Weed Control

The use of in-crop herbicides to control weeds is often very important in determining the success or failure of a crop. However, many other practices that can be implemented before and after a herbicide application can help to reduce weed competition. The use of these practices is termed Integrated Weed Management.

Integrated Weed Management

A farming system that utilizes an array of inter-dependent cultural, biological and herbicidal weed control practices is implementing Integrated Weed Management (IWM). It is essential that IWM involves an array of tools including the rotation of available herbicide groups, ensuring that weeds are exposed to a diverse range of control mechanisms. The principal aim of IWM is to improve the health and vigour of crops so that they may out-compete weeds emerging in the stand. This helps to reduce selection for resistance to any single control agent and to delay or prevent the development of herbicide resistant weeds.

Practising IWM does not mean abandoning chemical weed control, just relying on it less exclusively. For example:

• You may decide to choose a taller wheat variety or a tall, viny pea variety for a certain field. These crop selections will compete strongly with weeds, possibly allowing you to skip a spray operation in more competitive crops.

• You could insert a short-term forage crop into your crop rotation. Studies show that short-term alfalfa stands can reduce wild oat and green foxtail populations by up to 80 percent the year after breaking.

• Early sown barley may give you enough of a “jump” on the weeds that you can avoid herbicide applications.

• Use of vigorous, high-quality seed, sown shallow, can give you better crop competition than poor-quality or deeply sown crop seed.

• Banding nitrogen near the seed can give your crop an advantage over weeds.

For more information, refer to “Integrated Weed Management: Making it Work on Your Farm” factsheet, available from both Manitoba Agriculture, Food and Rural Development and Saskatchewan Ministry of Agriculture.

Making Spray Decisions

Field Scouting

Field scouting is an important tool for making informed spray decisions. Accurately assessing the type and number of weeds in the field will help you determine if a spray operation is necessary. The scouting pattern diagram on this page provides a guideline for scouting a field. The entire field should be walked to get a feel for the distribution and species of the weeds present. A minimum of 20 weed counts should be taken across the field. A smaller number may be used, but be aware that accuracy decreases as the number of counts gets smaller. Count the number of weeds in a 1 m^2 or a 0.25 m^2 area and divide the total number of weeds by the number of counts taken to obtain an average for the field. If using 0.25 m^2 samples, make sure to multiply by four so your average is for a 1 m^2 area.

Some weeds are not distributed uniformly and may be found in patches (for example, Canada thistle) or in low spots. As well, the type and number of weeds found along the field edges may be very different from those found inside the field. These areas should be considered separate from the rest of the field. If possible, patches, low spots, and field borders should be treated separately, as field wide spraying may not be required. Look out for new invading weeds and patches of herbicide-resistant weeds. Herbicide-resistant weeds and new invaders should be removed (manually if necessary), regardless of their number, to prevent them from spreading and becoming a serious control problem. Mapping your field’s weed problems will allow you to monitor the spread of weed patches over time and help you assess the effectiveness of your control program.

Yield Losses Caused by Weeds

Knowing the amount of crop yield loss caused by a given weed density will help you decide if a spray operation is required. The tables on the following pages give an indication of the yield loss caused by some of the important grassy weeds.

THESE TABLES SHOULD BE USED ONLY AS A GUIDE. The figures are based on Western Canadian research trials and will not be accurate all of the time. The yield loss values apply only to healthy, well fertilized crops with good stand establishment. Crops that are diseased or emerged unevenly will not compete well with weeds and will suffer larger yield losses than indicated in these tables. The yield loss figures are based on competition from single weed species only. Other weeds, such as wild mustard or Canada thistle, must be controlled if the figures are to be accurate. As well, the tables are based on competition from normal height crops. Semi-dwarf or hybrid varieties may not compete as well with weeds and the figures may not be accurate in these cases.
Table 1. Yield Losses (Percent) in Wheat Caused by Wild Oats.

<table>
<thead>
<tr>
<th>Wild Oat Density – Number Per Square Metre</th>
<th>1</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>14</th>
<th>16</th>
<th>18</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>35</th>
<th>40</th>
<th>45</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild Oats are 1 Leaf Stage Ahead of the Crop</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>14</td>
<td>15</td>
<td>17</td>
<td>19</td>
<td>22</td>
<td>26</td>
<td>29</td>
<td>32</td>
<td>34</td>
<td>37</td>
</tr>
<tr>
<td>Wild Oats are the Same Leaf Stage as the Crop</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>14</td>
<td>16</td>
<td>18</td>
<td>20</td>
<td>22</td>
<td>24</td>
</tr>
<tr>
<td>Wild Oats are 1 Leaf Stage Behind the Crop</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>10</td>
<td>11</td>
<td>13</td>
<td>14</td>
<td>15</td>
</tr>
</tbody>
</table>

Source: O’Donovan, Alberta Environmental Centre (Vegreville, Alberta)

Figure 1. Spray Decision Guideline for Wild Oats in Wheat.
Table 2. Yield Losses (Percent) in Wheat Caused by Green Foxtail (Wild Millet).

<table>
<thead>
<tr>
<th>Green Foxtail Density (no. per square metre)</th>
<th>50</th>
<th>75</th>
<th>100</th>
<th>125</th>
<th>150</th>
<th>175</th>
<th>200</th>
<th>250</th>
<th>300</th>
<th>350</th>
<th>400</th>
<th>450</th>
<th>500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield Loss (percent)</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>11</td>
<td>14</td>
<td>16</td>
<td>18</td>
<td>20</td>
<td>23</td>
</tr>
</tbody>
</table>

Source: O’Donovan, Alberta Environmental Centre (Vegreville, Alberta)
Table 3. Yield Losses (Percent) in Barley Caused by Wild Oats.

<table>
<thead>
<tr>
<th>Crop Density (plants/m²)</th>
<th>Relative Emergence</th>
<th>Wild Oat Density (plants/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Wild Oats are 1 Leaf Stage Ahead of the Crop</td>
<td>0.3</td>
</tr>
<tr>
<td>300</td>
<td>Wild Oats are the Same Leaf Stage as the Crop</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>Wild Oats are 1 Leaf Stage Behind the Crop</td>
<td>0.2</td>
</tr>
<tr>
<td>225</td>
<td>Wild Oats are 1 Leaf Stage Ahead of the Crop</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Wild Oats are the Same Leaf Stage as the Crop</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>Wild Oats are 1 Leaf Stage Behind the Crop</td>
<td>0.2</td>
</tr>
<tr>
<td>175</td>
<td>Wild Oats are 1 Leaf Stage Ahead of the Crop</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>Wild Oats are the Same Leaf Stage as the Crop</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Wild Oats are 1 Leaf Stage Behind the Crop</td>
<td>0.2</td>
</tr>
</tbody>
</table>
Table 4. Yield Losses (Percent) in Barley Caused by Green Foxtail (Wild Millet).

<table>
<thead>
<tr>
<th>Green Foxtail Density (no. per square metre)</th>
<th>50</th>
<th>75</th>
<th>100</th>
<th>125</th>
<th>150</th>
<th>175</th>
<th>200</th>
<th>250</th>
<th>300</th>
<th>350</th>
<th>400</th>
<th>450</th>
<th>500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield Loss (percent)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>10</td>
<td>11</td>
<td>13</td>
<td>14</td>
</tr>
</tbody>
</table>

Source: O’Donovan, Alberta Environmental Centre (Vegreville, Alberta)
Table 5. Yield Losses (Percent) in Canola Caused by Wild Oats and Volunteer Cereals.

<table>
<thead>
<tr>
<th>Weed Density – Number Per Square Metre</th>
<th>1</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>14</th>
<th>16</th>
<th>18</th>
<th>20</th>
<th>25</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild Oats</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>Volunteer Wheat</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>19</td>
<td>21</td>
</tr>
<tr>
<td>Volunteer Barley</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>14</td>
<td>15</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>23</td>
<td>25</td>
</tr>
</tbody>
</table>

Sources: Dew and Keys, Agriculture Canada (Lacombe, Alberta)
O’Donovan, Alberta Environmental Centre (Vegreville, Alberta)

Figure 2. Spray Decision Guideline for Wild Oats and Volunteer Cereals in Canola.
Table 6. Yield Losses (Percent) in Canola Caused by Green Foxtail (Wild Millet)

<table>
<thead>
<tr>
<th>Green Foxtail Density (no. per square metre)</th>
<th>50</th>
<th>75</th>
<th>100</th>
<th>125</th>
<th>150</th>
<th>175</th>
<th>200</th>
<th>250</th>
<th>300</th>
<th>350</th>
<th>400</th>
<th>450</th>
<th>500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield Loss (percent)</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>13</td>
<td>15</td>
<td>18</td>
<td>20</td>
<td>23</td>
<td>25</td>
</tr>
</tbody>
</table>

Source: O’Donovan, Alberta Environmental Centre (Vegreville, Alberta)
Table 7. Yield Losses (Percent) in Flax Caused by Wild Oats and Volunteer Cereals.

<table>
<thead>
<tr>
<th>Weed Density – Number Per Square Metre</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild Oat</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>13</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td>Volunteer Wheat</td>
<td>6</td>
<td>11</td>
<td>15</td>
<td>18</td>
<td>22</td>
<td>24</td>
<td>27</td>
<td>29</td>
<td>31</td>
<td>33</td>
</tr>
<tr>
<td>Volunteer Barley</td>
<td>6</td>
<td>12</td>
<td>16</td>
<td>21</td>
<td>24</td>
<td>28</td>
<td>31</td>
<td>34</td>
<td>36</td>
<td>39</td>
</tr>
</tbody>
</table>

Sources: Dew and Keys, Agriculture Canada (Lacombe, Alberta)
Friesen et al., University of Manitoba (Winnipeg, Manitoba)

Figure 3. Spray Decision Guideline for Wild Oats and Volunteer Cereals in Flax.
Deciding to Spray – Economic Thresholds and Herbicide Resistance

An economic threshold is the level of infestation at which lost yield exceeds the cost of the chemical and its application. Determining the economic threshold will help you decide if a spray operation is necessary.

The following example outlines how to determine an economic threshold:

You have a wild oat problem in your wheat. After a thorough field scouting you have determined that your field has an average density of 35 wild oats per square metre. You know that the crop and weeds are at the same leaf stage. Using Table 1, choose the “Same Leaf Stage” row and read across to 35 wild oats per square metre. You will find that your yield loss will be about 18 percent.

You think it could be a 40 bushel per acre wheat crop, and expect to get $4 per bushel for it. Therefore:

\[
\begin{align*}
40 \text{ bushels} & \times 0.18 \text{ (percent of expected yield loss)} = \\
7.2 \text{ bushels per acre of lost yield} & \\
7.2 \text{ bushels} & \times 4 \text{ per bushel} = \\
$28.80 \text{ per acre of lost income} &
\end{align*}
\]

Now find out the price of your herbicide. Most wild oat herbicides for wheat cost between $20 to $25 per acre. In this case, lost income exceeds the cost of the herbicide and application, so spraying would be justified.

Alternatively, you may want to use the figures provided with some of the yield loss tables. These figures provide flowcharts to assist you in making spray decisions. In some cases the flowcharts may indicate to spray when you do not have an economic threshold weed density, but most times they will prevent you from spraying unnecessarily.

Another factor to consider when deciding whether to spray is your herbicide rotation. A one in three rotation of herbicide groups is currently recommended to delay the development of herbicide resistance for weeds such as wild oats and green foxtail. Skipping a spray operation will give you an extra year of flexibility in your herbicide rotation. This means that you have one extra herbicide group to choose from the year after you skipped the spray operation. When making spray decisions, the ability to rotate herbicides should be considered in addition to the economics of spraying.

Making the Spray Decision

Remember that economic thresholds should be used only as guides when making a spray decision. Lost income caused by dockage or downgrading must also be considered. **FIELDS THAT ARE NOT SPRAYED THIS YEAR HAVE A HIGHER POTENTIAL FOR PROBLEMS THE FOLLOWING YEAR BECAUSE OF WEED SEED RETURN.** A farmer’s experience and common sense play an important role when deciding to spray. Used properly, however, the economic threshold can be an important tool in making spray decisions.

Weed Resistance to Herbicides

In recent years, the number of herbicide-resistant weeds and the areas they infest have increased.

Most herbicide-resistant weed infestations have developed following repeated use of the same herbicide (or herbicide group) for a number of years on the same field. Growers who have developed weed resistance on their farms will typically see a weed, which is normally controlled by a herbicide, escape uncontrolled after a number of years of use of the same product or product group. Individual plants may be resistant to 1.5 up to 10 or more times the normal field rate.

Herbicide Groups

To help you plan your herbicide program, the following table lists “herbicide groups.” To slow down the process of developing weed resistance, use products from different groups from year to year on your fields.

### Table 1: Herbicide Groups Based on Mode of Action


Continued on next page
New herbicides do not necessarily have a unique mode of action and may fall within the groups listed in the charts. Herbicides that have the same mode of action may not control the same weed spectrum or have the same crop safety. For example, Assert and Ally have the same mode of action; however, Assert controls wild oats while Ally does not.

### How Herbicides Work

After applying a herbicide, fields can be scouted to determine the effectiveness of the treatment. The symptoms of different herbicide groups, and the approximate time it takes to develop these symptoms, is listed in the table below. Weed patches that are not affected should be noted and checked, as they may be herbicide resistant. Note that symptoms may take longer to develop when conditions are not conducive to rapid plant growth.

The following table gives a brief description of symptoms that may be exhibited if plants are injured by a herbicide. The symptoms of each group are addressed for both foliar and soil exposures.

<table>
<thead>
<tr>
<th>Group 5 (contain photosynthetic inhibitors – triazines)</th>
<th>AAtrex, metribuzin, Primextra II Magnum*, simazine, Velpar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 6 (contain photosynthetic inhibitors – nitriles/benzothiadiazoles)</td>
<td>Axial iPak*, Basagran Brands, bromoxynil, bromoxynil/2,4-D ester*, bromoxynil/MCPA ester*, Conquer*, Enforcer Brands*, Infinity*, Tundra*, Velocity m3*, Viper ADV*</td>
</tr>
<tr>
<td>Group 7 (contain photosynthetic inhibitors – ureas/amides)</td>
<td>linuron</td>
</tr>
<tr>
<td>Group 8 (unknown mode of action)</td>
<td>Avadex, Eptam-8E, Fortress*</td>
</tr>
<tr>
<td>Group 9 (contain inhibitors of EPSP synthase)</td>
<td>Glyphosate - several brands. CleanStart*, Eclipse III*, FlexStar GT*, florasulam + glyphosate, Glykamba*</td>
</tr>
<tr>
<td>Group 10 (contain inhibitors of glutamine synthetase)</td>
<td>Good Harvest, Liberty</td>
</tr>
<tr>
<td>Group 11 (inhibit carotenoid synthesis - triazoles)</td>
<td>Amitrol 240</td>
</tr>
<tr>
<td>Group 14 (contain inhibitors of protoporphyrinogen oxidase/PPO/Protox)</td>
<td>Aim, Authority, Authority Charge, BlackHawk*, Blazer, CleanStart*, Conquer*, FlexStar GT*, flumioxazin, Focus*, Heat, Reflex</td>
</tr>
<tr>
<td>Group 15 (inhibit cell division - benzamides, chloroacetamides)</td>
<td>Battalion*, Dual II Magnum, Focus*, Frontier Max, Kerb, Outlook, Primextra II Magnum*</td>
</tr>
<tr>
<td>Group 19 (inhibits auxin transport)</td>
<td>Distinct*, OverDrive*</td>
</tr>
<tr>
<td>Group 22 (membrane rupture, photosynthetic inhibitors)</td>
<td>Diquat, Gramoxone, Reward</td>
</tr>
<tr>
<td>Group 26 (inhibits cellulose/cell wall formation): Quinclorac (grasses)</td>
<td></td>
</tr>
<tr>
<td>Group 27 (HPPD inhibitors – isoxazole)</td>
<td>Axial iPak*, Infinity*, topramezone, Tundra*, Velocity m3*</td>
</tr>
</tbody>
</table>

*Products contain more than one active ingredient and appear in more than one group. In some instances, both active ingredients act to kill the same weed using different modes of action. In these instances, use of tank mixes may slow down the process of developing weed resistance.
Table 2: The Mode of Action, Site of Uptake and Symptoms of Different Herbicide Groups.

<table>
<thead>
<tr>
<th>Herbicide Group</th>
<th>Mode of Action</th>
<th>Site of Uptake</th>
<th>Weed symptoms/timing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Grass weeds</strong></td>
</tr>
<tr>
<td>1</td>
<td>Systemic</td>
<td>Foliar</td>
<td>Reduced growth, yellowing of growing point in 1 to 3 weeks. Newest leaf of affected plant pulls out easily in 3 to 5 days.</td>
</tr>
<tr>
<td>2</td>
<td>Systemic</td>
<td>Foliar/Soil</td>
<td>Newest leaves yellowed in 3 to 10 days, dead in 1 to 3 weeks.</td>
</tr>
<tr>
<td>3</td>
<td>Systemic</td>
<td>Soil</td>
<td>Reduced emergence, poor root development of emerged plants. Roots often swollen/stunted and root tips darkened.</td>
</tr>
<tr>
<td>4</td>
<td>Systemic</td>
<td>Foliar</td>
<td>Tolerant to moderate rates. High rates cause symptoms similar to drought. Poor timing may cause kernal abortion.</td>
</tr>
<tr>
<td>5</td>
<td>Systemic</td>
<td>Soil</td>
<td>Wilted and yellowed oldest leaves, death in 7 to 10 days.</td>
</tr>
<tr>
<td></td>
<td>Contact</td>
<td>Foliar</td>
<td>Yellowed oldest leaves, death within days.</td>
</tr>
<tr>
<td>6</td>
<td>Contact</td>
<td>Foliar</td>
<td>Some leaf burn possible.</td>
</tr>
<tr>
<td>7</td>
<td>Systemic</td>
<td>Soil</td>
<td>Yelled and stunted plants, death in 10 to 14 days.</td>
</tr>
<tr>
<td></td>
<td>Contact</td>
<td>Foliar</td>
<td>Interveinal yellowing of oldest leaves, death within days.</td>
</tr>
<tr>
<td>8</td>
<td>Contact</td>
<td>Foliar</td>
<td>Yellowed leaves in 3 to 7 days, stunted plants.</td>
</tr>
<tr>
<td></td>
<td>Systemic</td>
<td>Soil</td>
<td>Reduced emergence, emerged leaves dark green/blue.</td>
</tr>
<tr>
<td>9</td>
<td>Systemic</td>
<td>Foliar</td>
<td>Wilted, yellowed leaves in 7 to 10 days. Newest growth is impacted first followed by the rest of the plant.</td>
</tr>
<tr>
<td>10</td>
<td>Contact</td>
<td>Foliar</td>
<td>Wilted, bleached leaves in 3 to 5 days, death in 1 to 2 weeks.</td>
</tr>
<tr>
<td>11</td>
<td>Systemic</td>
<td>Foliar</td>
<td>Plants wilted in 2 to 3 days, bleached and purpling leaves in 1 to 2 weeks.</td>
</tr>
<tr>
<td>14</td>
<td>Contact</td>
<td>Foliar</td>
<td>Some leaf burn at contact points or leaf edges.</td>
</tr>
<tr>
<td></td>
<td>Systemic</td>
<td>Soil</td>
<td>Bleaching and yellowing, death prior to or shortly following emergence</td>
</tr>
<tr>
<td>15</td>
<td>Systemic</td>
<td>Soil</td>
<td>Reduced emergence, emerged plants stunted.</td>
</tr>
<tr>
<td>19</td>
<td>Systemic</td>
<td>Foliar</td>
<td>Twisting of older leaves, new leaves fail to expand, plant death in 2 to 4 weeks.</td>
</tr>
<tr>
<td>22</td>
<td>Contact</td>
<td>Foliar</td>
<td>Leaves wilted within hours, desiccated in 1 to 3 days.</td>
</tr>
<tr>
<td>27</td>
<td>Systemic</td>
<td>Foliar</td>
<td>Some bleaching and whitening of leaves.</td>
</tr>
</tbody>
</table>
How to Identify Weed Resistance

It is important to avoid confusing herbicide failure caused by resistance with herbicide failure caused by various other factors (such as weather or application errors). When a herbicide fails to control weeds because of weather or application factors, that herbicide may work in the field the next season. But when herbicides fail because of the development of resistance, they will fail in subsequent years, regardless of weather or application procedures.

Herbicide resistance should be suspected under the following conditions:

- A weed species that the herbicide controlled in previous seasons now escapes the treatment, while other weeds that appear on the label continue to be controlled in the field.
- The escapes cannot be attributed to adverse weather or emergence after application (if a post-emergence product is in question).
- Irregular-shaped patches of a weed develop where the herbicide gives little or no control.
- Records of the past history of the field show repeated use of the same herbicide, or combinations of herbicides, that kill the weed in question in the same way.

Table 3: Herbicide-Resistant Weeds in Western Canada

<table>
<thead>
<tr>
<th>WEED</th>
<th>HERBICIDE GROUP</th>
<th>LOCATIONS CONFIRMED</th>
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</thead>
<tbody>
<tr>
<td>Canada Fleabane</td>
<td>Group 9</td>
<td>Occurs in several US states</td>
</tr>
<tr>
<td>Cleavers</td>
<td>Group 2</td>
<td>AB, MB, SK</td>
</tr>
<tr>
<td></td>
<td>Group 4</td>
<td>AB</td>
</tr>
<tr>
<td></td>
<td>Multiple combinations of: Groups 2 &amp; 4</td>
<td>AB</td>
</tr>
<tr>
<td>Chickweed</td>
<td>Group 2</td>
<td>AB, SK</td>
</tr>
<tr>
<td>Cow Cockle</td>
<td>Group 2</td>
<td>AB</td>
</tr>
<tr>
<td>Green Foxtail</td>
<td>Group 1</td>
<td>AB, MB, SK</td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
<td>MB</td>
</tr>
<tr>
<td></td>
<td>Multiple combinations of: Groups 1 &amp; 3</td>
<td>MB, SK</td>
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<tr>
<td>Hemp-nettle</td>
<td>Group 2</td>
<td>AB, MB</td>
</tr>
<tr>
<td></td>
<td>Group 4</td>
<td>AB</td>
</tr>
<tr>
<td></td>
<td>Multiple combinations of: Groups 2 &amp; 4</td>
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</tr>
<tr>
<td>Kochia</td>
<td>Group 2</td>
<td>AB, MB, SK</td>
</tr>
<tr>
<td></td>
<td>Group 4</td>
<td>Occurs in North Dakota and Montana</td>
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<tr>
<td></td>
<td>Group 5</td>
<td>MB</td>
</tr>
<tr>
<td></td>
<td>Group 9</td>
<td>AB, MB, SK</td>
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<tr>
<td>Lamb’s-quarters</td>
<td>Group 2</td>
<td>Occurs in Ontario</td>
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<tr>
<td></td>
<td>Group 5</td>
<td>Occurs in Ontario</td>
</tr>
<tr>
<td>Marshall (False ragweed)</td>
<td>Group 2</td>
<td>Occurs in North Dakota</td>
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<tr>
<td>Mustard, Ball</td>
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<td>AB</td>
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<tr>
<td>Mustard, Wild</td>
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<tr>
<td></td>
<td>Group 5</td>
<td>MB</td>
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<tr>
<td>Narrow-leaved hawk’s-beard</td>
<td>Group 2</td>
<td>AB</td>
</tr>
<tr>
<td>Persian Darnel</td>
<td>Group 1</td>
<td>AB, SK</td>
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<tr>
<td>Redroot pigweed</td>
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<td>MB, SK</td>
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<td></td>
<td>Group 5</td>
<td>Occurs in Ontario</td>
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<tr>
<td>Russian thistle</td>
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<tr>
<td>Shepherd’s-purse</td>
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<td>Smartweed, pale</td>
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<td>MB</td>
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<tr>
<td>Spiny Annual Sow-thistle</td>
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<td>AB, MB</td>
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<td>Stinkweed</td>
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<td>Wild buckwheat</td>
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<td>AB</td>
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<tr>
<td>Wild oat</td>
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<td></td>
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<td></td>
<td>Group 8</td>
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<td>AB, MB, SK</td>
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</table>

See Table 1 on page 45 for a complete list of products in each Herbicide Resistance Group.

If Weed Resistance Develops on Your Farm

It is important to identify weed resistance before it spreads across your farm. Plan on conducting a “patch watch” scouting program this summer to identify suspicious patches before they become difficult to manage. Resistant weed patches have been identified on fields where producers were unaware of their existence.

Your patch watch program should begin shortly after spraying and continue through July after the crop has headed out and most weeds are visible from a distance. If you find suspicious looking patches, contact your local agricultural office or crop protection company representative to assist you in confirming weed resistance. If resistance is suspected:

1. Map the location of the patches and mark them with stakes so you will remember their location.
2. Mow, cultivate or spot spray the patches. Resistant patches should not be allowed to produce seed.
3. Patchy areas should NOT be harvested with the rest of the field. Harvest these areas separately, and make sure to clean all harvesting equipment before leaving the area to prevent the spread of seeds across the field or to a neighbouring field.
4. Check patches each year to monitor their spread. Keeping your resistant weeds isolated to a manageable patch is easier than dealing with an entire field of resistant weeds.

**Adjuvants and Registered Pesticides:**

Note – some products are specific about the concentration of active ingredient in the surfactant for product performance. Check with the product page in this guide or the product label.

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<tr>
<th>TRADE NAME</th>
<th>COMPOSITION</th>
<th>REGISTERED PESTICIDES</th>
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<tbody>
<tr>
<td>Addit (PCP#29263)</td>
<td>37% Surfactant blend</td>
<td>Bison</td>
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<tr>
<td>Adigor Adjuvant</td>
<td>48.8% methylated rapeseed oil 28.2% ethoxylated alcohol</td>
<td>Broadband</td>
</tr>
<tr>
<td>Agral 90 (PCP#11809 or 24725)</td>
<td>90% nonylphenoxypolyethoxy ethanol</td>
<td>Accent, Altitude FX, Battalion, diquat, Escort, flucarbazone, glyphosate, Muster, Pinnacle, Prism, imazethapyr, metsulfuron, thifensulfuron/tribenuron, Reflex, Reward, Triton K, Ultim</td>
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<tr>
<td>Agsurf II (PCP#30071)</td>
<td>92% Alcohol ethoxylate</td>
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<tr>
<td>Amigo (PCP#22644), X-Act (PCP#28225)</td>
<td>30% phosphate ester surfactant</td>
<td>clethodim†*</td>
</tr>
<tr>
<td>Assist (PCP#16937), XA Oil Concentrate (PCP#11769), Score (PCP#12200), Signal (PCP#29173), Steppe (PCP#29281)</td>
<td>83% paraffin based mineral oil 17% surfactant blend</td>
<td>AAtrex, Basagran (all crops), Blazer, clodinafop†<em>, clodinafop + bromoxynil / MCPA ester†</em>, Harmony K*, Harmony SG*, Simplicity, Yuma GL (Not all adjuvants may be used with all herbicides listed)</td>
</tr>
<tr>
<td>Citowett Plus (PCP#12766), Super Spreader (PCP#17402)</td>
<td>50% Octylphenoxypolyethoxy ethanol</td>
<td>Accent, AAtrex, Basagran (peas), Battalion, Escort, metsulfuron, Muster, Pinnacle, Prism, thifensulfuron/tribenuron, Triton K, Ultim</td>
</tr>
<tr>
<td>Companion (PCP#15882)</td>
<td>70% Octylphenoxypolyethoxy-(9)-ethanol</td>
<td>Glyphosate, metsulfuron, Muster</td>
</tr>
<tr>
<td>Corn oil (PCP#18473)</td>
<td>99% paraffin based mineral oil 1% surfactant blend</td>
<td>AAtrex, linuron</td>
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<tr>
<td>Enhance (PCP#29270 or 29952), ADAMA Adjuvant 80 (PCP#30419)</td>
<td>80% triglyceride ethoxylate 10 POE</td>
<td>Accent, Battalion, diquat, Escort, glyphosate, Gramoxone, Lontrel, Muster, Pinnacle, Prism, imazethapyr, metsulfuron, thifensulfuron/tribenuron, Reflex, Reward, Ultim</td>
</tr>
<tr>
<td>Hasten (PCP#27420)</td>
<td>77.4% methyl and ethyl oleate(esterified vegetable oil)</td>
<td>Option 35DF</td>
</tr>
<tr>
<td>Intake (PCP#31243)</td>
<td>586 g/L Parrafinic oil 242 g/L Alkoxylated alcohol</td>
<td>Liquid Achieve</td>
</tr>
<tr>
<td>LI700 (PCP#23026)</td>
<td>80% surfactant blend</td>
<td>Diquat, flucarbazone, glyphosate, Fulfill insecticide</td>
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<tr>
<td>Liberate (PCP#29491)</td>
<td>100% lecithin, methyl esters of fatty acids and alcohol ethoxylate</td>
<td>Battalion, Pursuit, Reflex, Odyssey, Everest, thifensulfuron/tribenuron, tribenuron, metsulfuron (Accurate)</td>
</tr>
</tbody>
</table>

*Continued on next page*
**Adjuvants and Your Herbicide**

Adjuvants are important ingredients in chemical weed control. Many herbicides must be applied with an adjuvant. If it is forgotten, the level of weed control can vary widely, and re-spraying may be necessary.

Most products have adjuvants built into the formulation. Other require adjuvant addition (e.g. Refine SG). Some adjuvants were developed specifically for one herbicide, and these are either pre-packaged with the herbicide, or are identified by name on the label (e.g. Turbocharge for Achieve, Amigo for Select). Consult a company representative to determine the support for pesticide adjuvant combinations not listed on the product label.

With some products, adjuvants need to be added only under certain conditions. For example, glyphosate products have built-in adjuvants, but require additional adjuvant when low rates (pre-seeding or chem-fallow), high water volumes, or certain tank mixes are used.

Adjuvants should be added only when required. If one is not required, addition can reduce weed control or injure crops. Product labels will describe when an adjuvant is required, and what type should be used.

There are two main classes of adjuvants: “activators or spray modifiers” (these include surfactants and crop oils), and “utility modifiers” (these include pH adjusters, water conditioners, low-drift adjuvants, and anti-foaming agents). The most important class of adjuvants is the activators. Surfactants, the main group within the activators, are “surface active agents.” These chemicals produce effects at points where two substances touch, such as between two liquids (herbicide and water) or between a solid and a liquid (herbicide and leaf surface). Some surfactants act as dispersing agents, helping to keep a pesticide suspended in water. Others work on the plant, improving the wetting, sticking and penetrating characteristics of the herbicide droplets. Oil-based adjuvants contain petroleum or vegetable oil plus an emulsifier that suspends the oil in tiny droplets within the spray solution. Oil-based adjuvants typically assist in herbicide penetration into the leaf.

There are two basic type of surfactants (ionic and non-ionic), of which the non-ionic are most common. The tables on the previous page list the surfactants registered for use with herbicides in Western Canada.

---

### Trade Name Composition Registered Pesticides

<table>
<thead>
<tr>
<th>TRADE NAME</th>
<th>COMPOSITION</th>
<th>REGISTERED PESTICIDES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merge (PCP#24702)</td>
<td>50% solvent 50% surfactant blend</td>
<td>Ares, quinclorac, Odyssey, Odyssey Ultra, Poast Ultra, quizalofop, Solo, Tensile, Triton C</td>
</tr>
<tr>
<td>MSO Concentrate with Leci-Tech</td>
<td>70% methylated soybean oil</td>
<td>imazethapyr, Odyssey, Poast Ultra</td>
</tr>
<tr>
<td>(PCP#28385)</td>
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<tr>
<td>Sure-Mix (PCP#25467)</td>
<td>60% paraffin based mineral oil 40% surfactant blend</td>
<td>quizalofop</td>
</tr>
<tr>
<td>Turbocharge (PCP#23135)</td>
<td>50% mineral oil 39.5% surfactant blend</td>
<td>Achieve Liquid Gold*, Paradigm, tralkoxydim†</td>
</tr>
</tbody>
</table>

* The adjuvant is packaged with the product.
† Note: All products may not be registered with all adjuvants. See product page in the following sections to determine which adjuvants are registered for each herbicide.

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### Crop and Herbicide Recommendation Tables

The following charts give general weed control comparisons based on rates, timing and other application instructions and precautions as outlined in this Guide. A dot (*) will indicate if the weed is listed on a product label. Where rate ranges are listed for controlling a given weed, ratings are based on results achieved with the higher rate unless noted otherwise. ‘S’ indicates weed suppression.
# Weed Control Tables

## Table 1. Weed Control in Barley

| HERBICIDE | PACE | Barley and Cereals | Broadleaf | Cocksfoot | Cockspur | Creeping | Creeping | Dandelion | Extended Absorption Time | Flax | Grasses | Grasses | Grasses | Grasses | Grasses | Grasses | Grasses | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | Hairy | H
Table 2. Weed Control in Oat

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1 MCPA K mixes only.  2 Will not control CLEARFIELD canola varieties.  3 Spring seedlings only.  5 Seedlings and overwintered rosettes.  6 Controlled at higher rates.  7 Top growth control only.  S - Suppression.  • Registered for control.
Table 3. Weed Control in Rye or Triticale

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1 Green foxtail only.  2 Spring seedlings and overwintered rosettes.  3 MCPA K mix only.  4 Will not control CLEARFIELD canola varieties.  5 Spring seedlings only.  6 Not recommended for all spring wheat varieties. Check product listing for details.  7 Controlled at the higher rates.  8 Tank mix with 2,4-D ester when applying to durum wheat.  9 Top growth only.  10 Weeds controlled when emerging from seed only (not controlled if emerged at application).

* Registered for control.  S - Suppression
Table 5. Weed Control in Corn

| HERBICIDE          | FACE | Barnyard Grass | Volunteer Cocks | Foxtail, Green | Foxtail, Yellow | Wild Oats | Quackgrass | Blackshirt, Wild | Chickweed | Cleavers | Dandelion | Flixweed | Kochia | Lamb’s quarters | Dalibard | Kelloa | Lambsquarters, Wild | Pigeon redroot | Russian Thistle | Shepherd’s-purse | Smartweed | Annual Species | Lady’s-thumb | Sow-thistle | (Perennial) | Stinkweed | Sunflower, Volunteer | Thistle, Canada | Volunteer Canola |
|-------------------|------|----------------|-----------------|----------------|----------------|-----------|------------|------------------|-----------|----------|-----------|----------|--------|-----------------|----------|--------|-------------------|----------------|----------------|----------------|-------------|----------------|------------|-------------|------------------|--------------|-----------------|
| 2,4-D             | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| 2,4-DB            | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Atrix             | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Accent            | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Basagran/Basagran Forte | S  | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Battalion         | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Bromoxynil        | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Bromoxynil/MCPA   | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Dicamba           | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Dicamba + 2,4-D amine | S  | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Distinct          | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Dual II Magnum    | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Dyvel DSp         | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Focus             | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Frontier Max      | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Glyphosate1,4     | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Liberty 200 SN3   | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Linuron           | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| MCPA              | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| MCPB/MCPA         | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Option 35 DF/Option 2.25 OD6 | S  | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Permit            | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Primextra II Magnum | S  | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Simazine          | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Topramezone10     | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Topramezone + Atrazine | S  | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |
| Ultima8,10        | S    | S              | S               | S              | S              | S         | S          | S                | S         | S        | S         | S        | S      | S               | S        | S      | S                 | S             | S                 | S              | S           | S               | S          | S            |

1 For use on glyphosate tolerant varieties only.  2 See product page for registered corn varieties.  3 For use on Liberty 200 SN tolerant corn varieties only.  
4 Not all glyphosate products are registered for use on glyphosate tolerant corn.  5 Registered for use in Red River Valley region of Manitoba ONLY.  
6 For use in Manitoba only.  7 Except glyphosate tolerant varieties.  8Apply prior to seeding or up to 3 days after seeding.  
9 Only controlled when weeds are emerging from seed (not controlled if emerged at application).  10 Must be applied with a tank mix partner.  
• Controlled     S – Suppression
Table 6. Weed Control in Pea

| HERBICIDE                        | Barnyard Grass | Foxtail, Green and Yellow | Quackgrass | Volunteer Barley | Volunteer Wheat | Wild Oats | Blackseed, Wild | Chickweed | Clavers | Cocklebur | Dandelion | Flixweed | Hemp-nettle | Kochia | Lenty-squirres | Lesser, Wild | Pigweed, Bright | Russian Thistle | Shepherd’s purse | Smartweed, Annual Species | Smartweed, Fordale | Stinkweed | Thistle, Canada | Volunteer canola |
|----------------------------------|----------------|---------------------------|------------|------------------|----------------|-----------|----------------|-----------|---------|------------|-----------|----------|-------------|--------|----------------|---------------|-----------------|----------------|----------------|----------------|-----------------|----------------|
| Authority/Authority Charge³      |                |                           |            |                  |                |           |                |           |         |            |           |          |             |        |                |               |                 |                |                 |                |                |                |                |
| Avadex                           |                |                           |            |                  |                |           |                |           |         |            |           |          |             |        |                |               |                 |                |                 |                |                |                |                |
| Basagran/Basagran Forté          |                |                           |            |                  |                |           |                |           |         |            |           |          |             |        |                |               |                 |                |                 |                |                |                |                |
| Clethodim                        |                |                           |            |                  |                |           |                |           |         |            |           |          |             |        |                |               |                 |                |                 |                |                |                |                |
| Edge Granular                    |                |                           |            |                  |                |           |                |           |         |            |           |          |             |        |                |               |                 |                |                 |                |                |                |                |
| Flumioxazin (Valtera only)       |                |                           |            |                  |                |           |                |           |         |            |           |          |             |        |                |               |                 |                |                 |                |                |                |                |
| Imazethapyr                      |                |                           |            |                  |                |           |                |           |         |            |           |          |             |        |                |               |                 |                |                 |                |                |                |                |
| MCPA Sodium Salt/Amine           |                |                           |            |                  |                |           |                |           |         |            |           |          |             |        |                |               |                 |                |                 |                |                |                |                |
| MCPB/MCPA                        |                |                           |            |                  |                |           |                |           |         |            |           |          |             |        |                |               |                 |                |                 |                |                |                |                |
| Metribuzin                       |                |                           |            |                  |                |           |                |           |         |            |           |          |             |        |                |               |                 |                |                 |                |                |                |                |
| Odyssey                          |                |                           |            |                  |                |           |                |           |         |            |           |          |             |        |                |               |                 |                |                 |                |                |                |                |
| Odyssey Ultra                    |                |                           |            |                  |                |           |                |           |         |            |           |          |             |        |                |               |                 |                |                 |                |                |                |                |
| Poast Ultra                      |                |                           |            |                  |                |           |                |           |         |            |           |          |             |        |                |               |                 |                |                 |                |                |                |                |
| Quizalofop                       |                |                           |            |                  |                |           |                |           |         |            |           |          |             |        |                |               |                 |                |                 |                |                |                |                |
| Trifluralin (broadleaf & grassy weeds) |            |                           |            |                  |                |           |                |           |         |            |           |          |             |        |                |               |                 |                |                 |                |                |                |                |
| Viper ADV                        |                |                           |            |                  |                |           |                |           |         |            |           |          |             |        |                |               |                 |                |                 |                |                |                |                |

1 Green foxtail only.  2 Excluding CLEARFIELD varieties.  3 For in season activity only. For initial burn down of other weeds see table 13b.  4 For control of the marked weeds when emerging from seed (not controlled if emerged at application).  • Registered for control.  S - Suppression.
Table 7. Weed Control in Other Pulses

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<td>Viper ADV</td>
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1 White and kidney beans only. 2 Pre-emergent surface treatments only. 3 Pinto, pink and red beans only. 5 For use on navy beans in the Red River Valley of Manitoba. Does not include weeds controlled by Basagran Forté. 6 Not all dry bean types have been tested for tolerance to this herbicide. 7 White, kidney and pinto beans only. 8 Fall applications only. 9 For use ONLY on CLEARFIELD lentil varieties. 10 Including Clearfield lentil varieties. 11 Suppression in CLEARFIELD lentils. 12 Not controlled in CLEARFIELD lentils. 13 Not including CLEARFIELD wheat varieties. 14 Apply prior to seeding of or up to 3 days after seeding. 15 For control of the marked weeds when emerging from seed (not controlled if emerged at application). 16 For in season activity only. For initial burn down of other weeds see table 13b.

- Registered for control.  S - Suppression.
Table 8. Weed Control in Flax and Solin (Low Linolenic Acid Flax).
Not all products are registered for use on Solin.

**HERBICIDE**

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<th>Foxtail Yellow</th>
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<th>Wild Oats</th>
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<th>Catclaw, Nightshooting</th>
<th>Cleavers</th>
<th>Chickweed</th>
<th>Cocklebur</th>
<th>Dandelion</th>
<th>Flaxweed</th>
<th>Barbarea</th>
<th>Kochia</th>
<th>Lamb’s Quarters</th>
<th>Malva</th>
<th>Rollover</th>
<th>Russian Thistle</th>
<th>Shepherd's Purse</th>
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* Registered for control. S – Suppression.
1 Registered for use on both Flax and Solin (low linolenic acid flax). 2 Spring seedlings only. 3 Not recommended for use on flax in Saskatchewan. 4 Fall application only. 5 For in season activity only. For initial burn down of other weeds see table 13b.

Table 9. Weed Control in Canola

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* Registered for control. S – Suppression.
1 For use only on Liberty Link varieties. 2 For use only on CLEARFIELD canola varieties. 3 Ratings based on 1.35 L/acre rate of Liberty. Control may be reduced at lower rates. 4 For use only on glyphosate tolerant canola varieties. 5 Will not control CLEARFIELD wheat volunteers. 6 Season long control. 7 Top growth control only.
Table 10. Weed Control in Potatoes*

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<th>Volunteer Barley</th>
<th>Volunteer Wheat</th>
<th>Wild Oats</th>
<th>Quickgrass</th>
<th>Chickweed</th>
<th>Dandelion</th>
<th>Lactuca sp.</th>
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<th>Nightshade</th>
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* Controlled   S - Suppression
1 Will not control glyphosate tolerant varieties. 2 American and Eastern black nightshades. 3 Hairy nightshade.
4 Consult manufacturer or seed provider for varietal tolerance to Metribuzin.

*Note: Before using any pesticides on potatoes, consult the list of Agricultural Pesticides Approved for Use, available from Simplot Canada and McCain Foods (Canada).

Table 11. Weed Control in Sunflowers

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<th>Volunteer Barley</th>
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* Registered for control.  S - Suppression.
1 Will not control CLEARFIELD volunteers.  2 Season-long control.  3 Apply only on CLEARFIELD sunflower varieties.
4 For in season soil activity only. For initial burn down of other weeds see table 13b.  5 ExpressSun (tribenuron tolerant) sunflower varieties only.
Table 22. Weed Control in Soybean

| Herbicide/Resistant Group | Barnyard Grass | Foxtail, Green | Foxtail, Yellow | Volunteer barley | Volunteer wheat | Wild oat | Buckwheat, Wild | Cleavers | Cocklebur | Hemp-nettle | Kochia | Lambquarters | Lambsquarters, Wild | Nightshade, Hairy | Pigweed, Redroot | Russian thistle | Shepherd’s purse | Shepherd’s purse | Shepherd’s purse | Shepherd’s purse | Shepherd’s purse | Shepherd’s purse |
|---------------------------|---------------|--------------|---------------|-----------------|----------------|---------|---------------|----------|-----------|-------------|--------|---------------|-----------------|-----------------|---------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Authority/Authority Charge7 | 14            | S            | S             |                 |                 |         |               |          |           |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Basagran/Basagran Forté 6 | 6             | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Blazer 14                 | S             | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Clotrolin                 | 1             | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Dual II Magnum 15          |               | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Edge Granular             | S             | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Flexstar GT², ³           | 9/14          | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Flumioxazin (Valtra only) | 14            | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Focus⁵                     | 14/15         | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Glyphosate², ³            | 9             | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Imazethapyr               | 2             | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Liberty 205SN⁸             | 10            | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Linuron                   | 7             | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Metribuzin + Treflan (PPI) | 5             | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Odyssey                   | 2             | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Odyssey Ultra             | 1/2           | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Pinnacle                  | 2             | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Poast Ultra               | 1             | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Quinazolofop             | 1             | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Reflex + Basagran 1/4     | 6/14          | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Trifluralin (broadleaf & grassy weeds) | 3     | S            | S            | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Viper ADV 2/6             | S            | S            | S             | S               | S               | S       | S             | S        | S          |             |        |               |                 |                 |               |                 |                 |                 |                 |                 |                 |                 |                 |                 |

1 For use in the Red River Valley of Manitoba only. 2 For use on glyphosate tolerant varieties only. 3 Not all glyphosate products are registered for use on glyphosate tolerant soybeans. 4 Not including CLEARFIELD wheat varieties. 5 Apply in fall or spring prior to seeding of or up to 3 days after seeding. 6 Control of the following weeds emerging from seed (not controlled if emerged at application). See preseed table for emerged weeds controlled by the Aim component. 7 For in season activity only. For initial burn down of other weeds see table 13b. 8 For use in Liberty tolerant soybeans only.

- Registered for control. S - Suppression.
## Table 12. Weed Control in Special Crops

<table>
<thead>
<tr>
<th>HERBICIDE</th>
<th>CROP</th>
<th>ANNUAL WEEDS</th>
<th>PERENNIALS</th>
</tr>
</thead>
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<tr>
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<td>✓</td>
<td>✓</td>
</tr>
<tr>
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<td>Curtail M</td>
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<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Dicamba + MCPA</td>
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<tr>
<td>Dicamba/Mecoprop/MCPA</td>
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<td>Fluroxypyr + MCPA</td>
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<td>Trifluralin</td>
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1 Granular formulation only.  2 Yellow mustard only.  3 Brown and oriental mustards only.  4 Spring seedlings only.  5 Oriental mustard only.  6 For use in CLEARFILED varieties only. Non-CLEARFIELD varieties will be severely injured by this treatment.  5 CLEARFIELD varieties not controlled  6 Including Ethiopian mustard (Brassica carinata)  • Registered for control.  S - Suppression.
Table 13a. Herbicides to Control Weeds Before Seeding or After Seeding but Prior to Crop Emergence

<table>
<thead>
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<th>HERBICIDE</th>
<th>Barley</th>
<th>Canola</th>
<th>Corn, Field</th>
<th>Chickpea</th>
<th>Corn, Sweet</th>
<th>Dry Bean</th>
<th>Field Pea</th>
<th>Flax</th>
<th>Forage Grasses</th>
<th>Lentil</th>
<th>Oat</th>
<th>Potatoes</th>
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</tbody>
</table>

The following products may or must (+) be mixed with glyphosate – for the marked crops

A  Maximum of 140 gae/acre in chickpea, field pea and lentil (see glyphosate page).  
B  Amine formulations only.  
C  Only for select products. See product page for details.
### Table 13b. Weed Control Before Seeding or After Seeding but Prior to Crop Emergence

<table>
<thead>
<tr>
<th>HERBICIDE</th>
<th>PAGE</th>
<th>Barley</th>
<th>Canada</th>
<th>Chickpea</th>
<th>Dry Bean</th>
<th>Faba Bean</th>
<th>Field Pea</th>
<th>Flax</th>
<th>Lentil</th>
<th>Oat</th>
<th>Potato</th>
<th>Soybean</th>
<th>Sunflower</th>
<th>Wheat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amitrol</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>CleanStart</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
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<tr>
<td>Conquer</td>
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<td>✓</td>
<td></td>
</tr>
<tr>
<td>Glykamba</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>Glyphosate (180 gae/acre)&lt;sup&gt;1&lt;/sup&gt;</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>Glyphosate (360 gae/acre)&lt;sup&gt;1&lt;/sup&gt;</td>
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<td>✓</td>
<td>✓</td>
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</tbody>
</table>

The following products may or must (+) be mixed with glyphosate – weeds marked are those that the product has activity on in addition to glyphosate:

**Aim/Authority Charge**

+ 2,4-D

+ Bromoxynil

+ Brown mustard

+ Express FX

+ Triburon/Metsulfuron

+ Florasulam

+ Heat

+ Inferno Duo

+ Ko-Act

+ Korres

+ MCPA (up to 200 gae/acre)

+ Triburon

**Controlled** S – Suppression

1 Rates of application vary among brands. Consult the product page for application rates.

2 Spring seedlings only. 3 Initial burndown only. For extended in season control see Authority Charge in crop tables 6, 7, 8, and 11.

### Table 13c. Herbicides for Use as Harvest Aid or Desiccant Before Crop Harvest

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<thead>
<tr>
<th>HERBICIDE</th>
<th>PAGE</th>
<th>Alfalfa&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Barley</th>
<th>Canada</th>
<th>Chickpea</th>
<th>Dry Bean</th>
<th>Faba Bean</th>
<th>Field Pea</th>
<th>Flax</th>
<th>Lentil</th>
<th>Oat</th>
<th>Potato</th>
<th>Soybean</th>
<th>Sunflower</th>
<th>Wheat</th>
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<td>✓</td>
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<tr>
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<td>Diquat&lt;sup&gt;4&lt;/sup&gt;, 5</td>
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<tr>
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<td>Heat&lt;sup&gt;4&lt;/sup&gt;</td>
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</tbody>
</table>

1 Rates of application vary among brands. Consult glyphosate page for specific application rates. 2 For pre-harvest perennial weed control and may provide harvest management benefit. 3 For rapid plant tissue dry down to facilitate harvest. 4 May be tank mixed with glyphosate when used prior to harvest. 5 Refer to product page for surfactant requirements. 6 Not for crops grown for seed. 7 Seed production only. 8 Red lentil only.
Table 14. Weed Control in Fallow

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<tr>
<td>Dicamba + 2,4-D</td>
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<td>Dicamba / Mecoprop / MCPA</td>
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<tr>
<td>Glyphosate</td>
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<tr>
<td>Glyphosate (180 gae/acre)</td>
<td>*</td>
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<tr>
<td>Glyphosate (360 gae/acre)</td>
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</tbody>
</table>

The following products may or must (+) be mixed with glyphosate – weeds marked are those that the product has activity on in addition to glyphosate.

- **Aim**
- **Blackhawk**
- **2,4-D**
- **Bromoxynil**
- **Bromoxynil / MCPA**
- **Distinct (low rate)**
- **Florasulam**
- **Heat**
- **Korrex**
- **tribenuron**
- **tribenuron / metsulfuron**
- **Distinct (high rate)**

* Controlled S – Suppression
1 Top growth control only. 2 Not including glyphosate tolerant canola.
3 Rates of application varies among brands. Consult the product page for application rates. 4 Fall rosettes and spring seedling.

Table 15. Post-harvest Fall Weed Control in Stubble

<table>
<thead>
<tr>
<th>HERBICIDE</th>
<th>PAGE</th>
<th>Broome, Densio</th>
<th>Narrow-leaved Hawk’s-beard</th>
<th>Shepherd’s purse</th>
<th>Stinkweed, Broadleaf</th>
<th>Voluntary Canola</th>
<th>Quackgrass</th>
<th>Dandelion</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,4-D</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Amitrol</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Dicamba + Glyphosate</td>
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<tr>
<td>Dicamba / Mecoprop / MCPA</td>
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<td>DuVel DSp</td>
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<tr>
<td>Express Pro†</td>
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<td>Florasulam + glyphosate</td>
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<td>Tribenuron†</td>
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</tbody>
</table>

* Control S – Suppression. Levels of suppression vary depending on the product and growing conditions in the fall. Regrowth and in-crop treatments can be expected.
1 Top growth control only.
G To be used only in a mix with glyphosate.
## Table 16. Weed Control in Grass Pastures and Hayfields

<table>
<thead>
<tr>
<th>HERBICIDE</th>
<th>RATE (per acre)</th>
<th>PAGE</th>
<th>Abutilon</th>
<th>Barberry, Field</th>
<th>Buckthorn</th>
<th>Creeping Charlie</th>
<th>Daisy, English</th>
<th>Foulmallow</th>
<th>Gauntlet</th>
<th>Narrow-leaved Hawk’s-beard</th>
<th>Nodding Thistle</th>
<th>Poplar</th>
<th>Pussy Toes</th>
<th>Red Bartsia</th>
<th>Sages, Pasture</th>
<th>Snowberry</th>
<th>Snowberry, Perennial</th>
<th>Siskiyou</th>
<th>Skunkweed</th>
<th>Wineberry</th>
<th>Willow</th>
<th>Wormwood, Broken</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,4-D (500 g/L)</td>
<td>0.57 - 1.82 L₁</td>
<td>S</td>
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<td>S</td>
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* Controlled. S Top growth suppression only. ¹Rates may vary between different brands. Check product page for specific rate for product and use. ²May require multiple applications for complete control. ³Controlled by the highest rate within this range.

## Table 17. Weed Control in Shelterbelts

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<thead>
<tr>
<th>HERBICIDE</th>
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<th>SHELTERBELT SPECIES</th>
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* Controlled. ¹Yellow foxtail only.
### Table 18a - Weed Control in Forage Crops - Crops

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<th>COVER CROPS</th>
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<td>Grazing Ryegrass</td>
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<td>Crepideses Red Arrow</td>
<td>Annual Grass</td>
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<tr>
<td>E</td>
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</table>

S – seedling only. E – Established only. X – seedling or established. 1Undersowed only. 2For seed production only. 3Do not graze or harvest for livestock in the year of treatment. 4Use MCPA sodium salt on seedling forages only when undersowed to flax, oats, wheat or barley. Do not use on Flemish varieties of alfalfa. 5For use as a spot treatment only control red bartsia. 6Apply to fall prior to seeding. All products may not be registered for crops and weeds indicated. Check product labels. 7For forage production only. 8Check recommendations for varietal restrictions. 9CLEARFIELD varieties only. 10Liquid formulations in spring only. 11Bonanza 10G, Treflan E.C. (spring only). 12Treflan E.C. in spring only. 13Apply to seedings stands that will be in production for three years after application and establishment stands that will be in production for 2 years after application. 14May not include Solin (low linolenic acid flax). Check product label for restrictions. 15Fall application only. 16For application prior to emergence of the crop.
### Table 18b - Weed Control In Forage Crops - Weeds

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<th>VOLUNTEER</th>
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</table>

* Controlled by rates recommended for crops. S – Suppression. T– Top Growth Control. 1 Will not control CLEARFIELD varieties. 2 For control of wild oats only. 3 Controlled by MCPAK only. 4 Controls redroot pigweed only when a cereal cover crop is used. 5 Spring seedlings only. 6 Controlled only when growing rapidly 7 Spring germinating rosettes.

† Note: Surveys have found that 90% of fields have group 2 resistant kochia. Group 2 herbicides alone will not likely provide effective control.
Special Weed Problems

This section identifies specific weeds and some herbicides recommended for control. Refer to the particular crop section or the product label for information on specific products that may be used on the crops and for application instructions.

Absinthe

2,4-D LV Ester (500 g/L) - In grass pastures with no legumes, spray 1.82 L/acre in late June, prior to flowering. Re-treat regrowth in late summer when plants have 6 to 10 inches (15 to 25 cm) of new growth. More than 1 season of treatment may be required.

dicamba - In grass pasture and rangeland only, apply 0.5 L/acre in 20 to 30 gallons (90 to 135 L) per acre for top-growth control when leaves are fully expanded.

Restore/Restore II – In grass pastures and rangeland, apply Restore A at 0.2 L and Restore B at 1 L per acre (one package treats 15 acres) or Restore II at 0.97 L/acre (one 10 L jug treats 10 acres) when actively growing.

Alders

2,4-D LV Ester (500 g/L) - In grass pastures and non-crop land, apply 1.78 L/acre to the foliage of actively growing brush.

dicamba + 2,4-D amine or LV ester (500 g/L) - In grass pastures, rangeland and non-crop land, apply dicamba at 2.1 L per 1,000 L of water with 2,4-D LV ester or amine at 4.0 L per 1,000 L of water to the foliage of actively growing brush in the spring or early summer and wet the foliage until the point of runoff.

Aspen Poplar (Trembling Aspen)

dicamba + 2,4-D amine or LV ester (500 g/L) - In grass pastures, rangeland and non-crop land, apply dicamba at 1.32 L/acre with 2,4-D LV ester or amine at 1.78 L/acre in 20 gallons/acre (90 L/acre) water to the foliage of actively growing brush in spring or early summer.

Baby’s Breath (Perennial)

dicamba - In grass pastures with no legumes, apply 3.72 L/acre in 10 to 20 gallons/acre (45 to 90 L/acre) water when actively growing.

Biennial Wormwood

2,4-D LV ester - In grass pastures and non-crop land, apply 2,4-D LV ester (500 g/L) at 1.78 L/acre to the foliage of actively growing plants.

Overdrive - In grass pastures and non-crop land, apply at 115 g per acre for control.

Restore II - In grass pastures, apply 0.97 L/acre (one 10 L jug treats 10 acres).

Black Medic

Dichlorprop/2,4-D; Mecoprop-p; dicamba/mecoprop/MCPA; 2,4-D amine or LV ester - Apply in registered crops at registered rates to black medic in the 1 to 4 leaf stage for suppression only.

Chokecherry

2,4-D LV ester - In grass pastures and non-crop land, apply 2,4-D LV ester (500 g/L) at 1.78 L/acre to the foliage of actively growing brush.

Common Tansy

Glyphosate - Apply at 1.9-2.8 L/acre in 10 gallons of water/acre (40 L/acre) to actively growing plants that are 8-10 inches (20-25 cm) tall (summerfallow, stubble and noncropland).

Escort - In pastures, rangeland and rough turf, apply 8 g/acre in 10 to 20 gallons/acre (45 to 90 L/acre) of water to actively growing plants of less than 4 inches (10 cm) tall. Add non-ionic surfactant at 0.2 L per 100 L of spray solution.

Restore II – In grass pastures and rangeland, apply Restore II at 0.97 L/acre (one 10 L jug treats 10 acres) for suppression.

Curl Dock

dicamba - As a patch treatment or in pasture and range-land, apply 0.92 L/acre Banvel II in 10 to 20 gallons/acre (45 to 90 L/acre) water to actively growing weeds for top growth control.

Glyphosate - As a spot treatment, apply 2.83 to 4.86 L/acre (360 g/L formulations or equivalent of other formulations) in 10 gallons/acre (45 L/acre) water when most plants have reached the early bud stage. Do not disturb treated plants for at least 10 days following treatment.

MCMA amine, 2,4-D amine - Apply 0.445 to 0.69 L/acre of formulations containing 500 g/L MCPA or 2,4-D amine to give top growth control.

Dichlorprop/2,4-D - 0.71 L/acre for suppression before plants are 2 inches (5 cm) tall.

Diffuse and Spotted Knapweed

dicamba - In grass pastures, rangeland and non-crop land, apply at 1.86 L/acre in 10 to 20 gallons/acre (45 to 90 L/acre) water to actively growing weeds.

Restore II – In grass pastures and rangeland, apply Restore II at 0.57 L per acre when actively growing.

Tordon 22K - In rangeland and grass pasture, apply 0.91 L/acre in 90 to 180 gallons/acre (400 to 800 L/acre) of water to actively growing weeds. WARNING - Picloram is a very persistent and water-soluble herbicide. Do not apply to permeable soil. Do not apply to irrigated areas. Take special precautions to prevent drift.

Downy Brome and Japanese Brome

Altitude FX/FX2 - Apply at label rates to suppress Japanese brome to the 4 leaf stage in CLEARFIELD wheat.

Ares - Apply at label rates to suppress Japanese brome to the 4 leaf stage in CLEARFIELD canola and lentils.

Glyphosate - Prior to crop emergence, apply 0.51 to 0.77 L/acre (360 g/L formulations or equivalent of other formulations) in 5 to 10 gallons/acre (23 to 45 L/acre) water before downy brome is 6 inches (15 cm) in height.

Glykamba - Prior to crop emergence, apply 1.0 L/acre in 5 to 10 gallons/acre (23 to 45 L/acre) water between emer-
gence and heading of downy brome.

**Odyssey Ultra** - control spring seedlings of Japanese brome in registered crops with Poast Ultra tank mix.

**Florasulam + glyphosate** - Apply in spring or fall, prior to seeding cereal crops or in fallow at registered rates to control downy brome up to the 4 leaf stage.

**Simplicity** - Suppression of downy brome and control of Japanese brome up to the 6 leaf stage when applied at registered rates in the fall in winter wheat. Apply in spring at registered rates to control Japanese brome up to the 6 leaf stage in winter or spring wheat (including durum).

**Solo** - Apply at label rates to suppress Japanese brome to the 4 leaf stage in registered crops.

**Tandem** - Applied at the maximum labelled rate in spring wheat (including durum) will control Japanese brome up to the 6 leaf stage.

**Trifluralin** - Apply at recommended rates for weed control in broadleaf crops prior to emergence.

**Velocity m3** - Apply at registered rates in registered crops to suppress Japanese brome.

**Viper ADV** - In field peas, at registered rates to suppress Japanese brome.

**Field Bindweed**

**dicamba** - As a patch treatment or in rangeland, apply 1.0 L/acre in 10 to 20 gallons/acre (45 to 90 L/acre) water. Apply when field bindweed is in the flowering stage and allow 3 weeks after treatment before resuming normal summerfallow tillage.

**Basagran** - In labelled crops, apply 0.71 L/acre followed by 0.71 L/acre 7 to 10 days later. Apply in 20 to 35 gallons/acre (90 to 160 L/acre) water before field bindweed has developed a dark green colour and before it has begun trailing. Use a recommended surfactant (see recommendations under the appropriate crop).

**2,4-DB** - As a spot treatment in labelled crops apply 2.83 to 4.86 L/acre in 10 gallons/acre (45 L/acre) water at the bud stage. Do not disturb plants for at least 10 days following treatment. Heavy rainfall within 2 hours of application may wash chemical off the foliage and a repeat treatment may be required. Rainfall occurring within 6 hours after application may reduce control.

**2,4-D amine** - In grass pastures containing no legumes or as a spot treatment, apply 1.82 L/acre of formulations containing 500 g/L 2,4-D amine at early flowering stage.

**Glyphosate** - As a spot treatment, apply 2.8 to 4.9 L/acre (360 g/L formulations or equivalent of other formulations) in 10 to 30 gallons/acre (45 to 135 L/acre) at the full bloom stage or beyond. Allow 7 or more days after application before tillage.

**Restore II** - For season long control in grass pastures and rangeland only, apply Restore II at 0.97 L/acre.

**Tordon 22K** - In rangeland and grass pasture, apply 3.6 L/acre in 90 to 180 gallons/acre (400 to 800 L/acre) for spot treatment, using hand wand application equipment only, to a maximum of one acre of every two acre area of land. of water to actively growing weeds. **WARNING** - Picloram is a very persistent and water-soluble herbicide. Do not apply to permeable soil. Do not apply to irrigated areas. Take special precautions to prevent drift.

**Field Horsetail**

**Amitrol 240** - Apply 5.0 to 6.7 L/acre in 10 to 30 gallons/acre (45 to 135 L/acre) water in non-cropped areas and pastures when the weed is young and actively growing.

**MCPA amine, potassium and sodium salt mixtures** - Apply 0.57 L/acre of formulations containing 500 g/L MCPA after the weeds have fully emerged for top growth control. May be used in wheat, oats, barley, flax and rye.

**Foxtail Barley**

**Glyphosate** - Prior to crop emergence, apply 1 to 2 L/acre (360 g/L formulations or equivalent of other formulations) in 5 to 10 gallons/acre (23 to 45 L/acre) water to foxtail barley at the seedling to heading stage. Late fall applications may provide better control of established plants than spring applications.

**Glyphosate** - In glyphosate tolerant canola, apply 2 applications, each at 0.5 L/acre (360 g/L formulations or equivalent of other formulations), for season long control.

**Glykamba** - Prior to crop emergence, apply 1.26 L/acre in 10 to 20 gallons/acre (23 to 45 L/acre) water to foxtail barley before initiation of the seed head for suppression only.

**Gramoxone** - Apply 2.23 L/acre in 98 gallons/acre (445 L/acre) water or 75 mL in 2.2 gallons (10 L) water/1076 square feet (100 sq. m) for top growth control only.

**Kerb** - Apply registered rates in 20 gallons/acre (90 L/acre) water between October 1 and freeze-up. Use the lower rate on grey-wooded soils or where perennial bluegrass or fescues are the predominant pasture species. Do not use Kerb for foxtail barley removal in seed grass stands or desired foliage stands of timothy or fescue grass species. At recommended rates, pasture stands of perennial bluegrass and fescue may be reduced by 10 to 15 percent. Where perennial bluegrass and fescue are the dominant pasture species, use the lower rate of Kerb. Spray overlaps may seriously harm desirable pasture grass species. Where the grass stand comprises mostly foxtail barley and reseeding to a desirable grass species is required, delay seeding into the Kerb-treated soil until the end of June. Do not harvest or graze within 60 days of application with Kerb. Avoid using Kerb on soils having more than 6 percent organic matter.

**Goat’s-Beard**

**2,4-D amine** - Apply 0.91 L/acre of formulations containing 500 g/L in early fall or early spring.

**dicamba** - In grass pasture and rangeland only, apply 1.86 L/acre in 20 to 30 gallons (90 to 135 L) per acre when leaves are fully expanded.

**Dichlorprop + 2,4-D** - Apply 1.62 L/acre in early spring or fall.

**Gumweed**

**2,4-D LV ester** - In grass pastures and non-crop land, apply 2,4-D LV ester (500 g/L) at 0.89 L/acre to the foliage of actively growing plants.
Hemp Dogbane
2,4-D amine or LV ester - Apply 1.38 to 1.82 L/acre of formulations containing 500 g/L 2,4-D in fall before frost and while plant leaves are green.
Glyphosate - Apply 2.83 to 4.86 L/acre (360 formulations – see glyphosate page for other rates) when hemp dogbane is in the early bud stage. Apply in 10 gallons/acre (45 L/acre) water. Do not disturb treated plants for at least 7 days after application.

Hoary Cress
Amitrol 240 - For non-selective patch treatment in pastures and non-crop land, apply 8.9 to 13.8 L/acre.
Glyphosate - As a spot treatment in labelled crops, apply 2.83 to 4.86 L/acre (360 g/L formulations or equivalent of other formulations) in 10 to 30 gallons/acre (45 to 135 L/acre) water when most plants have reached the early bud stage. Do not disturb treated plants for at least 10 days following treatment.

Leafy Spurge
Amitrol 240 - Apply 15.2 to 18.5 L/acre in 10 to 30 gallons/acre (45 to 135 L/acre) water in non-cropped areas and pastures when the weed is between the late stages of flowering and early seed development.
dicamba - Apply 0.84 L/acre in 10 to 20 gallons/acre (45 to 90 L/acre) water for top growth control when the weed is actively growing. Patch treatment or pasture.
2,4-D amine - Apply 1.82 L/acre of formulations containing 500 g/L 2,4-D at early flowering stage. Repeat at least once to new growth later in the season. Control of established plants and new seedlings will require continued applications for a period of at least 4 to 5 years.
Tordon 22K - In rangeland and grass pasture, apply 3.6 L/acre in 90 to 180 gallons/acre (400 to 800 L/acre) of water to actively growing weeds. WARNING - Picloram is a very persistent and water-soluble herbicide. Do not apply to permeable soil. Do not apply to irrigated areas. Take special precautions to prevent drift.
Overdrive - In grass pastures and non-crop land, apply at 115 g per acre for top-growth control.

Locoweeds, Lupines, and Milk-vetches
2,4-D LV ester - In grass pastures and non-crop land, apply 2,4-D LV ester (500 g/L) at 1.78 to 2.75 L/acre at the full bloom stage.

Milkweed
Amitrol 240 - Apply 7.6 to 11.3 L/acre in 10 to 30 gallons/acre (45 to 135 L/acre) water in non-cropped areas and pastures in the early summer when all the shoots have emerged.
Glyphosate - When making Preharvest applications, use 1.0 L/acre (360 g/L formulations or equivalent of other formulations). For patch treatments, apply 4.86 L/acre (360 g/L formulations or equivalent of other formulations) in 10 gallons/acre (45 L/acre) water. Apply when most plants have reached the bud to bloom stage. Reduced results may occur on plants treated after full bloom as not all milkweed plants reach the required stage of growth at the same time. Repeat treatments may be required. Do not disturb plants for 10 days following treatment. Do not apply to plants covered with dust.

Narrow-leaf Hawk’s-beard
2,4-DB - Apply to forage legume crops at recommended rates at the 2 to 4 leaf stage of narrow-leaf hawk’s-beard, after legume growth in the fall has stopped.
2,4-D LV ester (600 g/L) - In fall stubble, apply 0.57 to 0.90 L/acre to fall rosettes. Apply to fall seedlings or spring seedling to the 2 leaf stage at 0.22 to 0.38 L/acre or 0.4 to 0.6 L/acre in spring prior to bolting to control.
Barricade, thifensulfuron/tribenuron, Triton C, Triton K - Up to 4 inches tall in registered crops.
Tribenuron/metsulfuron - Up to 3 inches tall with residual activity, prior to the seeding of registered crops.
Distinct - Apply in fallow or post-harvest at 58 g/acre (with 180 to 360 g ae/acre glyphosate) or 115 g/acre.
Express SG - For season long control in range and pasture at the early bud – pre-bloom stage.
Florasulam + glyphosate - up to 8 cm tall prior to seeding registered crops.
Florasulam + 2,4-D - Up to 2 leaf stage in registered crops.
Glyphosate - Prior to crop emergence, apply 0.51 to 0.77 L/acre (360 g/L formulations or equivalent of other formulations) in 5 to 10 gallons/acre (23 to 45 L/acre) water. Use the high rate if narrow-leaf hawk’s-beard is between 3 and 6 inches (8 to 15 cm) in height.
Glyphosate - In glyphosate tolerant crops, apply 0.5 L/acre (360 g/L formulations or equivalent of other formulations) at the 0 to 6 leaf stage. Not all products are registered. Check glyphosate pages.
Heat - Apply in a mix with glyphosate for rapid burndown prior to seeding.
Tribenuron - Apply 4 g per acre of 75% WG formulations or 6 g per acre of 50% SG formulations in a mix with glyphosate prior to seeding.
Velpar - Apply in late fall or early spring for control in established alfalfa in forage and seed production.

Pasture Sage
2,4-D LV ester - In grass pastures and non-crop land, apply 2,4-D LV ester (500 g/L) at 1.2 L/acre to the foliage of actively growing plants.
dicamba - In grass pastures, rangeland and non-crop land, apply dicamba at 1.86 L/acre in 10 to 20 gallons/acre (45 to 90 L/acre) water to actively growing weeds.
Reclaiam - In grass pastures and non-crop land, apply Reclaiam A at 92 g per acre plus Reclaiam B at 0.8 L per acre (20 acres per case) for 2 years of control.
**Tordon 22K** - In rangeland and grass pasture, apply 1.82 L/acre in 90 to 180 gallons/acre (400 to 800 L/acre) of water to actively growing weeds. WARNING - Picloram is a very persistent and water-soluble herbicide. Do not apply to permeable soil. Do not apply to irrigated areas. Take special precautions to prevent drift.

**Perennial Smartweed**
**Glyphosate** - Apply 2.0 L/acre (360 g/L formulations or equivalent of other formulations) in 10 gallons/acre water. Apply when vines are a minimum of 8 inches (20 cm) tall, but before flowering.

**Poplar**
**dicamba + 2,4-D** - In grass pasture and rangeland only, apply dicamba at 2.1 L plus 2,4-D 500 amine at 4 L or 2,4D 600 ester at 3.3 L per 220 gallons (1000 L) of water and apply by wand to the point of runoff when leaves are fully expanded.

**Glyphosate** - As a non-selective spot treatment, apply 1.21 to 2.43 L/acre (360 g/L formulations or equivalent of other formulations) in 10 to 30 gallons/acre (45 to 135 L/acre) water in the summer through early fall when brush is actively growing.

**Poverty Weed**
**dicamba** - As a spot treatment or in grass pasture or rangeland apply 1.86 L/acre in 10 to 20 gallons/acre (45 to 90 L/acre) water when weed is actively growing. Dicamba at 0.61 L/acre will provide only top growth control.

**Restore II** - For season long control in grass pastures and rangeland, apply Restore II at 0.97 L/acre (on 10 L container treats 10 acres).

**Tordon 22K** - In rangeland and grass pasture, apply 1.82 L/acre in 90 to 180 gallons/acre (400 to 800 L/acre) of water to actively growing weeds. WARNING - Picloram is a very persistent and water-soluble herbicide. Do not apply to permeable soil. Do not apply to irrigated areas. Take special precautions to prevent drift.

**Prairie Everlasting, Prairie Sage**
**2,4-D LV ester** - In grass pastures and non-crop land, apply 2,4-D LV ester (500 g/L) at 1.78 L/acre to the foliage of actively growing plants in the early fall, and repeat in the spring.

**Purple Loosestrife**
(dryland situations only)
**Glyphosate** - Apply 2.43 L/acre (360 g/L formulations or equivalent of other formulations) in 30 to 60 gallons/acre (135 to 270 L/acre) water when purple loosestrife is actively growing and at or beyond the bloom stage. If using hand held equipment, apply a 1 to 2 percent solution until plants are wet. Use a 33 percent product solution if using a wiper applicator. Do not treat plants over open water. If possible, remove and destroy the flower heads before treatment to ensure prevention of seed set. For large monocultures of purple loosestrife, gradually work from the periphery inward over a number of years to allow competing vegetation to invade the treated area. Sprayed areas should be monitored for new seedlings to prevent re-infestation of purple loosestrife.

**Red Bartsia**
**2,4-D amine or LV ester** - Apply 0.57 L/acre of formulations containing 500 g/L 2,4-D in 10 gallons/acre (45 L/acre) water. On hayland, treat within 10 days after first cutting. Roadsides and pastures should be sprayed as soon as the red bartsia appears, usually in early July. Repeat treatment if necessary for later germination.

**Roses**
**dicamba + 2,4-D amine or LV ester (500 g/L)** - In grass pastures, rangeland and non-crop land, apply dicamba at 1.48 L/acre with 2,4-D LV ester or amine at 1.78 L/acre to the foliage of actively growing brush in the spring or early summer.

**Escort** - In pasture and rangeland, apply Escort at 0.012 kg/acre with non-ionic surfactant at 0.2 L per 100 L spray solution in 10 to 20 gallons/acre (45 to 90 L/acre) water. Apply between mid-June and mid-August after the brush has leafed out, but before the leaves begin to turn their fall colours.

**Reclaim** - In grass pastures and non-crop land, apply Reclaim A at 92 g per acre plus Reclaim B at 0.8 L per acre (20 acres per case) for 2 years of control.

**Russian Knapweed**
**Tordon 22K** - In rangeland and grass pasture, apply 1.82 L/acre in 90 to 180 gallons/acre (400 to 800 L/acre) of water to actively growing weeds. WARNING - Picloram is a very persistent and water-soluble herbicide. Do not apply to permeable soil. Do not apply to irrigated areas. Take special precautions to prevent drift.

**dicamba** - In grass pasture and rangeland only, apply 3.72 L/acre in 20 to 30 gallons/acre (90 to 135 L/acre) water when leaves are fully expanded.

**Restore II** - In grass pastures and rangeland, apply 0.97 L/acre (one 10 L jug treats 10 acres) when actively growing for suppression.

**Saskatoon**
**2,4-D LV ester** - In grass pastures and non-crop land, apply 2,4-D LV ester (500 g/L) at 1.78 L/acre to the foliage of actively growing brush.

**Scentless Chamomile**
**Bromoxynil/MCPA ester** - Apply in registered crops at label rates when scentless chamomile is in the 2 to 4 leaf stage.

**Curtail M** - In registered crops, apply 0.81 L/acre in 10 gallons/acre (45 L/acre) water when scentless chamomile is actively growing and in the 2 to 4 leaf stage.

**dicamba** - Apply 0.51 L/acre in 10 to 20 gallons/acre (45 to 90 L/acre) water to actively growing weeds for top growth control.
**Stingling Nettle**

*2,4-D amine* - Apply 0.91 to 1.82 L/acre of formulations containing 500 g/L 2,4-D amine.

**Stork’s Bill**

*Altitude FX, Ares, Everest GBX, florasulam + MCPA, Prestige XC, Pulsar, Stellar, Tandem, thifensulfuron/tribenuron, Trophy* - Apply at label rates to provide suppression in registered crops. See product pages for Crops, Rates and Staging.

*Basagran* – In registered crops apply 0.91 L/acre at the 2 to 6 leaf stage.

*Dichlorprop/2,4-D* - Apply at 0.71 L/acre to registered crops when stork’s-bill is in the 2 to 4 leaf stage.

*Fluroxypyr + 2,4-D, OcTain* - Apply at the maximum labelled rate to registered crops when stork’s-bill is in the 1 to 8 leaf stage.

*Liberty* - In registered crops apply 1.35 L/acre to plants in 1 to 3 leaf stage.

*Linuron* - Apply with MCPA amine in registered crops at registered rates to stork’s-bill in the 2 to 4 leaf stage.

*Metsulfuron* - Apply with 2,4-D or MCPA amine or LV ester in registered crops at registered rates to stork’s-bill in the 2 to 4 leaf stage.

**Odyssey** – In registered crops, apply 17 g/acre plus adjuvant.

**Glyphosate** - In glyphosate tolerant crops, apply 0.5 L/acre (360 g/L formulations or equivalent of other formulations) from emergence to the 6 leaf stage.

**Spectrum** – In registered crops apply at 20 acres per case to control from the 2 to 4 leaf stage.

**Toadflax (Yellow)**

*Amitrol 240* - Apply 7.6 to 11.3 L/acre in 10 to 30 gallons/acre (45 to 135 L/acre) water in non-cropped areas and pastures when the weed is in the advanced rosette to prebud stage.

*Dichlorprop/2,4-D* - Apply 0.71 L/acre in 10 to 18 gallons/acre (45 to 80 L/acre) water in wheat or barley for toadflax suppression. Apply when majority of toadflax is no taller than 6 inches (15 cm). The use of Dichlorprop/2,4-D for suppression of toadflax in wheat or barley should be part of a long-term planned approach for toadflax control, which includes spring and fall tillage, fall patch spraying, fallow.

*Glyphosate* - Apply 2.83 to 4.86 L/acre (360 g/L formulations or equivalent of other formulations) when most plants have reached the early bud stage of growth. Allow 7 more days after application before tillage. A rate of 1.0 L/acre may be used with Preharvest applications or when controlling in summerfallow situations.

*Metsulfuron plus 2,4-D* - Apply 2 to 3 g/acre Ally plus 0.34 to 0.45 L/acre 2,4-D LV ester or amine (500 g/L formulations) in 10 gallons/acre (45 L/acre) water for toadflax suppression in wheat, barley, and creeping red fescue. Add non-ionic surfactant at 0.2 L per 100 L of spray solution.

*Thifensulfuron/tribenuron* - In registered crops, apply 8 g/acre of DG formulations or 12 g/acre of Refine SG in 10 gallons/acre (45 L/acre) water to actively growing seedlings for suppression. Add non-ionic surfactant at 0.2 L per 100 L of spray solution.

*Tordon 22K* - In rangeland and grass pasture, apply 0.445 L/acre in 90 to 180 gallons/acre (400 to 800 L/acre) water to actively growing weeds. WARNING - Picloram is a very persistent and water-soluble herbicide. Do not apply to permeable soil. Do not apply to irrigated areas. Take special precautions to prevent drift.

*Triton C* - Apply at label rates to suppress scentless chamomile up to 10 cm across or high.

**Western Snowberry (Buckbrush)**

*2,4-D amine or LV ester (500 g/L)* - Apply 1.82 L/acre 2,4-D amine or LV ester in a minimum of 20 gallons/acre (90 L/acre) water in spring or early summer. Retreatment may be necessary the following year.

*Dicamba plus 2,4-D LV ester (500 g/L)* - Apply 1.48 L/acre dicamba tank mixed with 1.82 L/acre 2,4-D LV Ester in 20 gallons/acre (90 L/acre) water in spring or early summer after the leaves are fully expanded.

*Escort* - Apply 10 g/acre in 10 to 20 gallons/acre (49 to 90 L/acre) water between mid-June and mid-August after the brush has leafed out, but before the leaves turn their fall colours.
Reclaim - In grass pastures and non-crop land, apply Reclaim A at 92 g per acre plus Reclaim B at 0.8 L per acre (20 acres per case) for 2 years of control.

White Cockle
2,4-DB - Apply Embutox 625 at 1.1 L/acre or Caliber 400 at 1.7 L/acre or Cobutox 600 at 1.1 L/acre for top growth control to registered crops only.
Express SG - Apply in a mix with glyphosate prior to seedling registered follow crops to control spring rosettes.
Mecoprop - Apply 2.2 L/acre in 18 gallons water/acre (*80 L/acre) for top growth control of established plants. Will also control seedlings. Apply to registered crops only.

Wolf Willow (Silverwillow)
Dicamba + 2,4-D amine or LV ester (500 g/L) - In grass pastures with no legumes, apply dicamba at 2.1 L per 1000 L of water with 2,4-D LV ester or amine at 4.0 L per 1000 L of water to the foliage of actively growing brush in the spring or early summer and wet the foliage until the point of runoff.
Reclaim - In grass pastures and non-crop land, apply Reclaim A at 92 g per acre plus Reclaim B at 0.8 L per acre (20 acres per case) for 2 years of control.

Wild Tomato
2,4-D or MCPA amine or ester (500 g/L) - Apply 0.34 to 0.45 L/acre to registered crops up to the 8 leaf stage of wild tomato.
Bromoxynil+MCPA ester - Apply 0.40 L/acre to registered crops from the 1 to 6 leaf stage of wild tomato.

Willow
2,4-D LV ester - In grass pastures and non-crop land, apply 2,4-D LV ester (500 g/L) at 1.78 L/acre to the foliage of actively growing brush.

Soil Residual Herbicides
When applied at recommended rates in a crop, most herbicide residues will disappear within a few weeks after application and impose no restriction on cropping options the next year. However, some herbicide residues do not degrade quickly, and can persist in the soil for months or years following application, thereby restricting the crops that can be grown in rotation. Herbicide residues in the soil are deactivated in various ways including:
- Break down by chemical reactions,
- Break down by soil microbes,
- Escape to the atmosphere as a gas (volatilization),
- Break down by light (photodegradation),
- Binding to soil particles.
Herbicides often disappear from the environment by more than one of these mechanisms. Many herbicides considered to be non-residual are bound temporarily to soil particles while they are broken down gradually by either soil microbes or chemical reactions. The binding action insures that the herbicide is not available to the crop in quantities that will cause damage.

As a general rule, breakdown processes are favoured by warm, moist soil conditions. During the winter, when the ground is frozen, and in the summer when the soil is dry, herbicide degradation is reduced. The residual activity of certain herbicides is also affected by soil organic matter and soil pH. These soil factors are seldom uniform across a field.

Herbicide carryover is aggravated by low levels of organic matter and is more likely to occur on eroded hilltops than in other parts of a field. The risk of herbicide carryover will also be greater in sprayer overlaps which are most common around headlands and slough margins.
Growers should be aware of the residual properties before applying any herbicide if they are to avoid cropping restrictions in following years. Knowledge of the limitations associated with herbicides that leave a soil residue, along with an accurate record of application (i.e. rates, locations) will serve to minimize rotational problems. Each herbicide used in mixes should be considered separately.

Soil tests using chemical extraction cannot always give a good indication of the potential injury risk from herbicide residue because of the influence of organic matter, clay and pH. Because of this, a field bioassay or laboratory bioassay, where plants are grown directly in the treated soil are best for detecting the potential for injury. These tests are not intended to be used to shortcut restrictions on the label, but provide information on rotational crops where none is available.

Injury symptoms from other causes can resemble herbicide carryover injury (i.e. cold weather, flooding, drought, insects, diseases, etc.). Consult with your local agronomist on potential causes before spending money on testing.
Herbicides that leave a soil residue and are of particular concern in Western Canada are found in the following chart.
Re-cropping Restrictions for Residual Herbicides:

Figures listed are the number of cropping seasons before each crop can be grown (“1” means that the crop can be grown the year following application). For plant-back restrictions less than one season; the delay is indicated with a “d” for number of days or with “mths” for the number of months. A blank space means that there are no recommendations given on the product label and a field bioassay is recommended by many product manufacturers to determine if these crops are safe to plant. A field bioassay is a strip of a test crop that covers an area of the field that is representative of the field variation and should include an untreated area.

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<th>Canola</th>
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</table>

* The minimum re-cropping intervals are listed. These intervals may be longer than those listed depending on the use rates, region, province, soil types, environment, time of application and crop variety. Refer to product page for more information.

** Drought restrictions apply to drought conditions (80% of normal June to September rainfall) for high pH soils (greater than pH 7.5) and severe drought (less than 65% of normal June to Sept. rainfall) for all soils.

*** May not be supported for all products. See product page for details.

† May not be valid for all varieties or crop types. See product page for details.

†† DO NOT grow dry beans the year following Everest GBX application.

0 - May be seeded or reseeded the year following application. No re-cropping restrictions. 1 - Next cropping season after application. 2 - Two cropping seasons after application. NR - Not recommended.

Note: The re-cropping intervals listed may not be sufficient to prevent crop injury during periods of below average rainfall.
### Effect of Rainfall on Herbicide Efficacy

<table>
<thead>
<tr>
<th>Required Interval</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 minutes</td>
<td>Diquat</td>
</tr>
<tr>
<td>30 minutes</td>
<td>clodinafop</td>
</tr>
<tr>
<td>1 hour</td>
<td>Axial, Barricade II, Broadband, Bromoxynil, Bromoxynil/MCPA ester, clethodim, fenoxaprop, flucarbazone Gramoxone, Harmony SG, Infinity, Paradigm, Pixxaro, Poast Ultra, Predicate, quizalofop, thifensulfuron/tribenuron, tralkoxydim, Traxos, Tundra, Varro, Velocity m3</td>
</tr>
<tr>
<td>2 hours</td>
<td>2,4-D LV Ester, metsulfuron+2,4-D LV Ester, Aatrex (post-emergent applications), fluroxypyr + 2,4-D ester, MCPA Ester, Simplicity, Travallas</td>
</tr>
<tr>
<td>3 hours</td>
<td>dicamba/mecoprop-p/MCPA, Odyssey, Odyssey Ultra</td>
</tr>
<tr>
<td>4 hours</td>
<td>Accent, metsulfuron + 2,4-D Amine, 2,4-D Amine, Battalion (post-emergent application), Liberty (both), MCPA Amine, Overdrive, Permit (foliar applications), Prism, Reflex, Tandem, Ultim</td>
</tr>
<tr>
<td>6 hours</td>
<td>Blazer, quinclorac, Curtail M, glyphosate/dicamba, imazamethabenz, MCPA-K, MCPA Sodium Salt, Muster, Option, Prestige XC, Metribuzin, Tordon 22K, Triton C</td>
</tr>
<tr>
<td>8 hours</td>
<td>Basagran, CleanStart</td>
</tr>
</tbody>
</table>

*The products listed make no specific time recommendation on the label. The required rainfree period could be up to 8 hours. See the product page in the guide or consult the product label.*

**Note:** The term “Rainfastness” refers to the time needed between application and rainfall to avoid significant reduction in efficacy. Rainfall shortly after application of most post-emergent herbicides may reduce weed control. Effect will vary with product, the interval between spraying and rainfall and the intensity and duration of the rainfall. These guidelines are based on label information. Use the longest time interval on the component products when considering tank mixes.
# Products Available as Prepackaged Tank Mixes

<table>
<thead>
<tr>
<th>Product Name (Manufacturer)</th>
<th>Component 1 or A</th>
<th>Component 2 or B</th>
<th>Component 3 or C</th>
<th>Crops</th>
<th>Weeds Controlled</th>
<th>Area Treated per Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authority Charge (FMC)</td>
<td>Aim</td>
<td>Authority</td>
<td>Chickpea, field pea, flax, soybean, sunflower</td>
<td>See component products</td>
<td>80 to 64</td>
<td>32 to 26</td>
</tr>
<tr>
<td>Axial iPak (Syngenta)</td>
<td>Axial BIA</td>
<td>Infinity</td>
<td>Spring wheat (NOT including durum), barley</td>
<td>See component products</td>
<td>40</td>
<td>16</td>
</tr>
<tr>
<td>Black Hawk (Nufarm)</td>
<td>Aim</td>
<td>2,4-D 700 ester</td>
<td>Prior to seeding: Wheat (spring, durum, winter), barley, rye</td>
<td>See component products</td>
<td>80</td>
<td>32</td>
</tr>
<tr>
<td>Conquer (Nufarm)</td>
<td>Aim</td>
<td>Bromoxynil (Koril)</td>
<td>Prior to seeding canola</td>
<td>Weeds controlled by component products plus: Volunteer canola,</td>
<td>80</td>
<td>32</td>
</tr>
<tr>
<td>Eclipse III (Dow AgroSciences)</td>
<td>Lontrel (Eclipse A)</td>
<td>glyphosate (Eclipse III B)</td>
<td>Glyphosate tolerant canola varieties</td>
<td>See component products</td>
<td>40</td>
<td>16</td>
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<tr>
<td>Enforcer MSU (Nufarm)</td>
<td>Enforcer M</td>
<td>Thifensulfuron/tribenuron (Boost)</td>
<td>Barley, Wheat (spring, durum)</td>
<td>Weed controlled by component products plus suppression of narrow-leaved hawk’s-beard</td>
<td>40</td>
<td>16</td>
</tr>
<tr>
<td>Express FX (E. I. DuPont)</td>
<td>Tribenuron (Express SG)</td>
<td>Dicamba 480 (Dupont Dicamba)</td>
<td>(must be mixed with glyphosate – purchased separately)</td>
<td>Prior to seeding</td>
<td>Weeds controlled by Express SG plus glyphosate plus Group 2 &amp; 9 resistant kochia</td>
<td>80</td>
</tr>
<tr>
<td>Harmony SG (E. I. duPont)</td>
<td>thifensulfuron/tribenuron (Refine SG)</td>
<td>clodinafop (Harmony Grass)</td>
<td>Score (adjuvant)</td>
<td>Spring wheat (including durum)</td>
<td>Weeds controlled by Refine SG plus wild oat, green foxtail</td>
<td>40</td>
</tr>
<tr>
<td>Harmony K (E. I. duPont)</td>
<td>Refine SG (thifensulfuron/tribenuron)</td>
<td>Harmony Grass (clodinafop plus Score (adjuvant)</td>
<td>dicamba</td>
<td>Spring wheat (NOT including durum)</td>
<td>Weeds controlled by Refine SG plus wild oat, green foxtail &amp; Group 2 resistant kochia</td>
<td>40</td>
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<tr>
<td>Ko-Act (Nufarm)</td>
<td>tribenuron (Spike)</td>
<td>2,4-D 700 ester</td>
<td>Wheat, barley, rye</td>
<td>See component products</td>
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<tr>
<td>Odyssey Ultra (BASF)</td>
<td>Odyssey</td>
<td>Poast Ultra</td>
<td>Merge (adjuvant)</td>
<td>Field peas, CLEARFIELD lentil</td>
<td>See component products</td>
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<tr>
<td>Predicate (E. I. duPont)</td>
<td>Barricade II (Predicate Broadleaf)</td>
<td>Varro (Predicate Grass)</td>
<td>MCPA 600 Ester</td>
<td>Wheat (spring, durum, winter)</td>
<td>See component products</td>
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<tr>
<td>Refine M (E. I. duPont), Broadside (Loveland)</td>
<td>thifensulfuron/tribenuron (Refine SG)</td>
<td>MCPA Ester</td>
<td>Wheat (durum, spring, winter), barley, oat</td>
<td>See component products</td>
<td>80</td>
<td>32</td>
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</table>

*Continued on the next page 78.*
<table>
<thead>
<tr>
<th>Product Name</th>
<th>Active Ingredients</th>
<th>Crop Species</th>
<th>Weeds Controlled</th>
<th>Application Rate (oz/acre)</th>
<th>Effective Period (days)</th>
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</thead>
<tbody>
<tr>
<td>Retain SG (Loveland)</td>
<td>thifensulfuron/tribenuron (Refine SG)</td>
<td>Wheat (spring, durum), barley</td>
<td>Weeds Controlled by Refine SG plus non-Group 2 resistant cleavers</td>
<td>40</td>
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<tr>
<td>Salute (Dow)</td>
<td>Ares</td>
<td>Lontrel Dry</td>
<td>CLEARFIELD canola</td>
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<tr>
<td>Tensile (BASF)</td>
<td>Solo</td>
<td>Lontrel Dry</td>
<td>CLEARFIELD canola</td>
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<tr>
<td>Traxos Two (Syngenta)</td>
<td>Traxos</td>
<td>OcTTain (fluroxypyr+2,4-D)</td>
<td>Wheat (spring, durum)</td>
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<td>Triton K (E. I. duPont)</td>
<td>Tribenuron (Express SG)</td>
<td>2,4-D LV Ester</td>
<td>Spring wheat, barley</td>
<td>40</td>
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</table>

**Note:** See the component products listed for information concerning staging, application information, safety precautions, the effect of weather and grazing, re-cropping, harvest interval and storage precautions. The more stringent recommendation of the two products should be followed. Mix products in the order listed.
**Weed Control**

**Herbicide Product Pages**

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**2,4-D**

Herbicide Group 4 - 2,4-D

(Refer to page 45)

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**Company and Formulation:**

<table>
<thead>
<tr>
<th>PCP # (Product Name)</th>
<th>600 Amine*</th>
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<td>AgriStar</td>
<td>31332</td>
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<td>IPCO</td>
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<td>5931, 29248</td>
<td>27818 (Salvo), 29006</td>
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<td>14726</td>
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<tr>
<td>Farmers of North America</td>
<td>30460</td>
<td>(MPower 2,4-D)</td>
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* formulated as a solution.
** formulated as an emulsifiable concentrate.

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**Post-emergent:**

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<th>CROP</th>
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<td></td>
</tr>
<tr>
<td>Wheat, barley, spring rye</td>
<td>227 to 283** (Esters) 227 (Amines)</td>
</tr>
<tr>
<td>Fall rye, winter wheat*</td>
<td>205 (Amines)</td>
</tr>
<tr>
<td>Corn*</td>
<td>227 (Amines) 213 (Esters)</td>
</tr>
<tr>
<td>Seedling and established grasses for forage and seed production*</td>
<td>213 (Esters and Amines)</td>
</tr>
<tr>
<td>Established forage grass (not for seed production)*</td>
<td>426 (Esters and Amines)</td>
</tr>
<tr>
<td>Established grass pastures</td>
<td>907 (Esters and Amines)</td>
</tr>
<tr>
<td>Turf*</td>
<td>510 (Esters and Amines)</td>
</tr>
</tbody>
</table>

---

**Crops, Rates and Staging:**

*Application rates for individual products may vary from those listed. Refer to the label for product specific use rates. Rates greater than those listed may cause crop injury.

When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

---

600 Amine: 564 g ae per L present as dimethylamine salt and formulated as a solution.

700 Ester: 660 g ae per L present as 2 ethylhexyl ester and formulated as an emulsifiable concentrate.

---

* Note: Registered for use only with certain brands of 2,4-D; use of non-registered products is at the risk of the user.

** Note: Rates above 227 g ae per acre can result in crop injury. This injury is typically offset by the benefits of improved weed control.
Pre-plant or Pre-emergent:
*Barley, rye, wheat (spring, winter)*: Apply 134 to 213 g ae per acre (weeds less than 8 cm), to a maximum of 294 g ae per acre (weeds greater than 8 cm), of NuFarm 2,4-D Ester 700 only prior to seeding or after seeding but prior to emergence of the crop.

*Soybean*: Apply from 134 to 213 g ae per acre of 2,4-D 700 Ester (Nufarm and Loveland Salvo only) 7 days prior to seeding.

<table>
<thead>
<tr>
<th>RATE PER ACRE*</th>
<th>FORMULATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>(g ae)</td>
<td>(oz. ae)</td>
</tr>
<tr>
<td>113</td>
<td>4</td>
</tr>
<tr>
<td>125</td>
<td>4.4</td>
</tr>
<tr>
<td>134</td>
<td>4.75</td>
</tr>
<tr>
<td>170</td>
<td>6</td>
</tr>
<tr>
<td>205</td>
<td>7.25</td>
</tr>
<tr>
<td>213</td>
<td>7.5</td>
</tr>
<tr>
<td>227</td>
<td>8</td>
</tr>
<tr>
<td>283</td>
<td>10</td>
</tr>
<tr>
<td>340</td>
<td>12</td>
</tr>
<tr>
<td>483</td>
<td>17</td>
</tr>
<tr>
<td>510</td>
<td>18</td>
</tr>
<tr>
<td>907</td>
<td>32</td>
</tr>
</tbody>
</table>

* Actual product rates vary somewhat between products for similar uses. Check the product labels for the specific use rate for the product selected.

Weeds, Rates and Staging:
Apply at lower rates when weeds are small (2 to 4 leaf stage) and actively growing. Higher rates are needed when weeds are larger, in heavy populations, or growing under stressful conditions (excessively cold, hot, dry or wet).

For pre-seed or pre-emergent application of NuFarm 2,4-D 700 Ester only, apply 134 to 213 g ae per acre to control weeds less than 8 cm tall or 294 g ae per acre before the emergence of cereals to control weeds greater than 8 cm tall or harder to control weeds.

Note: The rates listed differ slightly from product to product. Check individual product labels for exact use rates.

Susceptible Weeds:

**125 to 227 g ae per acre**

- Bluebur
- Burdock
- Cocklebur
- False flax
- Flixweed (late fall application or spring seedlings)
- Goat’s-beard
- Kochia
- Lamb’s-quarters
- Mustards (except dog and tansy mustard)
- Narrow-leaved hawk’s-beard (fall application to seedlings or spring application at 1-2 leaf stage)
- Plantain

**Harder to control weeds:**

227 to 340 g ae per acre

- Annual sow-thistle
- Blue lettuce*
- Burdock (top growth only of bolting plants)
- Canada thistle***
- Common chickweed
- Common groundsel**
- Common peppergrass
- Dandelion*
- Flixweed (spring prior to bolting)
- Knotweed
- Lady’s-thumb
- Prickly lettuce
- Ragweed (common, false and giant)
- Russian pigweed
- Russian thistle
- Shepherd’s-purse**
- Stinging nettle
- Stinkweed**
- Sweet clover
- Thyme-leaved spurge
- Volunteer canola (including all herbicide tolerant varieties)
- Wild radish
- Wild sunflower

**Top Growth Control only (at rates for harder to control weeds):**

- Biennial wormwood
- Bull thistle
- Buttercup
- Curled dock
- Field bindweed
- Gumweed
- Hedge bindweed
- Hoary cress
- Horsetail
- Mouse-eared chickweed
- Perennial sow-thistle
- Russian knapweed
- Tartary buckwheat
- Volunteer sunflower

* Control of seedlings at rates given above and top growth control only of established plants.

** Spring seedlings. Winter annual weeds - apply in late fall or early spring prior to bolting.

*** Suppression only - Apply when Canada thistle plants are actively growing and have 6 to 8 inches (15 to 20 cm) of new growth. Regrowth will be present the following spring and in-crop treatments will be required.**
Formulation Characteristics:

<table>
<thead>
<tr>
<th>Formulation</th>
<th>Risk of Vapour Drift</th>
<th>Activity on Weeds</th>
<th>Risk of Crop Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>LV Ester</td>
<td>Medium</td>
<td>Fast</td>
<td>Medium</td>
</tr>
<tr>
<td>Amine</td>
<td>Very Low</td>
<td>Medium</td>
<td>Low</td>
</tr>
</tbody>
</table>

Application Information:


Higher application volumes (40 L/acre or greater), reduce the risk of crop injury.

Nozzles and Pressure: 40 psi (275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use nozzles and pressures designed to deliver proper coverage with ASABE coarse droplets.

How it Works:

Refer to Table 2 on page 47.

Effects of Growing Conditions:

Best weed control occurs when temperatures are above 21°C (daytime) or 10°C (nighttime) and humidity is above 70 percent. DO NOT apply if temperature exceeds 27°C.

Tank Mixes:

None listed on 2,4-D label.

Restrictions:

Rainfall: 2,4-D amine: within 4 hours will reduce control. 2,4-D LV ester: within 2 hours will reduce control.

Re-entry: DO NOT enter treated fields for at least 12 hours

Grazing: DO NOT permit lactating dairy animals to graze fields within 7 days of application. Do not harvest forage or cut for hay within 30 days of application. Withdraw meat animals from treated fields at least 3 days before slaughter.

Re-cropping: No recropping guidelines are provided on the labels. As a general guideline, there should be no cropping restrictions the year following an in-crop treatment.

Aerial Application: Some formulations may be applied by air. Check the label for detailed instructions.

Storage: 2,4-D LV ester may be frozen. 2,4-D amine requires heated storage.

Buffer Zones:

<table>
<thead>
<tr>
<th>Crop</th>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Field Crops</td>
<td>Ground*</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Fixed wing aircraft</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Helicopter</td>
<td>10</td>
</tr>
<tr>
<td>Fallow, pastures, range-land</td>
<td>Ground*</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Fixed wing aircraft</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Helicopter</td>
<td>15</td>
</tr>
<tr>
<td>Turf</td>
<td>Ground only*</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy. Hand-held or backpack sprayers, inter-row hooded sprayers and spot treatments are exempt from buffer zone requirements.

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Handheld or backpack sprayers do not require a buffer zone.

Sprayer Cleaning:

Refer to page 15.

Hazard Rating:

⚠️ Warning – Poison

⚠️ Danger Poison – Ester 700 Formulations

For an explanation of the symbols used here see page 11.
### 2,4-DB

**Company:**
- IPCO (Cobutox 625 – PCP#27911)
- Nufarm Agriculture (Embutox – PCP#27912)
- Loveland Products Canada (Caliber 625 – PCP#27910)

**Formulation:**
625 g/L 2,4-DB formulated as an emulsifiable concentrate.
Container size - 10 L.

**Crops and Staging:**
NOTE - When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seedling alfalfa, bird’s-foot trefoil*</td>
<td>1 to 4 trifoliate leaf stage</td>
</tr>
<tr>
<td>Clover (alsike**, red**, white, Dutch but NOT sweet clover)*</td>
<td>As soon as possible after emergence of the 1st trifoliate leaf</td>
</tr>
<tr>
<td>Wheat, barley or oats</td>
<td>5 leaf to emergence of the flag leaf</td>
</tr>
<tr>
<td>Field corn</td>
<td>15 inches (38 cm) to prior to tassling using drop nozzles.</td>
</tr>
<tr>
<td>Pastures containing forage legumes</td>
<td>After cutting or grazing and regrowth less than 3 inches (7.5 cm)</td>
</tr>
</tbody>
</table>

* With or without a cereal cover crop.
** Alsike and red clovers may be damaged by 2,4-DB applications.

**Seedling Forage Grasses**:
*Apply from 2 to 4 leaf stage of:*
- Bromegrass (smooth)
- Fescue (creeping red, meadow, tall)
- Orchard grass
* Not for seed production. Not for feeding in the establishment year.

**Weeds and Staging:**

**Weeds controlled at the 0.71 L per acre rate from the 2 to 4 leaf stage at lower recommended rates include:**
- Lamb’s-quarters
- Mustard (ball, wild, wormseed)
- Ragweed
- Redroot pigweed
- Shepherd’s-purse
- Stinkweed

**Weeds controlled at higher recommended rates (0.91 to 1.1 L/acre) include:**

<table>
<thead>
<tr>
<th>WEED</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bull thistle</td>
<td>Rosette to early bud stage</td>
</tr>
<tr>
<td>Canada thistle*</td>
<td>6 in. (15 cm) to early bud</td>
</tr>
<tr>
<td>Chicory</td>
<td>Rosette</td>
</tr>
<tr>
<td>Curled dock**</td>
<td>Young and actively growing</td>
</tr>
<tr>
<td>Dandelion*</td>
<td>Prior to bud</td>
</tr>
<tr>
<td>Field bindweed*</td>
<td>Late summer</td>
</tr>
<tr>
<td>Horsetail*</td>
<td>4 to 5 inches (10 to 13 cm)</td>
</tr>
<tr>
<td>Narrow-leaved hawk’s-beard</td>
<td>Apply at rosette stage after alfalfa has gone dormant</td>
</tr>
<tr>
<td>Oak-leaved goosefoot</td>
<td>Up to 2 leaf stage</td>
</tr>
<tr>
<td>Perennial sow-thistle*</td>
<td>Rosette</td>
</tr>
<tr>
<td>Plantain</td>
<td>Prior to flowering</td>
</tr>
<tr>
<td>Smartweed (green, lady’s-thumb)**</td>
<td>Seedlings</td>
</tr>
<tr>
<td>Wild buckwheat</td>
<td>Up to 2 leaf stage</td>
</tr>
<tr>
<td>Wild Radish</td>
<td>Up to 2 leaf stage</td>
</tr>
<tr>
<td>Yellow rocket</td>
<td>Late September to mid-October</td>
</tr>
</tbody>
</table>

* Top growth control
** Suppression

Refer to individual product labels for details on application rates to use for different weed species.
Rates:

<table>
<thead>
<tr>
<th>CROPS</th>
<th>RATE (L/ACRE)</th>
<th>ACRES TREATED PER CONTAINER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereals, seedling forage legumes and grasses</td>
<td>0.71 to 0.91</td>
<td>14.1 to 11.0</td>
</tr>
<tr>
<td>Corn and pastures containing forage legumes</td>
<td>0.71 to 1.11</td>
<td>14.1 to 9.0</td>
</tr>
</tbody>
</table>

Application Information:

Water Volume: 61 to 81 L per acre.

Nozzles and Pressure: 30 to 40 psi (200 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use nozzles and pressures designed to deliver proper coverage with a minimum of fine droplets.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Severe damage to legumes can occur if high temperatures (more than 27°C) or high humidity prevail at the time of application. DO NOT apply under dry soil/drought conditions.

Tank Mixes:
Herbicides:
Underseeded Legumes: MCPA amine (28 mL/acre*)
* 500 g/L formulation

This tank mix may increase crop damage (stunting). Follow all precautions and restrictions on both product labels.

Fertilizers: None registered.
Insecticides: None registered.
Fungicides: None registered.

Note: The above mixes are those listed on 2,4-DB labels only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Not specified on the label. A period of up to 8 hours may be required. Contact the manufacturer for more details.
Grazing: DO NOT graze or cut treated crops or forage until 30 days after application.
Re-cropping: No restrictions the year after application.
Aerial Application: DO NOT apply by air
Storage: May be frozen.

Sprayer Cleaning:
Refer to page 15.

Hazard Rating:

Caution – Poison
For an explanation of the symbols used here see page 11.

AAtrex Liquid

Herbicide Group
5 - atrazine
(Refer to page 45)

Company:
Syngenta Canada (PCP#18450)

Formulations:
480 g/L atrazine formulated as a liquid suspension. Container sizes - 2 x 10 L

Crops, Rates and Staging:
Corn (silage, field, sweet): 0.85 to 1.25 L per acre* using the following application methods;
Pre-plant incorporated (PPI).
Pre-emergent surface (after planting but before emergence of weeds and crop): Recommended only on irrigated fields. Inconsistent weed control will occur if 0.5 inches (1.25 cm) of water/precipitation does not occur within 7 days of application.
Post-emergence: 1 to 6 leaf stage and when corn is less than 12 inches (30 cm) tall. Add 1.11 to 2.23 L per acre of oil concentrate or 6.88 L per acre crop oil. Crop injury may occur when Aatrex and oil is applied post-emergence during cold weather.

When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

* Use the low rate on crops grown on sandy soils, and where weed infestations are light.

Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

Weeds and Staging:
For pre-plant incorporated, pre-emergent and post-emergent (when weeds are less than 4 inches or 10 cm tall) control of the following weeds:

- Common purslane
- Lamb’s-quarters
- Ragweed
- Redroot pigweed
- Smartweed (including lady’s-thumb)
- Volunteer clover
- Wild buckwheat
- Wild mustard
- Wild oats
- Wormseed mustard

Application Information:
Water Volume: Minimum 61 L per acre.

Nozzles and Pressure: 30 to 45 psi (200 to 300 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage and a minimum of fine droplets that are prone to drift. Use a 50 mesh or coarser screen and filter system.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Post-emergent applications made during periods of cold weather may cause crop lightening. Hot, dry weather preceding post-emergent applications may result in reduced weed control. Aatrex will move with soil if eroded.

Tank Mixes:
Tank mix partners applied at all label rates and include recommended adjuvants unless otherwise noted.

Herbicides:
Pre-Emergent and Pre Plant Incorporated:
Dual II Magnum (0.5 to 0.71 L/acre)

Post-Emergent:
- Dicamba (Banvel II only - 0.24 L/acre)†
- Bromoxynil/MCPA (Buctril M only)**
- Dual II Magnum
- Bromoxynil (Pardner only)

† DO NOT use in sweet corn.
* DO NOT use oils or adjuvants with post-emergent tank mixes.
** DO NOT treat after the 6 leaf stage, crop injury may occur.

Fertilizers: For pre-emergence applications, nitrogen solutions or complete liquid fertilizers may replace all or part of the water as a carrier. AAtrex may be impregnated onto dry granular fertilizers. DO NOT impregnate onto nitrate, super-phosphate or limestone.

DO NOT apply Aatrex with nitrogen fertilizer after corn has emerged, as crop injury will occur.

Insecticides: None registered.

Note: The above mixes are those listed on the Aatrex label only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. See the general guidelines for mixing pesticides for more information.

Restrictions:
Rainfall: Within 2 hours of post-emergence applications may result in reduced weed control.

Grazing: DO NOT graze or cut for feed before ear emergence.

Preharvest: Leave at least 45 days from application to harvest for sweet corn and 60 days for field corn.

Re-cropping: All crops, except corn and triazine-tolerant canola, may be affected the year following the use of atrazine. Flax, peas and fababeans have some tolerance to atrazine residues and are usually not affected by rates of up to 0.9 L per acre applied the previous year. Other more sensitive crops may be affected 2 or more growing seasons after application.

Aerial Application: DO NOT apply by air.

Storage: DO NOT freeze.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground only*</td>
<td>Aquatic Habitats</td>
</tr>
<tr>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

DO NOT mix or load within 30 m of any wells, lakes, streams, ponds, dugouts or sinkholes.
**Sprayer Cleaning:**
Refer to 'Method A' in the general section on sprayer cleaning on page 15-16. Let solution stand for several hours. Scrub inside surfaces but do not enter tank. Flush sprayer system with water.
DO NOT clean equipment upslope of water bodies or ditches, near cropland or shelterbelts. Clean your sprayer away from areas where family members or others are likely to frequent or walk.

**Hazard Rating:**

⚠️ Caution – Eye Irritant

KEEP OUT OF REACH OF CHILDREN.
Harmful if swallowed.
For an explanation of the symbols used here see page 11.

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**Accent***

**Company:**
E. I. duPont Canada (PCP#25116)

**Formulation:**
75% nicosulfuron formulated as a water dispersible granule.
Container size - 133.6 g (4 x 33.4 g water soluble bags per pouch).

**Crops and Staging:**

**Field Corn:** 1 to 8 leaf stage (six visible collars), coleoptile (short, blunt leaf) is counted as the first leaf.

**Sweet corn**: 1 to 6 leaf stage (4 visible collars).

* NOTE - Since applications to field and sweet corn in western Canada has been registered under the User Requested Minor Use program, the manufacturer assumes no responsibility for herbicide performance. Application to corn is at the risk of the user.

**Note that Accent is registered for use on all sweet corn varieties but tolerance may vary depending on variety. Krispy King, Jubilee and Jubilee Supersweet are the only varieties that have been tested for tolerance in western Canada. Test on small areas planted to other varieties for tolerance prior to widespread use.

---

**Herbicide Group**

2 - nicosulfuron

(Refer to page 45)

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**Weeds and Staging:**

<table>
<thead>
<tr>
<th>WEEDS</th>
<th>STAGING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barnyard grass, green foxtail, yellow foxtail*, old witchgrass</td>
<td>1 to 6 leaves (up to 2 tillers)</td>
</tr>
<tr>
<td>Quackgrass</td>
<td>3 to 6 leaves (with extended leaf 4 to 8 inches (10 to 20 cm) long)</td>
</tr>
<tr>
<td>Wild oats</td>
<td>3 to 6 leaves</td>
</tr>
</tbody>
</table>

* Suppression only

The best control and yield response is achieved by applying at the earlier end of the leaf stage ranges.

**Rates:**

13.5 g per acre. Add non-ionic surfactant (Citowett Plus, Agsurf or Agral 90) at 0.2 L per 100 L of spray solution.
One water soluble bag will treat 2.5 acres (1 ha).
One pouch will treat 10 acres (4 ha).
Refer to the product label for complete mixing instructions.
A general guide to mixing can be found on page 14.
Application Information:
Water Volume: Minimum 40 L per acre; optimum 56 to 77 L per acre.
Nozzles and Pressure: 25 to 40 psi (175 to 275 kPa) when using conventional flat fan nozzles tilted forward at a 45° angle. Low drift nozzles may require higher pressures for proper performance. Use nozzles and pressures designed to deliver proper coverage with ASABE medium droplets. Use a 50 mesh or coarser screen and filter system.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Poor weed control or crop injury may result if at the time of application, plants are under stress from disease, insect or nematode injury, carryover of herbicide from a previous years application, abnormally hot or cold weather, drought, water-soaked soils, hail damage or frost. Delay application until stress passes and both corn and weeds have resumed growth. When corn is injured by frost, wait 48 to 72 hours after normal growing conditions have resumed before applying Accent. Stress conditions after application may also result in injury or poor weed control.

Tank Mixes:
Herbicides:
Field corn only:
Banvel II (0.24 L/acre) plus surfactant.
Pardner (0.4 L/acre) plus surfactant.
Fertilizers: Do not mix with fertilizers.
Insecticides: None registered. Accent should not be applied to corn that has been treated with organophosphate insecticides. Leave 7 days between the application of Accent and that of a foliar organophosphate insecticide.
Fungicides: None registered.
Note: The above mixes are those listed on the Accent label only.

Restrictions:
Rainfall: Within 2 to 4 hours of application may result in reduced weed control.
Re-entry: DO NOT enter treated fields for at least 12 hours.
Grazing: DO NOT graze treated crops or cut for hay.

Preharvest: Leave at least 30 days in field corn and 40 days in sweet corn from application to harvest.
Re-cropping: Winter wheat may be seeded 4 months following Accent application. Alfalfa, barley, canola, field corn, red clover, sorghum, soybean, white bean may be seeded 10 months following application. For all other crops a field bioassay is recommended before planting. For all other crops, a field bioassay is recommended before planting.
Aerial Application: DO NOT apply by air.
Storage: Store product in original containers in a secure, dry area, away from other pesticides, food or feed.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of Terrestrial habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground only*</td>
<td>2</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Leave a 5 m buffer between the last spray path and woodlots or shelterbelts. Leave a 22 m buffer before wetland areas or water bodies.

Sprayer Cleaning:
Refer to 'Method A' in the general section on sprayer cleaning on page 15-16.

Hazard Rating:

⚠️ Caution – Eye Irritant

KEEP OUT OF REACH OF CHILDREN.
Avoid breathing spray mist.
Avoid contact with skin, eyes and clothing.
For an explanation of the symbols used here see page 11.
Company:
FMC of Canada (PCP#28573)
Distributed by NuFarm Agriculture.

Formulations:
240 g/L carfentrazone formulated as an emulsifiable concentrate.
Container sizes - 0.6 L, 1.2 L, 3.38 L

Crops, Rates and Staging:

Pre-Seeding:
* From 14.8 to 29.5 mL per acre prior to the seeding of:  
  - Sorghum
* From 14.6 to 46.8 mL per acre prior to the seeding of:  
  - Buckwheat
  - Canola (rapeseed)
  - Chickpea
  - Corn (field and sweet)
  - Dry bean
  - Field peas
  - Flax
  - Lentil
  - Millet (pearl and proso)

Use Agral 90 or Ag-Surf at 0.25 L per 100 L of spray solution or use Merge at 1 L per 100 L of spray solution.

Harvest aid treatment*:

<table>
<thead>
<tr>
<th>CROP</th>
<th>RATE (mL per acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley, oats, wheat, millet, dry bean, chickpea, fababean, field pea, soybean, triticale</td>
<td>29 to 47</td>
</tr>
<tr>
<td>Sorghum</td>
<td>29</td>
</tr>
<tr>
<td>Potato**</td>
<td>94 to 142</td>
</tr>
</tbody>
</table>

Use Agral 90 or Ag-Surf at 0.25 L per 100 L of spray solution or use Merge at 1 L per 100 L of spray solution.

Weeds, Rates and Staging:
Apply to listed weeds up to ten (10) cm in height unless otherwise indicated:

<table>
<thead>
<tr>
<th>WEEDS</th>
<th>RATE (mL per acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redroot pigweed</td>
<td>14.6</td>
</tr>
<tr>
<td>Above weeds plus:</td>
<td>23.2</td>
</tr>
<tr>
<td>Lamb's-quarters, Round-leaved mallow, Hairy nightshade, Stinkweed, Pigweed (Prostrate, Smooth, Tumble), Purslane, Tansy mustard, Tall waterhemp</td>
<td>29.2</td>
</tr>
<tr>
<td>Above weeds plus:</td>
<td>46.8</td>
</tr>
<tr>
<td>Cocklebur, Kochia, Volunteer canola (all varieties), Eastern black nightshade, Prickly lettuce, Corn spurry</td>
<td></td>
</tr>
</tbody>
</table>

Application Information:

Water Volume: Use a minimum of 40 L per acre. Higher spray volumes is required for dense weed stands. Weed control improves with the amount of coverage.

Nozzles and Pressure: Maximum 35 psi (210 kPa) if using conventional nozzles. Low drift nozzles may require higher pressure for proper performance. Use nozzles and pressure designed to deliver proper coverage with ASABE medium droplets.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Extremes in environmental conditions such as temperature, moisture, soil conditions, and cultural practices may affect activity. Under warm moist conditions, herbicide symptoms may be accelerated. While under very dry conditions, the expression of herbicide symptoms may be reduced as weeds hardened off by drought are less susceptible.
**Tank Mixes:**

**Herbicides:**

**Pre-plant:**
- *Glyphosate* (180 to 360 g ae per acre)
- **2,4-D Ester** (213 g ae per acre) (fallow only)
- *Bromoxynil* (57 g active ingredient per acre)
- *Bromoxynil + glyphosate* (rates above)

**Harvest aid treatment:**
- *Barley, chickpea, dry beans, fababean, field pea, millet, oats, sorghum, and wheat:*
  - *Glyphosate* (360 g ae per acre)
- *Potato only:*
  - *Reglone** (0.7 to 0.9 L/acre)
  - *IPA or K salt only.

*If this mix is applied, neither the mix, nor the individual products may be applied following the first application of the mix.*

**Note:** The above mixes are those listed on the *Aim* label only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

**Restrictions:**

**Rainfall:** Rainfall within 6 to 8 hours after application may reduce activity. Heavy rainfall shortly after application may reduce activity.

**Re-entry:** DO NOT enter treated fields for 12 hours.

**Preharvest Interval:** Leave 7 days between application and harvest for potatoes and 3 days for all other registered crops for harvest aid uses.

**Grazing:** DO NOT graze the treated crop or cut for feed.

**Re-cropping:** There are no rotational restrictions on crops registered for pre-seed use. All other crops may be planted 12 months after application.

**Aerial application:** DO NOT apply by air.

**Storage:** Store in a cool, dry place and avoid excess heat.

**Buffer Zones:**

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres) Required for the Protection of Terrestrial Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground only*</td>
<td>5</td>
</tr>
</tbody>
</table>

*Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches above the crop canopy.*

DO NOT apply in areas where surface water from the treated area can run off into aquatic habitats.

**Sprayer Cleaning:**

Refer to ‘Method A’ in the general section on sprayer cleaning on page 15-16.

**Hazard Rating:**

⚠️ Caution – Eye and skin irritant

For an explanation of the symbols used here see page 11.

---

**Altitude FX**

**Company:**
BASF Canada

**Herbicide Group**
- 2 - imazamox
- 4 - fluroxypyr & MCPA

*(Refer to page 45)*

**Formulations:**

*Altitude FX contains 3 separate components. Each case contains:*

- **AC 299,263 120 AS (PCP#26705):** 120 g/L imazamox formulated as a solution.
  Container size - 1.34 L

- **Starane (PCP#24815):** 180 g/L of fluroxypyr formulated as an emulsifiable concentrate.
  Container size - 4.8 L.

- **MCPA ester 600 (PCP#27802):** 600 g/L of MCPA ester formulated as an emulsifiable concentrate.
  Container size - 7.5 L.
Crops and Staging:
CLEARFIELD wheat varieties: 3 leaf (after appearance of first tiller) to 6 leaf stage to ensure optimal crop tolerance. Apply only to CLEARFIELD wheat varieties; application to any other variety of wheat or any other crop will result in crop death.

Weeds and Staging:
Grasses:
Apply from 1 to 4 leaf stage, up to a maximum of two tillers.
Barnyard grass
Foxtail (green and yellow)
Japanese brome*
Persian darnel
Volunteer cereals (barley, canary seed, oat, non-CLEARFIELD spring wheat, durum)
Wild oat

Broadleaves:
Apply up to 4 leaf stage unless otherwise indicated.
Annual sunflower
Burdock common
Chickweed
Cleavers (1 to 4 whorls)
Cocklebur
Common ragweed
Cow cockle
Flixweed
Green smartweed
Hemp-nettle (2 to 6 leaf)
Kochia
Lamb’s-quarters
Mustards (except dog and tansy)
Prickly lettuce
Redroot pigweed
Round-leaved mallow*
Russian thistle*
Shepherd’s-purse
Stinkweed
Stork’s-bill (1 to 8 leaf)*
Vetch
Volunteer canola
Volunteer flax (1 to 12 cm)
Wild buckwheat
Wild radish

* Supression

Rates:
Altitude FX (1 case treats 20 acres)
AC 299,263 120 AS: 67 mL per acre.
Starane: 0.24 L per acre.
MCPA 600 Ester: 0.38 L per acre.
Add a non-ionic surfactant (such as Agral 90 or Ag-Surf) at 0.25 L per 100 L of spray solution. Surfactant not included.
DO NOT apply Altitude FX or other products containing imazamox, fluroxypyr or MCPA more than once per season.
Refer to the product label for complete mixing instructions for this product and its mixes. A general guide to mixing can be found on page 14.

Application Information:
Water Volume: 20 to 40 L per acre.
Nozzles and Pressure: Maximum 40 psi (275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE coarse droplets. Use a 50 mesh or coarser screen and filter system.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Initial crop injury may be observed after application but this is outgrown and should not affect yield. Severe crop injury will occur as a result of spray overlap. AVOID SPRAYER OVERLAP.
DO NOT spray if temperatures of +5°C are forecast within 3 days of application. Treat crops during warm weather when weeds are actively growing and soil moisture is adequate for rapid growth. Under cool or dry conditions, control of some weeds may be severely reduced.

Tank Mixes:
None Registered.

Restrictions:
Rainfall: No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information.
Re-entry: DO NOT enter treated fields for at least 12 hours.
Grazing: DO NOT graze the treated crop within 14 days of application or cut for hay within 42 days of application.
Preharvest Interval: DO NOT apply within 79 days of harvest.
Re-cropping: Winter wheat may be seeded 3 months after application. Barley, canola (all varieties), field peas, flax, lentils, oats, sunflower, and spring wheat may be grown safely the year following application. Condiment mustard may be grown the second season following Altitude FX application. Conduct a field bioassay the year before growing any other crop than those listed above.
Aerial Application: DO NOT apply by air.
Storage: DO NOT freeze. Store in a cool, dry place above 5°C. Combustible – DO NOT store near heat or open flame.
Altitude FX2

Company:
BASF Canada

Formulations:
Altitude FX2 contains 2 separate components. Each case contains:
AC 299,263 120 AS (PCP# 26705): 120 g/L imazamox formulated as a solution.
Container size - 2.68 L
Starane (PCP# 24815): 180 g/L of fluroxypyr formulated as an emulsifiable concentrate.
Container size - 9.6 L.
MCP A, 2,4-D, or Curtail M must be added and are purchased separately.

Crops and Staging:
CLEARFIELD wheat varieties: 3 leaf (after appearance of first tiller) to 6 leaf stage to ensure optimal crop tolerance. Apply only to CLEARFIELD wheat varieties; application to any other variety of wheat or any other crop will result in crop death.

Sprayer Cleaning:
Refer to ‘Method C’ in the general section on sprayer cleaning on page 15-16.

Hazard Rating:

<table>
<thead>
<tr>
<th>Herbicide Group</th>
<th>2 - imazamox</th>
<th>4 - fluroxypyr</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Altitude FX2</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Weeds and Staging:

Grasses:
Apply from 1 to 4 leaf stage to a maximum of two tillers.
Barnyard grass
Foxtail (green and yellow)
Japanese brome*
Persian darnel

Volunteer cereals (barley, canary seed, oat, non-CLEARFIELD spring wheat, durum)
Wild oat

Broadleaves:
Apply up to 4 leaf stage unless otherwise indicated.
Cleavers (1 to 4 whorls)
Cow cockle
Green smartweed
Kochia
Lamb’s-quarters
Redroot pigweed
Round-leaved mallow*
Russian thistle*

Shepherd’s-purse
Stinkweed
Stork’s-bill (1 to 8 leaf)*
Volunteer canola (except Clearfield varieties)
Volunteer flax (1 to 12 cm)
Wild buckwheat
Wild mustard

* Supression

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground only*</td>
<td>15</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

For an explanation of the symbols used here see page 11.
Rates:

*Altitude FX2 (1 case treats 40 acres)*

**AC 299,263 120 AS:** 67 mL per acre.

**Starane:** 0.24 L per acre.

*Altitude FX2* must be tank mixed with one of the registered tank mix options found under the “tank mix” section below. Add a non-ionic surfactant (such as *Agral 90* or *Ag-Surf II*) at 0.25 L per 100 L of spray solution. Surfactant not included.

DO NOT apply *Altitude FX2* or other products containing imazamox, or fluroxypyr more than once per season.

Refer to the product label for complete mixing instructions for this product and its mixes. A general guide to mixing can be found on page 14.

Application Information:

**Water Volume:** 20 to 40 L per acre.

**Nozzles and Pressure:** Maximum 40 psi (275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of *ASABE coarse* droplets. Use a 50 mesh or coarser screen and filter system.

How it Works:

Refer to Table 2 on page 47.

Effects of Growing Conditions:

Initial crop injury may be observed after application but this is outgrown and should not affect yield. Severe crop injury will occur as a result of spray overlap. AVOID SPRAYER OVERLAP.

DO NOT spray if temperatures of +5°C are forecast within 3 days of application. Treat crops during warm weather when weeds are actively growing and soil moisture is adequate for rapid growth. Under cool or dry conditions, control of some weeds may be severely reduced.

Tank Mixes:

**Herbicides:**

*Altitude FX2 must be mixed with one of the following:*

- MCP A Ester 600 (0.38 L/acre)
- 2,4-D Ester (213 g ae/ac)
- Curtail M (0.61 to 0.81 L/acre)

Restrictions:

**Rainfall:** No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information.

**Re-entry:** DO NOT enter treated fields for at least 12 hours.

**Grazing:** DO NOT graze the treated crop within 14 days of application for hay within 42 days of application.

**Preharvest Interval:** DO NOT apply within 79 days of harvest.

**Re-cropping:** Winter wheat may be seeded 3 months after application. Barley, canola (all varieties), field peas, flax, lentils, oats, and spring wheat may be grown safely the year following application. Condiment mustard may be grown the second season following *Altitude FX2* application. Conduct a field bioassay the year before growing any other crop than those listed above.

Aerial Application: DO NOT apply by air.

Storage: DO NOT freeze. Store in a cool, dry place above 5°C. Combustible – DO NOT store near heat or open flame.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground only*</td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td></td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td></td>
<td>Terrestrial habitat</td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:

Refer to ‘Method C’ in the general section on sprayer cleaning on page 15-16.

Hazard Rating:

*Starane*  

*Danger – Poison*  

*Warning – Eye Irritant*  

*Caution – Skin Irritant*  

For an explanation of the symbols used here see page 11.
Amitrol 240*

* Note: This product is no longer manufactured but inventories still remain in distribution. This product may be removed from future editions.

Company:
Nufarm Agriculture (PCP#25684)

Formulation:
231 g/L amitrole formulated as a liquid.
Container size - 10, 450 L.

Crops, Rates and Staging:

Fall Stubble: Perennial weed control prior to spring seeding. No planting restrictions for barley, canola*, field corn, field pea, soybean, wheat, or white bean, but leave 8 months between application and the seeding of any other crops.

Alfalfa stand renovation/removal: 4 to 6 inches (10 to 15 cm) high.

Pastures (spot treatment only): For non-selective patch treatment of dandelion, Canada thistle, perennial sow-thistle, hoary cress, milkweed, poison ivy and toadflax apply 0.165 L in 25 L of water to treat a 10 m x 10 m area. For treatment of leafy spurge and horsetail, apply 0.460 L in 25 L of water to treat a 10 m x 10 m area. DO NOT mow treated plants for 3 weeks after application.

Established shelterbelts: up to 11.3 L per acre - Keep spray away from tree foliage or trunks.

Pre-seeding:

<table>
<thead>
<tr>
<th>CROP</th>
<th>RATE (L per acre)</th>
<th>Delay seeding after application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley, wheat, canola</td>
<td>1.7</td>
<td>0 to 1 days</td>
</tr>
<tr>
<td>Field pea</td>
<td>1.7</td>
<td>5 to 7 days</td>
</tr>
<tr>
<td>Soybean (low rate)</td>
<td>1.7</td>
<td>6 days</td>
</tr>
<tr>
<td>Soybean (high rates)</td>
<td>5.1 to 6.7</td>
<td>10 to 14 days</td>
</tr>
<tr>
<td>Field corn, white bean, soybean</td>
<td>3.3 to 6.7</td>
<td>10 to 14 days</td>
</tr>
</tbody>
</table>

Adhere to the maximum pre-seeding rates and delays between application and seeding indicated above to avoid the risk of damage to the emerging crop or excess residues in the grain.

Avoid using rates higher than 6.7 L per acre for preplant applications prior to soybeans, dry beans and corn on very light textured soils with low organic matter, as crop damage can occur.

Fallow areas: Apply according to weed stage and rates in the next section.

Weeds, Rates and Staging:

Fall stubble: Canada thistle, perennial sow-thistle - Spray when thistle has 4 to 6 inches (10 to 15 cm) of new growth. DO NOT cultivate for 2 weeks after application. DO NOT apply after October 1. DO NOT replant crops in treated areas within 8 months of application except those registered for pre-seeding uses.

Pre-seeding: Dandelion and annual weeds - Apply 1.7 L per acre to actively growing weeds less than 10 cm tall or across. DO NOT cultivate for 10 to 14 days after treatment.

Fallow, Pastures and Shelterbelts:

<table>
<thead>
<tr>
<th>WEED</th>
<th>RATE (L/ACRE)</th>
<th>WEED STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada thistle</td>
<td>5.1 to 6.7</td>
<td>Early bud to bloom stage.</td>
</tr>
<tr>
<td>Cattails</td>
<td>15.2 to 18.5</td>
<td>After seed heads have formed.</td>
</tr>
<tr>
<td>Dandelion</td>
<td>1.7 to 5.1</td>
<td>Young and actively growing plants.</td>
</tr>
<tr>
<td>Hoary cress</td>
<td>7.6 to 11.3</td>
<td>Advanced rosette and bud stage.</td>
</tr>
<tr>
<td>Horsetail</td>
<td>5.0 to 6.7</td>
<td>Actively growing plants.</td>
</tr>
<tr>
<td>Leafy spurge</td>
<td>15.2 to 18.5</td>
<td>Advanced flowering to early seed set.</td>
</tr>
<tr>
<td>Milkweed</td>
<td>7.6 to 11.3</td>
<td>Early summer after majority of shoot emergence.</td>
</tr>
<tr>
<td>Perennial sow-thistle</td>
<td>5.1 to 6.7</td>
<td>Early bud to bloom stage.</td>
</tr>
<tr>
<td>Poison ivy</td>
<td>3.7</td>
<td>Fully developed green foliage.</td>
</tr>
<tr>
<td>Quackgrass</td>
<td>5.1 to 6.7</td>
<td>When plants are 4 to 6 inches (10 to 15 cm) high and actively growing.</td>
</tr>
<tr>
<td>Toadflax</td>
<td>7.6 to 11.3</td>
<td>Advanced rosette to prebud.</td>
</tr>
</tbody>
</table>
Application Information:
Water Volume:
*Fall stubble*: 20 to 81 L per acre.
*Pastures, shelterbelts*: 40 to 121 L per acre. For poison ivy, apply 202 to 405 L per acre.
*Pre-seeding*: 20 to 81 L per acre.
Nozzles and Pressure: Maximum 45 psi (less than 300 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use nozzles and pressures designed to deliver proper coverage with ASABE coarse droplets.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Less than acceptable results may occur in dry weather.

Tank Mixes:
Nufarm supports the following mixes that are not on the Amitrol 240 label. Mixes must be applied according to the most restrictive use limitations for either product:
*Herbicides*: glyphosate
Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information.
Re-entry: DO NOT re-enter treated areas for 12 hours.
Grazing: DO NOT graze treated crops or weeds or use for hay or feed.
Re-cropping: DO NOT plant any crop for 8 months following application except those registered for pre-seeding uses.
Aerial Application: DO NOT apply by air.
Storage: DO NOT store where temperatures may exceed 50°C or near open flames. Do not store below 4°C.
Buffer Zones: DO NOT contaminate any body of water. Use cautions to prevent spray, spray mist, or vapours from drifting off target. Spray drift may cause damage to crops or vegetation.

Sprayer Cleaning:
Refer to 'Method C' in the general section on sprayer cleaning on page 15-16.

Hazard Rating:

![Caution – Poison](https://example.com/careful.png)

![Warning – Eye Irritant](https://example.com/careful.png)
For an explanation of the symbols used here see page 11.

Weeds, Rates and Staging:
At 244 mL per acre (40 acres per case), Ares will control:
*Grasses* - From 1 to 6 true leaf stage with up to 2 tillers:
- Barnyard grass
- Foxtail (green and yellow)
- Japanese brome*
- Persian darnel

*Volunteer cereals (barley, canaryseed, durum, oats and wheat - NOT including CLEARFIELD varieties)
*Wild oats

*Spring germinating Japanese brome maximum 4 leaf stage.

**Ares**

**Company:**
BASF Canada (PCP#30188)

**Formulations:**
33 g/L imazamox and 15 g/L imazapyr formulated as a solution.
Container size - 1 x 9.8 L jug, Merge 8.1 L jug.

**Crops and Staging:**
**CLEARFIELD canola**: 2 to 7 leaf stage.
**CLEARFIELD lentil**: 1 to 9 node stage.
**CLEARFIELD oilseed mustard (Brassica juncea)**:
2 to 7 leaf stage.

**Weed Control Group**
2 - imazamox & imazapyr
*(Refer to page 45)*
**Broadleaf Weeds** - cotyledon to 4 leaf stage unless otherwise indicated:

Chickweed
Cleavers (up to 4 whorls) ***
Cow cockle
Green smartweed
Hemp-nettle
Lamb’s-quarters **
Redroot pigweed
Round-leaved mallow
Russian thistle
Shepherd’s-purse
Stinkweed
Stork’s bill
Volunteer canola (not CLEARFIELD varieties)
Volunteer tame mustard (not CLEARFIELD oilseed varieties - B. juncea)
Wild buckwheat**
Wild mustard ***

** Cotyledon to 6 leaf stage.
*** NOT Group 2 resistant biotypes

*Merge* adjuvant must be used at a rate of 0.5 L per 100 L of spray solution.

DO NOT apply *Ares* more than once per year or follow *Ares* with other products containing the active ingredient imazamox (e.g. Solo, Odyssey) or imazapyr (Salute) in the same year.

Refer to the product label for complete mixing instructions for this product and its mixes. A general guide to mixing can be found on page 14.

**Application Information:**

**Water Volume:** 20 to 40 L per acre.
**Nozzles and Pressure:** Maximum 40 psi (275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE medium droplets. Use 50 mesh or coarser filter screens.

**How it Works:**

Refer to Table 2 on page 47.

**Effects of Growing Conditions:**

DO NOT spray if temperatures of +5°C are forecast within 3 days of application. Treat crops during warm weather when weeds are actively growing and soil moisture is adequate for rapid growth. Under cool or dry conditions, control of some weeds may be severely reduced.

**Tank Mixes:**

**Herbicides:**

In CLEARFIELD canola only. DO NOT apply to CLEARFIELD oilseed mustard or CLEARFIELD lentils: *Lontrel 360* (84 mL/acre)

**Fertilizers:** None registered.

**Insecticides:** None registered.

**Fungicides:** None registered.

Note: The above mixes are those listed on the *Ares* label only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

**Restrictions:**

**Rainfall:** Avoid application when heavy rain is forecast.

**Re-entry:** DO NOT re-enter treated fields for 12 hours.

**Preharvest Interval:** DO NOT apply within 60 days of harvest of registered crops.

**Re-cropping:** Barley, canaryseed, chickpea, CLEARFIELD canola/oilseed B. juncea, field corn, field pea, lentil, oat, and spring wheat may be seeded the first full season after application. Non-Clearfield canola, durum, flax and sunflower may be seeded the second full season after application. The company recommends that a field bio-assay (a test strip grown to maturity) be conducted the year before growing any crops other than those listed above.

**Aerial Application:** DO NOT apply by air.

**Storage:** Store in a cool, dry place.

**Environment:** Avoid drift. Leave at least 11 m between the downwind edge of the boom and sensitive areas such as shelterbelts, hedgerows, wetlands, woodlots, vegetated ditch banks, ponds, streams, and sloughs.

**Sprayer Cleaning:**

Refer to page 'Method C’ in the general sprayer cleaning section on 15-16.

**Hazard Rating:**

No specific hazards.
**Authority**

**Company:**
FMC of Canada (PCP#29012)

**Formulation:**
480 g/L sulfentrazone formulated as a suspension concentrate.
Container sizes - 4 x 3.8 L jugs per case.

**Crops and Staging:**
Chickpeas, Field Pea, Flax, Soybean and Sunflower: Soil applied in the spring only.

*Pre-plant surface*: Apply to the soil surface prior to seeding the crop.

*Pre-emergent surface*: Apply to the soil surface up to 3 days after seeding. Crops emerging or near emerging at application may be injured.

All applications require rainfall for proper activation. (See “Effects of Growing Conditions”)
DO NOT use on coarse soils classified as sand, loamy sand or sandy loam or where water table is high.

**Weeds, Rates and Staging:**
Controls the following weeds when applied to the soil prior to emergence:

At 88 mL per acre (172 acres per case):
Kochia

At 118 mL per acre (129 acres per case):

- Cleavers (suppression only)
- Lamb’s-quarters
- Redroot pigweed
- Wild buckwheat

Use the higher rates within the rate range for soils with pH less than 7.0 and organic matter greater than 3%.

DO NOT APPLY Authority to:
- coarse-textured (Sand, Loamy Sand, Sandy Loam) soils
- compacted or heavy clay soils with less than 1.5% organic matter,
- soils with organic matter content greater than 6%,
- soils with a pH of 7.8 or greater.

Application of Authority in back to back years is not recommended.

**Application Information:**

**Water Volume**: Minimum 40 L per acre. Use as high water volume as practical to achieve even distribution over the soil surface.

**Nozzles and Pressure**: Maximum 30 psi (175 kPa) if using conventional nozzles. Low drift nozzles may require higher pressures for proper performance. Use nozzles and pressure designed to deliver proper coverage with ASABE medium droplets or larger.

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**
All applications require rainfall for proper activation. If weed growth begins before activation occurs, poor control may result on larger weeds. A moderate rainfall (10 to 20 mm) or equivalent irrigation is required within 10 to 14 days to activate pre-emergent surface treatments. If rain does not occur, a shallow harrowing or use of a rotary hoe may assist activation using existing soil moisture. Dry conditions that persist after any application may reduce weed control. On sandy soils, heavy rainfall following application may cause leaching of Authority, resulting in reduced weed control.

**Tank Mixes:**

**Herbicides:**

*Preseed to Peas:*
Imazethapyr (28.3 mL/acre)

FMC of Canada supports the following tank mixes that are not on the Authority label. Apply mixes according to the most restrictive use limitations for either product:

**Herbicides:**

*All crops: Aim; Glyphosate (180 to 360 g ae per acre)*

**Restrictions:**

**Rainfall**: Rainfall following application is required for adequate weed control.

**Grazing**: DO NOT graze treated crops or cut for hay.

**Preharvest Interval**: Leave 60 days between application and harvest.

**Re-entry**: DO NOT re-enter treated area within 12 hours.
**Re-cropping:** Registered crops may be planted anytime after application. Alfalfa, barley, canola, field corn and spring, durum and winter wheat may be seeded the season following application (after one winter). Sweet corn, lentils and sorghum may be seeded the second season (two winters) after application. For all other crops three winters must pass following application and a successful bioassay indicating adequate tolerance before planting. For each year of drought experienced, add one year to the intervals above and conduct a bioassay to confirm tolerance of the rotational crop. Lentils may be particularly sensitive to Authority residue.

**Aerial Application:** DO NOT apply by air.

**Storage:** Store above 5°C to keep from freezing. If frozen, and solid crystals are observed, warm to above 15 °C and shake or roll container periodically to dissolve solids.

**Buffer Zones:** DO NOT fill mix or clean sprayer within 15 m of any water source, unless the well is properly capped or activities take place on impervious pads or properly diked mixing/loading areas. Leave a 1m buffer between the last spray path and water or wetland habitats and 10 meters to sensitive plants and upland habitats when applying by ground. Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

**Sprayer Cleaning:**
Refer to ‘Method A’ in the general section on sprayer cleaning on page 15-16. Leaving cleaning solution in the sprayer tank and plumbing for an extended period will improve cleaning effectiveness.

**Hazard Rating:**

⚠️ Caution – Poison.

For an explanation of the symbols used here see page 11.
### Avadex Brands

**Company:**
Gowan Canada

**Formulation:**

*Extra Strength Avadex BW (PCP# 16759):* 480 g/L triallate formulated as an emulsifiable concentrate.

Container size - 2 x 10 L, 115 L, 946 L.

*Avadex MinTill (PCP# 25112):* 10% triallate formulated as a granular. Container size - 22.7 kg, 451.3 kg.

---

**Herbicide Group**

**8 - triallate**

(Refer to page 45)

---

**Authority Charge**

**Company:**
FMC Canada

**Formulation:**

*Aim (PCP# 28573):* 240 g/L cafentrazone formulated as an emulsifiable concentrate.

Container size – 1 x 1.2 L

*Authority (PCP# 29012):* 480 g/L sulfentrazone formulated as a suspension concentrate.

Container size – 2 x 3.79 L

**Crops and Staging:**

Chickpea, Field Pea, Flax, Soybean and Sunflower:

Soil applied in the spring only, tank mixed with glyphosate.

*Pre-plant surface:* Apply to the soil surface prior to seeding the crop.

**Weeds and Staging:**

Weeds controlled by component products.

---

**Herbicide Group**

**14 - carfentrazone & sulfentrazone**

(Refer to page 45)

---

This product is a co-pack of *Aim* (page 87) and *Authority* (page 95). Information is restricted to Crop, Weeds, Rates and Tank Mixes. For other detailed information on the component products see the product pages listed above. *Note: this product is based on an unlabeled tank mix supported by the manufacturer.*

**Rates**

*Aim:* 15 to 18.75 mL per acre.

*Authority:* 88 to 118 mL per acre.

One case treats 80 to 64 acres at the respective rates above.

**Tank Mixes:**

*Authority Charge* should be tank mixed with glyphosate at 180 to 360 grams ae per acre (See glyphosate page for equivalent product rates.) based on the *Aim* component label only.

For additional information, precautions and restrictions see the individual component at the page numbers shown above.
Crops, Rates and Application Timing:

**Avadex Liquid Rates – Spring Treatment**

<table>
<thead>
<tr>
<th>CROP</th>
<th>APPLICATION TIMING</th>
<th>RATE (L/acre)</th>
<th>ACRES TREATED PER 115 L CONTAINER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>4% or less</td>
<td>Greater than 4%</td>
</tr>
<tr>
<td>Spring and durum wheat</td>
<td>Before Seeding*</td>
<td>1.0</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>After Seeding</td>
<td>1.2</td>
<td>1.4</td>
</tr>
<tr>
<td>Barley</td>
<td>Before and After Seeding</td>
<td>1.2</td>
<td>1.4</td>
</tr>
<tr>
<td>Canola, flax†, mustard</td>
<td>Before Seeding</td>
<td>1.4</td>
<td>1.9</td>
</tr>
<tr>
<td>Peas (dry)</td>
<td>Before Seeding</td>
<td>1.4</td>
<td>1.4</td>
</tr>
</tbody>
</table>

* DO NOT apply this product before seeding wheat in soils with 4 percent or less organic matter (brown, dark brown or grey wooded soils) where discers are to be used for seeding. If an air seeder is to be used, it must be equipped with a depth control device to ensure accurate seed placement, otherwise crop injury may occur.

† Excluding Solin (low linolenic acid flax).

**Avadex Granular Rates – Fall Treatment**

<table>
<thead>
<tr>
<th>CROP</th>
<th>RATE (KG/ACRE)</th>
<th>ACRES TREATED PER 451.3 KG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Less than 2%*</td>
<td>2 to 4%</td>
</tr>
<tr>
<td>Spring and durum wheat</td>
<td>4.5</td>
<td>5.7</td>
</tr>
<tr>
<td>Barley, canaryseed</td>
<td>4.5</td>
<td>5.7</td>
</tr>
<tr>
<td>Canola, flax†, mustard</td>
<td>5.7</td>
<td>6.9</td>
</tr>
</tbody>
</table>

* Fall treatments conducted under minimum tillage are not recommended on soils with less than 2 percent organic matter.

† Excluding Solin (low linolenic acid flax).

**Avadex Granular Rates – Spring Treatment**

<table>
<thead>
<tr>
<th>CROP</th>
<th>APPLICATION TIMING**</th>
<th>RATE (KG/ACRE)</th>
<th>ACRES TREATED PER 451.3 KG CONTAINER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>4% or less*</td>
<td>Greater than 4%</td>
</tr>
<tr>
<td>Spring and durum wheat</td>
<td>Before seeding***</td>
<td>4.5</td>
<td>5.7</td>
</tr>
<tr>
<td></td>
<td>After seeding</td>
<td>5.7</td>
<td>6.9</td>
</tr>
<tr>
<td>Barley, canaryseed</td>
<td>Before and after seeding (barley only)</td>
<td>5.7</td>
<td>6.9</td>
</tr>
<tr>
<td>Canola, flax†, mustard</td>
<td>Before Seeding</td>
<td>6.9</td>
<td>8.9</td>
</tr>
</tbody>
</table>

* Minimum tillage treatments must be applied to fields with at least 2 percent organic matter.

** Minimum tillage treatments must be applied 10 to 14 days before seeding or incorporating. For minimum tillage treat-
ments on spring and durum wheat, apply 5.7 kg per acre on soils with 4% organic matter or less and 6.9 kg per acre on soils with greater than 4 percent organic matter.

*** DO NOT apply this product before seeding wheat in soils with 4% or less organic matter (brown, dark brown or grey wooded soils) where discers are to be used for seeding. If an air seeder is to be used, it must be equipped with a depth control device to ensure accurate seed placement, otherwise crop injury may occur.

† Excluding Solin (low linolenic acid flax).

Seedling Forage Legumes (under-seeded only):
Apply recommended rates for the companion crop.
Alfalfa
Bird’s-foot trefoil
Clover (alsike, red, sweet)

Weeds and Staging:
For pre-emergent control of wild oats.

Application Information:
Water Volume (Liquid formulations only):
45 L per acre.
Pressure: 30 psi (200 kPa), liquid formulation only.
Nozzles: Flat fan, liquid formulation only. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE medium droplets.

General Information: The liquid formulation must be incorporated into soil that is free of lumps or crop residue. The liquid formulation is recommended for spring use because soils are left in an erosion prone state if the liquid is fall-applied. The granular formulation may be incorporated into fields with crop residues and is best suited for fall use.

Fall Application (Minimum Tillage): Applications of Avadex granules should be made to standing stubble or chemical fallow fields that are not prone to erosion. DO NOT apply to smooth, hard packed soils that may allow granules to drift. If excessive crop residue exists at the time of application, harrowing should be conducted to ensure the granules are in good contact with the soil. Apply when the soil begins to cool (less than 4°C) and within 3 weeks of soil freeze-up. Incorporation can be performed in the spring before seeding or as part of the seeding operation.

Fall Applications (Conventional Tillage): Apply Avadex granules to fields that are in good working condition, without excessive crop residue. Heavy crop residue or lumpy, wet fields may require tillage prior to application. Avadex must be applied after October 1 but before soil freeze-up. Application before October 1 may result in reduced weed control. Only one incorporation is required in the fall. The second incorporation may be done in the fall (before soil freeze-up) or in the spring.

Spring Application (Minimum Tillage): Avadex granules should be applied in spring and when the soil temperature is 4°C or less. Apply granules 10 to 14 days before incorporation. DO NOT apply more than 4 weeks before seeding is intended.

Spring Application (Conventional Tillage): Apply Avadex (liquid or granules) to fields that are in good working condition, without excessive crop residue. Heavy crop residue or lumpy, wet fields may require tillage prior to application. Liquid formulations should be applied to fields with 30 percent or less residue cover. Avadex may be applied before or after seeding of wheat, barley, or canaryseed and before seeding of canola, flax, mustard or peas (liquid only). If wheat is being seeded into soils with an organic matter content of less than 4 percent, Avadex should be applied after seeding.

Incorporation:
Minimum Tillage: Incorporation of Avadex granules in minimum tillage systems is achieved with one high disturbance incorporation, which can be conducted prior to seeding, or as part of the seeding pass. A high disturbance system is one that disturbs the soil enough so that emerged weeds are controlled by the operation (example - air seeder with cultivator shovels). Harrowing after the incorporation operation is recommended for best results.

For optimum results in minimum tillage systems, incorporate when wild oat growth is noticeable in the field, as this will ensure that the soil is warm enough for activation of Avadex. Under excessively warm or wet conditions between application and crop emergence, control may be reduced. For best results on heavy wild oat infestations, use the conventional tillage guidelines for incorporation.

Conventional Tillage: Avadex applications require two incorporations, with the second incorporation at right angles to the first. Using a seeder that provides soil disturbance equivalent to a cultivator may replace one of the incorporations. The first incorporation of the granular formulation should be completed within 48 hours of application and the second incorporation should be delayed an additional 48 hours or more. The first incorporation of the liquid formulation should be completed as soon as possible after spraying, while the second incorporation may be done any time prior to crop emergence.

Incorporate to a depth of 2 inches (5 cm) by setting disc or cultivator implements to cut 3 inches (7.5 cm) into the soil. Mixing the product to greater depths will dilute the herbicide, decrease wild oat control, and may cause injury to cereals. Ensure that cereals are seeded below the treated layer (2 to 3 inches or 5 to 7.5 cm). Incorporations performed after seeding should be conducted with harrows or other suitable tillage equipment adjusted so as not to disturb the seed. Harrowing does not provide effective incorporation if compact soil prevents penetration of harrow teeth, if crop residue accumulates in the harrow sections, or if the harrows bounce.
Fallow: Incorporation can be done by a disc followed by harrowing at right angles, a vibrashank cultivator followed by harrowing at right angles, or double harrowing. The second operation can be delayed until spring. If fallow must be ridged to prevent soil erosion the granular formulation should not be used in the fall. Note that fall minimum tillage applied granules do not require incorporation in the fall. If soils must be ridged following application of the liquid formulation, ridging depth should be kept to a minimum as deep ridging may reduce wild oat control and increase crop injury.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Reduced control may result if prolonged cool conditions or dry soil conditions prevail at the time weeds are emerging. If conditions are dry or wild oats germinate from below the treated zone, the weeds may emerge, but will usually be controlled. Thinning of wheat can occur under conditions of heavy rainfall or if cold soil conditions persist as the crop emerges. DO NOT apply to fields where crop residue has been burned in the previous 12 months. Efficacy will be reduced.

Tank Mixes:
Herbicides: Avadex liquid may be tank mixed with liquid formulations of trifluralin for control of wild oats, green and yellow foxtail in wheat and barley. Apply after seeding but prior to crop emergence. Consult the recommendations for trifluralin for rates in different soil types.
Insecticides: None registered.
Fertilizer: Avadex liquid alone, or tank mixed with liquid formulations of trifluralin, may be tank mixed with liquid fertilizer. Compatibility of the herbicide and liquid fertilizer should be checked. Follow the instructions on the herbicide label prior to adding the herbicide to the spray tank. Avadex liquid may be sprayed on dry urea fertilizer. A minimum of 60 kg per acre (150 kg/ha) of dry urea fertilizer must be used. Only commercial blending is recommended.
Note: The above mixes are those listed on the Avadex labels only.
Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: At least 0.5 inches (1.5 cm) within 2 weeks of application is required for activation.
Re-entry: DO NOT enter treated fields for at least 12 hours.
Grazing: DO NOT graze the treated crop or use as hay or feed prior to crop maturity or in year of treatment.
Re-cropping: DO NOT seed tame oats the year after treatment.
Aerial Application: DO NOT apply by air (Extra Strength Avadex BW). Granular formulations may be applied by air with attachments designed for applying low volumes of granules (Avadex MinTill).
Storage: DO NOT freeze liquid formulations. Store granular formulations in a cool, dry place.

Buffer Zones: (Liquid formulations only)

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres †) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground only*</td>
<td>5</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance is measured from the downwind edge of the boom to sensitive areas.

Sprayer Cleaning:
Refer to page 15.

Hazard Rating:
❖ Warning – Poison (Liquid formulation)
❖ Warning – Contains the allergen soy (Liquid and Granular)

Skin and Eye Irritant (Granular formulation)
For an explanation of the symbols used here see page 11.
Axial BIA

Company:
Syngenta Canada

Formulation:
Axial BIA (PCP#30341): 50 g/L pinoxaden formulated as an emulsifiable concentrate.
Container size - 2x10 L, 80 L, 400 L.

Crops and Staging:
Spring wheat (not including durum), winter wheat and barley. Up to the emergence of the flag leaf.
When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

Weeds, Rates, and Staging:
Apply from the 1 to 6 leaf up to the emergence of the 4th tiller.
Axial BIA at 0.48 L per acre (no adjuvant required)* (one case treats 40 acres):
Volunteer oat
Volunteer canary seed
Wild oat
Apply at the 2 to 3 leaf stage for optimum control.
Optimum weed control and yield response occurs when weeds are controlled before tillering.
Maximum one application per year of this or other products containing the active ingredient pinoxaden. Do not mix with any other adjuvant other than what is provided in the package.

Application Information:
Water Volume:
Ground: 20 to 40 L per acre.
Aerial: 12 L per acre

Nozzles and Pressure: 40 to 45 psi (275 to 310 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE medium droplets. Use a 50 mesh or coarser screen and filter system.

How it Works:
Refer to Table 2 on page 47.

Herbicide Group 1 - pinoxaden
(Refer to page 45)

Effects of Growing Conditions:
DO NOT apply to crops that are stressed (frost, low fertility, drought or flooding, disease or insect damage) as crop injury may result.
Weed control may be reduced if Axial BIA is applied under stress conditions such as drought, heat, insufficient fertility, flooding or prolonged cool temperatures.

Tank Mixes:
Tank mix partners applied at all label rates and include recommended adjuvants unless otherwise noted.

Herbicides:
Bromoxynil/MCPA (Buctril M and Mextrol 450 only)†
Curtail M†
Florasulam + Curtail M (Spectrum only)***†
Florasulam + MCPA (Frontline XL only)
fluroxypyr + MCPA (Trophy only)†
Infinity
MCPA ester† (0.34 to 0.45 L/acre - 500 g/L form)
Refine SG + MCPA ester***† (12 g/acre + 0.23 to 0.28 L/acre)
Thifensulfuron/tribenuron (Refine SG only)**

* Always consult the label of the broadleaf herbicide prior to use.
** Addition of surfactants other than those included in Axial BIA are not required.
*** Suppression only of green foxtail.
† A reduction in barnyard grass control may be observed.

Insecticides: None registered.

Fungicides: Propiconazole (Tilt only).

Fertilizers: None registered.

Note: The above mixes are those listed on the Axial BIA label only.

Syngenta also supports the following mixes that are not on the Axial BIA label. Apply mixes according to the most restrictive use limitations for either product:

Herbicides: Barricade II; Broadside; Enforcer M; florasulam/fluroxypyr + MCPA (Stellar only); Triton C; Triton C + MCPA)††; Momentum + MCPA ester; Paradigm; Pixaaro; Prestige XC; Pulsar; Pulsar+Express SG (up to 6 g/acre); Pulsar (low rate)+MCPA ester.

Fungicides: Propiconazole (Propel only), Quilt.
†† Only wild oat is controlled with this mix.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.
Restrictions:
Rainfall: Within 1 hour of treatment may reduce control.
Re-entry: DO NOT enter treated fields for 12 hours.
Preharvest: Leave at least 60 days between treatment and harvest of grain and straw.
Grazing: DO NOT graze livestock within 7 days or cut for hay within 30 days of application.
Re-cropping: No restrictions the year following treatment. DO NOT seed any crops in the year of treatment following application (emergency re-crop).
Aerial Application: May be applied by air.
Storage: Store in a cool, dry place. May be frozen.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of: Terrestrial habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground only*</td>
<td>1</td>
</tr>
<tr>
<td>Aerial by airplane or helicopter</td>
<td>25</td>
</tr>
</tbody>
</table>

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.
Buffers are not required for handheld and backpack applications.

Sprayer Cleaning:
Refer to 'Method B' in the general section on sprayer cleaning on page 15-16.

Hazard Rating:

⚠️ Caution – Poison
⚠️ Warning – Eye and skin irritant

For an explanation of the symbols used here see page 11.
Axial iPak

This product is a prepackaged tank mix of Axial BIA (page 101) and Infinity (page 221). Information listed is restricted to Crop, Weeds and Rates. For other detailed information on the component products see the product pages listed above.

Company:
Syngenta Canada

Formulation:
The Axial iPak package contains the following:
Axial BIA (PCP# 30341): 50 g/L pinoxaden formulated as an emulsifiable concentrate.
Container Size - 1 x 10 L
-Plus-
Infinity (PCP# 28738): 37.5 g/L pyrasulfotole and 210 g/L bromoxynil formulated as an emulsifiable concentrate.
Container size - 1 x 6.7 L jugs per case.

Crops and Staging:
Spring wheat (not including durum), and barley. Up to the emergence of the flag leaf.

Weeds and Staging:
Weeds controlled by the component products.

Rates:
Axial BIA: 0.48 L per acre (no adjuvant required)*
-Plus-
Infinity: 0.33 L per acre.
One case treats 20 acres

Note: Ammonium sulphate is required to be added at 202 g per acre (99% dry) or 0.4 L per acre (49% solution) at 4 to 6 whorls for certain weeds controlled by Infinity
* Maximum one application of products containing the active ingredients pinoxaden, pyrasulfotole or bromoxynil per year. DO NOT mix with any other adjuvant other than what is provided in the package.

For additional information, precautions and restrictions, see the individual component at the page numbers shown above.

Herbicide Group
1 - pinoxaden
6 - bromoxynil
27 - pyrasulfotole
(Refer to page 45)
Axial Xtreme

Company:
Syngenta Canada (PCP#30391)

Formulation:
50 g/L pinoxaden and 87.5 g/L fluroxypyr formulated as an emulsifiable concentrate.
Container size - 2 x 10 L, 80 L, 400 L.

Crops and Staging:
Spring wheat (NOT including durum) and barley:
1 to 6 leaf stage prior to the emergence of the 4th tiller, and
before the first node can be felt in the stem.

Weeds and Staging:
Grasses - 1 to 6 leaf prior to the emergence of the 4th tiller
Foxtail (green and yellow) Volunteer oat
Barnyard grass Volunteer canary seed
Proso millet Wild oat

Broadleaf Weeds - stages indicated below:
Cleavers (up to 4 whorls) Stork’s bill (up to 6 leaf)*
Kochia (2 to 8 leaf) Wild buckwheat (up to 4 leaf)*
* Suppression.

Rates:
0.5 L per acre.
DO NOT apply Axial Xtreme more than once or follow it with any other products containing pinoxaden or fluroxypyr in the same year.

Application Information:
Water Volume: 20 to 40 L per acre.
Nozzles and Pressure: Maximum 40 to 45 psi (275 to 310 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE coarse classification droplets. Use 50 mesh or coarser filter screens. Thorough coverage of the plants is essential for consistent control.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Tolerance and efficacy is best when applied during warm weather when weeds are actively growing and soil moisture is adequate for rapid growth. Under prolonged stress caused by excessive cool or heat, flooding or drought, or poor fertility, control of some weeds may be reduced and or crops may be injured.

Tank Mixes:
Tank mix partners applied at all label rates and include recommended adjuvants unless otherwise noted.
Herbicides:
Bromoxynil/MCPA†
Curtail M†
Florasulam + MCPA (Frontline XL only)††
Infinity††
MCPA ester (0.28 to 0.37 L/acre – 600 g/L form)†
Thifensulfuron/tribenuron (Refine SG only)
Thifensulfuron/tribenuron (Refine SG only) + MCPA ester (rates above)††
† A reduction in barnyard grass control may be observed with this mix.
†† A reduction in green foxtail control may be observed with this mix.
Fungicides: Propiconazole (Tilt only at 101 to 202 mL/acre)
Insecticides: None registered.
Fertilizers: None registered.
Note: The above mixes are those listed on the Axial Xtreme label only.
Syngenta also supports the following mixes that are not on the Axial Xtreme label. Apply mixes according to the most restrictive use limitations for either product:
Herbicides: Broadsix
Fungicide: Tebuconazole (Fuse only), Quilt
Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.
**Restrictions:**

Rainfall: Within 1 hour of application may reduce control.

Re-entry: DO NOT re-enter treated fields for 12 hours.

Pre-harvest: DO NOT apply within 60 days of harvest.

Grazing: Must not be grazed within 7 days or cut for livestock feed within 30 days of treatment.

Re-cropping: Barley, canola, flax, forage grasses, lentils, mustard, oats, peas, rye or wheat may be seeded the first full season after application or fields can be fallowed.

Aerial Application: DO NOT apply by air.

Storage: Store in a cool, dry place. DO NOT freeze.

Environment: Avoid drift. Leave at least 15 m between the downwind edge of the boom and sensitive areas such as shelterbelts, hedgerows, wetlands, woodlots, vegetated ditch banks, ponds, streams, and sloughs. Buffer zones can be reduced by 70% when using shrouds or by 30% when using cones mounted less than 12 inches from the crop canopy.

**Sprayer Cleaning:**

Refer to ‘Method B’ on page 15. Use 500 g or mL per 100L of rinsate for alkali detergents or 250 g or mL per 100L of rinsate for concentrated laundry detergents. DO NOT use chlorine based cleaners.

**Hazard Rating:**

⚠️ Warning – Eye and skin irritant

Potential skin sensitizer.

For an explanation of the symbols used here see page 11.

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**Barricade II**

**Company:**
E. I. duPont Canada

**Formulation:**
The Barricade II package contains two components:

**Barricade SG (PCP#29544):** 25% thifensulfuron methyl plus 25% tribenuron methyl formulated as a water soluble granule.

- Container size - 486 g bottle.
- **Perimeter II (PCP#30094):** 333 g a.e./L fluroxypyr formulated as an emulsifiable concentrate.

- Container size - 3.4 L

**Crops and Staging:**
Barley and spring wheat (including durum) only:
2 leaf until first node can be felt at the base of the stem.

Winter wheat: In the spring from the 3 tiller stage until the emergence of the flag leaf.

Weeds and Staging:

Unless otherwise noted below, apply to young and actively growing weeds that are less than 4 inches (10 cm) in height or width.

**Weeds Controlled:**

Annual smartweed (green, lady’s-thumb)
Canada thistle (less than 6 inches (15 cm) tall or across and prior to budding)**

Cleavers (1 to 6 whorls)
Common chickweed (1 to 6 leaf)
Cow cockle
Flixweed
Hemp-nettle
Kochia
Lamb’s-quarters

** Suppression only.

Narrow-leaved hawk’s-beard
Night-flowering catchfly
Redroot pigweed
Round-leaved mallow (1 to 5 leaf)
Russian thistle
Sow-thistle (perennial)
Stinkweed
Stork’s-bill (1 to 6 leaf)
Volunteer canola
Volunteer flax (up to 12 cm)

** Herbicide Group

2 - thifensulfuron & tribenuron
4 - fluroxypyr

*(Refer to page 45)*
Rate:
*Barricade SG*: 12 g per acre.

*Perimeter II*: 85 mL per acre.

(one package treats 40 acres)

Maximum of one application of this or other thifensulfuron/tribenuron products or fluroxypyr products per year.

Add Agral 90, Agsurf II, or Citowett Plus at 0.2 L per 100 L of spray solution. *Barricade SG* may degrade if left in the sprayer for an extended period. Apply within 24 hours of mixing.

Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

Application Information:

**Water Volume:**

*Ground:* Minimum 40 L per acre.

*Aerial:* 12 to 20 L/acre

**Nozzles and Pressure:** Flat fan nozzles are recommended. Sprayers without drift reduction nozzles should use between 30 to 40 psi (210 to 275 kPa). Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with *ASABE medium* droplets by ground or *ASABE coarse* droplets by air. Use a 50 mesh or coarser screen and filter system.

How it Works:

Refer to Table 2 on page 47.

Effects of Growing Conditions:

DO NOT apply to registered crops that are stressed by severe weather conditions (frost, drought or water saturated soil) as crop injury may result. Reduced activity will occur when temperatures are below 8°C or above 27°C. Frost 3 days before or after application may reduce weed control and crop tolerance. Under certain conditions (heavy rainfall, prolonged cool weather, frost conditions, wide fluctuations in day/night temperatures) lightening in crop colour and reduction in crop height may occur.

Tank Mixes:

**Herbicides:** None registered

**Fertilizers:** None registered.

E.I. duPont supports the following mixes that are not on the *Barricade II* label. Apply mixes according to the most restrictive use limitations for either product:

**Herbicides:** Horizon NG, Axial BIA, Assert, Flucarbazone, Flucarbazone 2.0 + 2,4-D Ester, MCPA ester (190 mL/acre), Puma Advance, Simplicity, Traxos, Varro.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:

**Rainfall:** Up to 1 inch within 1 hour of application may reduce control.

**Re-entry:** DO NOT re-enter treated fields for 12 hours.

**Preharvest Interval:** Leave 60 days between application and harvest.

**Grazing:** MUST NOT be grazed or fed to livestock for 7 days after treatment.

**Re-cropping:** Alfalfa, barley, corn, canola, dry beans, flax, forage grasses, lentils, mustard, oats, peas, potatoes, rye, soybeans, sugar beets, sunflowers, wheat or fields can be fallowed the year after treatment.

**Aerial Application:** May be applied by aircraft.

**Storage:** Store in a cool, dry place. Avoid freezing. If frozen, bring to room temperature and agitate before use. This product is COMBUSTIBLE. DO NOT store near heat or open flame.

**Buffer Zones:**

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres †) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground*</td>
<td>15</td>
</tr>
<tr>
<td>Fixed wing aircraft</td>
<td>5</td>
</tr>
<tr>
<td>Helicopter</td>
<td>3</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

† Distance is measured from the downwind edge of the boom to sensitive areas.

**Sprayer Cleaning:**

Follow the sprayer cleaning instructions on the *thifensulfuron/tribenuron* page. The addition of a wetting agent (detergent) will also aid the cleaning process.

Refer to page 15 to 16 for additional information.

**Hazard Rating:**

Danger – Poison

Warning – Contains the allergens milk and sulfites

For an explanation of the symbols used here see page 11.
**Basagran Brands**

**Company:**
BASF Canada
*Basagran* (PCP#12221)
*Basagran Forté* (PCP#22006)

**Formulation:**
480 g/L bentazon formulated as a solution in both products.
*Basagran Forté* has a built-in adjuvant.

Container size -
*Basagran*: 2 x 9 L jugs.
*Basagran Forté*: 2 x 10 L jugs.

**Crops and Staging:**

*Basagran and Basagran Forté:*

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soybean</td>
<td>No restrictions</td>
</tr>
<tr>
<td>Dry bean ***</td>
<td>After the first trifoliate leaf</td>
</tr>
<tr>
<td>Corn</td>
<td>No restrictions</td>
</tr>
<tr>
<td>Pea</td>
<td>After 3 leaf pairs but prior to flowering</td>
</tr>
<tr>
<td>Fababean</td>
<td>At least 4 inches (10 cm) tall</td>
</tr>
<tr>
<td>Flax</td>
<td>After 2 inches (5 cm) in height</td>
</tr>
</tbody>
</table>

*Basagran Forté only:*

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forage millet and forage sorghum (forage and seed production)*</td>
<td>3 to 6 leaf prior to canopy closure</td>
</tr>
<tr>
<td>Established clover (alsike, red) for seed production only*</td>
<td>7.5 to 25 cm prior to canopy closure</td>
</tr>
</tbody>
</table>

**Basagran only:**

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring wheat (excluding durum)**</td>
<td>No restrictions (limited to the 4 leaf to flag leaf by 2,4-D staging)</td>
</tr>
<tr>
<td>Solin (low linolenic acid flax)</td>
<td>After 2 inches (5 cm) in height</td>
</tr>
<tr>
<td><strong>Forage grasses for seed production</strong>*: Bromegrass, creeping red fescue, crested wheatgrass, meadow foxtail, orchardgrass, timothy.</td>
<td>1 to 7 leaf stage</td>
</tr>
<tr>
<td><strong>Forage legumes (seedlings) for seed production</strong>*: Alfalfa, alsike clover, red clover, sainfoin.</td>
<td>After the third trifoliate leaf</td>
</tr>
<tr>
<td>Established alfalfa for seed production.</td>
<td>Prior to flowering</td>
</tr>
<tr>
<td>Established clover (Sweet, or Red) and sainfoin for seed production.</td>
<td>3 to 10 inches (7.5 to 25 cm) high</td>
</tr>
</tbody>
</table>

* One application per season.

** Basagran only at 0.4 L per acre. Must be tank mixed with 2,4-D (no adjuvant required).

*** Refer to product labels for a list of dry bean types registered for Basagran. Basagran Forté registered for all dry bean types but not tested for tolerance on all types. Test a small area of a new variety for tolerance before widespread use.

When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

Herbicide Group
6 - bentazon
*(Refer to page 45)*
Weeds, Rates and Staging:
Add Assist or XA oil concentrate at 0.4 to 0.8 L per acre to Basagran only. Basagran Forté does not require the addition of Assist or XA oil concentrate. If hot, humid conditions prevail (above 28°C and 80% relative humidity), use only the low rate of Assist or XA oil concentrate. Citowett Plus may be used on peas at 0.25 L per 100 L spray mixture. Ammonium sulphate can be added to Basagran and Basagran Forté for applications to soybean and to Basagran only for applications to dry beans. Apply the rate listed when weeds in the table are within the recommended height:

<table>
<thead>
<tr>
<th>ANNUAL WEEDS</th>
<th>0.71 L per acre</th>
<th>0.91 L per acre</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inches</td>
<td>Maximum Leaf Stage</td>
</tr>
<tr>
<td>Buttercup</td>
<td>2 to 4</td>
<td>6*</td>
</tr>
<tr>
<td>Cleavers</td>
<td>1 to 3 whorl stage</td>
<td></td>
</tr>
<tr>
<td>Cocklebur</td>
<td>3 to 7</td>
<td>6*</td>
</tr>
<tr>
<td>Common chickweed</td>
<td>1 to 3 weeks after emergence</td>
<td></td>
</tr>
<tr>
<td>Common groundsel</td>
<td>2 to 4</td>
<td></td>
</tr>
<tr>
<td>Common ragweed</td>
<td>1 to 2</td>
<td>6</td>
</tr>
<tr>
<td>Corn spurry</td>
<td>1 to 4</td>
<td></td>
</tr>
<tr>
<td>Flower of an hour</td>
<td>1 to 2</td>
<td>6*</td>
</tr>
<tr>
<td>Giant ragweed</td>
<td>2 to 6</td>
<td>4</td>
</tr>
<tr>
<td>Hairy galinsoga</td>
<td>2 to 3</td>
<td>6*</td>
</tr>
<tr>
<td>Hairy nightshade</td>
<td>0.2 to 0.8</td>
<td>6</td>
</tr>
<tr>
<td>Jimsonweed</td>
<td>2 to 6</td>
<td>10</td>
</tr>
<tr>
<td>Lady’s-thumb (smartweed)</td>
<td>1 to 3</td>
<td>6*</td>
</tr>
<tr>
<td>Lamb’s-quarters</td>
<td>0.5 to 1.0</td>
<td>8</td>
</tr>
<tr>
<td>Purslane</td>
<td>1 to 2</td>
<td>6</td>
</tr>
<tr>
<td>Redroot pigweed (suppression only)</td>
<td>0.5 to 1.5</td>
<td>4</td>
</tr>
<tr>
<td>Russian thistle (suppression only*)</td>
<td>1 to 3</td>
<td>4*</td>
</tr>
<tr>
<td>Shepherd’s-purse</td>
<td>Rosette to 4</td>
<td>6*</td>
</tr>
<tr>
<td>Stinkweed</td>
<td>Rosette to 2</td>
<td>6*</td>
</tr>
<tr>
<td>Stork’s-bill</td>
<td>1.5 to 4</td>
<td>2 to 6 leaf stage</td>
</tr>
<tr>
<td>Volunteer canola</td>
<td>0.75 to 6</td>
<td>8**</td>
</tr>
<tr>
<td>Wild mustard</td>
<td>1 to 5</td>
<td>6*</td>
</tr>
<tr>
<td>Wild radish</td>
<td>1 to 2</td>
<td>6</td>
</tr>
<tr>
<td>PERENNIAL WEEDS</td>
<td></td>
<td>Repeat application 7 to 15 days after first application (if necessary)</td>
</tr>
<tr>
<td>Canada thistle</td>
<td>6 to 8</td>
<td></td>
</tr>
<tr>
<td>Field bindweed</td>
<td>1 to 2.5</td>
<td></td>
</tr>
<tr>
<td>Yellow nutsedge</td>
<td>6 to 8</td>
<td></td>
</tr>
</tbody>
</table>

* Basagran Forté only.
** Basagran only.
Basagran may be applied in wheat at 0.4 L per acre when tank mixed with 2,4-D amine or ester at 143 to 190 g ae to control the weeds controlled by 2,4-D plus lady’s-thumb, redroot pigweed and daisy fleabane. No adjuvant is required for this mix. Refer to the product label for complete mixing instructions for this product and its mixes. A general guide to mixing can be found on page 14.
Application Information:
Water Volume: 40 to 160 L per acre. A minimum of 80 L per acre is recommended for optimum control.*
Nozzles and Pressure: Maintain 40 to 60 psi (275 to 425 kPa)* when using conventional flat fan nozzles capable of delivering high water volumes with ASABE medium droplets. Low drift nozzles may require higher pressures for proper performance. Contact the herbicide manufacturer regarding the suitability of low drift nozzles for use with this product. Direct nozzles 45° forward to improve contact with vertical targets.
* Higher water volumes and pressures should be used when the weeds are at the upper end of their recommended treatment stage.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Poor results will occur if temperatures are cool. Optimum results are achieved when applied at daytime temperatures between 20 and 28°C. Applications at temperatures greater than 28°C may result in crop injury.

Tank Mixes:
Herbicides:
In soybean:
Pinnacle (2.2 to 3.2 g/acre)

In dry bean:
*Basagran only (0.71 L/acre) plus Reflex (0.23 L/acre) plus Agral 90.

In spring wheat (not including durum):
Basagran only (0.4 L/acre) must be tank mixed with 2,4-D amine or ester at 143 to 190 g ae/acre. This tank mix DOES NOT need any adjuvant.
* For use in the Red River Valley of Manitoba only.

Insecticides: None registered.
Fungicides: None registered.

Fertilizers:
In soybean:
Basagran or Basagran Forté (0.71 to 0.91 L/acre) plus UAN (4 L/ac)
DO NOT add fertilizer with Assist or XA Oil Concentrate when tank mixing with Pinnacle.
The risk of crop injury increases with the use of fertilizer mixes under hot, humid conditions.
Use of fertilizer mixes is not recommended for use under western Canadian environmental conditions for other crops.
When mixing Basagran Liquid or Basagran Forté refer to the tank mix partner label for any additional restrictions and precautions.
Allow 4 days between application of Basagran and other herbicides, fertilizers or insecticides.

Note: The above mixes are those listed on the Basagran/ Basagran Forté labels only. Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Within 6 to 8 hours will reduce control.
Re-Entry: DO NOT enter treated field for 12 hours.
Grazing: Allow 30 days between treatment with Basagran Forté and harvest of forage sorghum and millet for hay. Otherwise DO NOT graze treated crops or cut for feed prior to crop maturity.
Preharvest Interval: 50 days for Basagran + 2,4-D in wheat, 84 days for Basagran + Reflex in Dry beans in Manitoba. Other uses are restricted only by appropriate staging.
Re-cropping: No restrictions the year after application.
Aerial Application: May be applied by air for weed control in dry beans or soybeans only. Use 23 to 45 L/acre water volume. Assist or XA Oil Concentrate at 0.05 to 0.1 L/acre must be added. DO NOT use Assist or XA Oil Concentrate in excess of 0.1 L/acre as substantial crop injury could occur. DO NOT apply fertilizer mixes in soybean or 2,4-D tank mix in wheat by air. Crop canopy should NOT cover the weeds.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Crop</th>
<th>Buffer Zones (metres††) Required for the Protection of: Terrestrial habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground†</td>
<td>Sorghum**, Forage millet**, Forage grasses and legumes, Pea*</td>
<td>1</td>
</tr>
<tr>
<td>Fixed wing airplane*</td>
<td>Dry bean</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Soybean</td>
<td>35</td>
</tr>
<tr>
<td>Helicopter*</td>
<td>Dry bean</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Soybean</td>
<td>30</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Basagran only
** Basagran Forté only
† Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
†† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.
Company:
E. I. duPont Canada

Formulation:
The Battalion package contains the following:
Elim EP (PCP#23518): 25% rimsulfuron formulated as a water dispersible granule.
Container sizes - 480 grams (8 x 60 gram soluble bags).
Dual II Magnum (PCP#25729): 915 g/L s-metolachlor formulated as an emulsifiable concentrate.
Container sizes - 6 L.
Banvel II (PCP#23957): 480 g/L dicamba formulated as a solution of a diglycolamine salt.
Container sizes - 6 L.

Crops and Staging:*  
May be applied to field corn as a pre-emergent or post-emergent application. For use in the Red River Valley region of Manitoba only. DO NOT use on sweet corn.
Pre-emergent – apply as a broadcast ground treatment after planting but before weeds and corn emerge.
Post-emergent – apply up to the 3-leaf stage (2 visible collars or 20 cm in height – leaf extended). Corn hybrid sensitivity to post-emergent applications of Battalion have been observed in the field with varieties rated less than 2500 CHU in regions with less than 2500 CHU. Check with seed supplier prior to applying Battalion to ensure the hybrid has known tolerance to Group 2 and Group 4 herbicides.
* NOTE - Since applications to Corn in the Red River Valley region of Manitoba has been registered under the User Requested Minor Use program, the manufacturer assumes no responsibility for herbicide performance or crop safety. Application to corn is at the risk of the user.

Weeds and Staging:
Pre-emergent applications**:  
Common ragweed  Lamb’s-quarters
Eastern black nightshade Quackgrass (suppression)
Green foxtail Redroot pigweed
Lady’s-thumb Yellow foxtail (suppression)
** Rain is required within 10 days of application or a shallow cultivation or use of a rotary hoe is required.

Post-emergent applications: Apply prior to the 2 leaf stage of the following weeds. Battalion must be applied with a non-ionic surfactant (see ‘Rates’ for details)
Annual smartweeds  Indian mustard
(green, lady’s-thumb)  Lamb’s-quarters
Barnyard grass Quackgrass (suppression)
Cleavers Redroot pigweed
Common ragweed Russian pigweed
Corn spurry Tartary buckwheat
Cow cockle Tumble mustard
Eastern black nightshade Velvetleaf
False ragweed Wild buckwheat
Foxtail (Green and Yellow) Wild mustard
Giant ragweed Wormseed mustard
Hare’s-ear mustard

Sprayer Cleaning:
Refer to ‘Method B’ in the general sprayer cleaning section on page 15-16.

Hazard Rating:
Basagran
Caution – Poison

Basagran Forté
* Warning – Poison
* Danger – Corrosive to Eyes
* Warning – contains the allergen soy.

For an explanation of the symbols used here see page 11.

Battalion*  
* (For use only on field corn grown in the Red River Valley region of Manitoba)

Herbicide Group  
2 - rimsulfuron
4 - dicamba
15 - metolachlor  
(Refer to page 45)
Rates:

<table>
<thead>
<tr>
<th>Component</th>
<th>Pre-emergent</th>
<th>Post-emergent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elim EP</td>
<td>24 g</td>
<td>20 g</td>
</tr>
<tr>
<td>Dual II Magnum</td>
<td>300 mL</td>
<td>250 mL</td>
</tr>
<tr>
<td>Banvel II</td>
<td>300 mL</td>
<td>250 mL</td>
</tr>
<tr>
<td>Acres per case</td>
<td>20</td>
<td>24</td>
</tr>
</tbody>
</table>

* Battlion must be applied with a non-ionic surfactant such as Citowett Plus, Agral 90 or Agsurf II at a rate of 0.2 L per 100 L of spray solution (0.2 % v/v) when applied as a post emergent application to corn.

Application Information:

Water Volume: 60 to 70 L per acre.

Nozzles and Pressure: Flat fan nozzles are recommended. Sprayers without drift reduction nozzles should use a maximum of 40 psi (275 kPa). Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE medium droplets. Use a 50 mesh or coarser screen and filter system.

How it Works:

Refer to Table 2 on page 47.

Effects of Growing Conditions:

Rapid fluctuations in temperature (greater than 20°C difference within 24 to 36 hours) will stress the corn crop. For maximum crop safety, allow 48 to 72 hours for the corn to acclimatize before applying Battlion.

Apply ONLY when the temperature in the 24 hours before AND after application is between 10°C and 25°C. Temperatures beyond this range increase the potential for crop injury. Separate applications of Battlion herbicide followed by a broadleaf herbicide (minimum of 12 hours later) will reduce the potential for injury.

WARNING: Crop injury may result if application is made to corn that has been stressed by abnormally hot, humid, or cold weather conditions, frost, low fertility, drought, water saturated soil, compacted soil, previous pesticide applications, disease, or insect damage. If corn has been injured by frost, wait 48 to 72 hours before applying Battlion.

Tank Mixes: None registered

NOTE: Battlion should NOT be applied to corn that has been treated with Lorsban. Leave 7 days between the application of Battlion and that of a foliar organophosphate insecticide.

Restrictions:

Rainfall:

Pre-emergent applications: Rainfall is required within 10 days of application for proper activation of Battlion. Otherwise a shallow cultivation or use of a rotary hoe is required.

Post-emergent applications: Within 4 hours of application may result in reduced weed control.

Re-entry: DO NOT enter treated fields for at least 12 hours.

Grazing: DO NOT graze treated crops or cut for feed.

Preharvest Interval: Leave at least 80 days from application to harvest.

Re-cropping: Corn, winter wheat and barley may be seeded the year following Battlion application. For all other crops, a field bioassay is recommended before planting.

Aerial Application: DO NOT apply by air.

Storage: May be frozen.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground only*</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

DO NOT mix or load within 30 m of any water sources.

Sprayer Cleaning:

Refer to product label for complete sprayer cleaning instructions. DO NOT clean equipment upslope of water bodies or ditches, near cropland or shelterbelts. Clean your sprayer away from areas where family members or others are likely to frequent or walk.

For additional information, Refer to page 15.

Note: The above mixes are those listed on the Battlion label only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. See the general guidelines for mixing pesticides on page 14 for more information.
Hazard Rating:

⚠️ Caution – Poison (Banvel II)
💎 Warning – Eye Irritant

Keep out of reach of children
For an explanation of the symbols used here see page 11.

BlackHawk

This product is a prepackaged tank mix of Aim (page 87) and 2,4-D (page 79). Information listed is restricted to Crop, Weeds, Rates and Tank mixes. For other detailed restrictions and other general information on the component products see the product pages listed above.

Company:
Nufarm Agriculture

Formulation:
The BlackHawk package contains the following components:

**Aim EC (PCP#28573):** carfentrazone-ethyl 240 g/L as emulsifiable concentrate.
Container size - 2x 600 mL

**2,4-D 700 ester (PCP#27820):** 2,4-D 660g/L as emulsifiable concentrate
Container size - 2x 8.69 L.

Crops and Staging:
Pre-seed burndown prior to seeding the following crops:

- Spring wheat
- Durum wheat
- Winter wheat
- Soybean - 7 days prior to seeding.

Weeds and Staging:
**Aim EC:** 15 mL/acre + **2,4-D 700 ester:** 212 mL/acre.
One case treats 80 acres
Emerged weeds controlled by the component products up to 10 cm or 3 leaf rosette stage plus:

- Kochia*
- Volunteer canola*
- All biotypes.

Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

Tank Mixes:
**Herbicides:**

- **Glyphosate** (180 to 360 g ae per acre)

See component products for more information on restrictions application details and handling. Use the most limiting restrictions across all components for the mix.

Herbicide Group
4 - 2,4-D
14 - carfentrazone
(Refer to page 45)
Company: United Phosphorus Inc. (PCP#23315)

Formulation: 240 g/L acifluorfen present as a sodium salt and formulated as a solution. Container size - 10 L jug.

Crops and Staging: Soybean from the 1 to 3 trifoliolate leaf stage. DO NOT apply before the first trifoliolate leaf stage of the soybean. DO NOT apply to soybeans grown on sand or loamy sand soils.

Weeds and Staging:
Blazer applied at 0.5 L per acre (one jug treats 20 acres) plus Assist adjuvant at 0.5 L per 100 L of spray solution will control:

<table>
<thead>
<tr>
<th>WEED</th>
<th>MAXIMUM LEAF STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common ragweed</td>
<td>8</td>
</tr>
<tr>
<td>Redroot pigweed</td>
<td>4</td>
</tr>
</tbody>
</table>

Blazer applied at 1.0 L per acre** (one jug treats 10 acres) will control the weeds above plus the following weeds at the maximum leaf stages listed:

<table>
<thead>
<tr>
<th>WEED</th>
<th>MAXIMUM STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada thistle*</td>
<td>Pre-bud</td>
</tr>
<tr>
<td>Cocklebur</td>
<td>4 leaf</td>
</tr>
<tr>
<td>Common milkweed*</td>
<td>-</td>
</tr>
<tr>
<td>Field bindweed*</td>
<td>-</td>
</tr>
<tr>
<td>Hedge bindweed*</td>
<td>-</td>
</tr>
<tr>
<td>Lamb’s-quarters</td>
<td>2 leaf</td>
</tr>
<tr>
<td>Nightshade (eastern black)</td>
<td>6 leaf</td>
</tr>
<tr>
<td>Redroot pigweed</td>
<td>6 leaf</td>
</tr>
<tr>
<td>Smartweed (including lady’s-thumb)</td>
<td>8 leaf</td>
</tr>
<tr>
<td>Wild Mustard</td>
<td>10 leaf</td>
</tr>
</tbody>
</table>

* Topgrowth control only. The plant will grow back from underground roots
**DO NOT add Assist adjuvant with the 1.0 L per acre rate as crop injury will result.
Refer to the product label for complete mixing instructions for this product and its mixes. A general guide to mixing can be found on page 14.

Application Information:
Water Volume: No specific water volume is provided on the label but a minimum of 81 L per acre is implied by the adjuvant rates on the label. Good coverage of weed foliage is required for proper control.
Nozzles and Pressure: Use nozzles and pressure designed to deliver thorough, even coverage with ASABE medium droplets.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Soybeans may exhibit speckling, bronzing and/or leaf burn. The trifoliolate leaf emerging at the time of application may be distorted. Soybeans usually outgrow these conditions and continue to grow at a normal rate with no adverse effect on vigour, maturity, or crop yield. It is important to have good spray coverage on the weeds as Blazer works mainly by contact action. Failure to follow the suggested application rate and timing may result in unsatisfactory control.

Tank Mixes:
Herbicides:
Blazer (0.5 L/acre) plus Basagran Forté (0.5 L/acre) or Blazer (0.255 L/acre) plus Basagran* or Basagran Forté (0.71 L/acre) depending on predominant weed species present. See label for details.
*Add Assist adjuvant at 0.5 L per 100 L of spray solution for Basagran tank mix only.
Fertilizers: None registered. DO NOT add fertilizers to the spray mixture.
Insecticides: None registered.
Fungicides: None registered.
Note: The above mixes are those listed on the Blazer label only.
Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Within 6 hours may reduce weed control.
Re-Entry: DO NOT enter treated fields for 12 hours.
Preharvest Interval: No specific preharvest interval is indicated on the label.
Grazing: DO NOT graze the treated crop or cut for hay.
Re-cropping: The label has no restriction on crops that may be planted the following season.
Aerial application: DO NOT apply by air.
Storage: DO NOT freeze.
Buffer Zones: Leave a buffer of 15 m from the last spray pass and sensitive upland areas such as other crops, pastures, rangeland, woodlots or shelterbelts.

Sprayer Cleaning:
Refer to ‘Method B’ in the general section on sprayer cleaning on page 15-16. Tanks may require cleaning after several tanks to remove any excessive oil buildup on the inside of the tank.

Hazard Rating:

	Warning – Poison

	Danger – Corrosive to eyes.

	Warning - Causes skin irritation. Avoid contact with skin. Harmful if inhaled.

For an explanation of the symbols used here see page 11.

Company:
Syngenta Canada

Formulation:
Broadband (PCP#29138): 92.7 g/L pinoxaden and 7.7 g/L florasulam formulated as an emulsifiable concentrate.
Container size - 10.5, 84.2 L.
Adigor Adjuvant (PCP#28151): 11.3, 90.4 L.

Crops and Staging:
Barley, spring wheat (NOT including durum) up to the emergence of the flag leaf.
When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

Weeds and Staging:
Grass weeds controlled from 1 to 6 leaves and prior to the emergence of the 4th tiller:
Barnyard grass
Foxtail (green and yellow)
Proso (Crown) millet
Volunteer oat
Volunteer canary seed
Wild oat

Broadleaf weeds controlled at the 1 to 6 leaf stage:
Annual smartweed (including lady’s-thumb)
Common chickweed
Cleavers
Hemp-nettle†
Pigweed, redroot†
Shepherd’s-purse
Sow-thistle (annual, perennial**)
Stinkweed
Volunteer canola*
Wild buckwheat
Wild mustard
† Suppression only.
* Not Clearfield varieties.
** Applications made at advanced leaf stages will reduce product effectiveness.

Rates:
Bondroad: 263 mL per acre.
Add Adigor adjuvant at 280 mL per acre.
(Package sizes listed above will treat 40 or 320 acres)
DO NOT apply more than once per season.

Application Information:
Water Volume: 20 to 40 L per acre.
Nozzles and Pressure: Use a combination of nozzles and

Herbicide Group
1 - pinoxaden
2 - florasulam
(Refer to page 45)
Weed Control

pressure designed to deliver thorough, even coverage with ASABE medium droplets. Low drift nozzles may require higher pressures for proper performance.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
DO NOT apply to crops or weeds that are stressed (frost, low fertility, drought or flooding, disease or insect damage) as crop injury or reduced weed control may result. Temporary crop injury may occur with tank-mixes under extreme weather conditions or when the crop is suffering from stress due to inadequate or abnormally high moisture levels or extreme temperatures.

Tank Mixes:
Herbicides:
Curtail M (0.6 L/acre)
MCPE LV500 ester (0.28 L/acre)
Fungicides: Propiconazole (Tilt only at label rates)
Fertilizers: None registered

Note: The above mixes are those listed on the Broadband label only. Syngenta also supports the following mixes that are not on the Broadband label only. Apply mixes according to the most restrictive use limitations for either product:
Herbicides: Fluoroxypyr+MCPE (Trophy only); Infinity; Prestige XC (low rate).
Fungicides: Propiconazole (Propel & Tilt only at the low rate); Quilt; Tebuconazole (Fuse only).
Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Within 1 hour of application may reduce control.
Re-Entry: DO NOT re-enter treated fields within 12 hours.
Preharvest: Leave 60 days between treatment and harvest.
Grazing: DO NOT cut for livestock feed within 30 days or grazed by livestock within 7 days of treating the crop.
Recropping: No restrictions the year following treatment.
Aerial Application: DO NOT apply by air.
Storage: Store in dry, heated storage.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres †)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats</td>
</tr>
<tr>
<td>Ground only*</td>
<td>5</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:
Refer to ‘Method A’ in the general section on sprayer cleaning on page 15-16.

Hazard Rating:

Warning Eye Irritant
For an explanation of the symbols used here see page 11.
Bromoxynil

Crops, Staging and Rates:

**Pardner**: At 0.40 to 0.48 L per acre one 8 L jug treats 20 to 16.5 acres.

**Koril, Brotex 240 & Bromotril II**: At 0.49 to 0.57 L per acre one 9.71 L jug treats 20 to 17 acres.

**Brotex 480 & Loveland Bromax**: At 0.24 to 0.28 L per acre one 9.7 L jug treats 40 to 34 acres.

See the chart below for registered crops and specific rates and stages. **NR = Not Registered**.

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
<th>RATE (L / acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Pardner</strong></td>
</tr>
<tr>
<td>Barley, oats, triticale, wheat</td>
<td>2 leaf stage to early flag</td>
<td>0.40 to 0.48</td>
</tr>
<tr>
<td>(spring and durum**)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter wheat</td>
<td>2 to 4 leaf stage (fall application)</td>
<td>0.40 to 0.48</td>
</tr>
<tr>
<td></td>
<td>First growth to early flag leaf (spring application)</td>
<td></td>
</tr>
<tr>
<td>Corn (field or sweet)</td>
<td>4 to 8 leaf</td>
<td>0.40 to 0.48</td>
</tr>
<tr>
<td>Corn (field or sweet) with</td>
<td>Beyond 8 leaf</td>
<td>0.40 to 0.48</td>
</tr>
<tr>
<td>drop pipes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canaryseed (seed production only)</td>
<td>3 to 5 leaf</td>
<td>0.40</td>
</tr>
<tr>
<td>Seedling alfalfa</td>
<td>2 to 6 trifoliate leaf stage</td>
<td>0.40</td>
</tr>
<tr>
<td>Established alfalfa (seed</td>
<td>Up to 10 inches (25 cm). Apply no more than twice in one</td>
<td>0.40 to 0.48</td>
</tr>
<tr>
<td>production only)</td>
<td>growing season.</td>
<td></td>
</tr>
<tr>
<td>Fall rye</td>
<td>First growth to early flag leaf (spring application only)</td>
<td>0.40 to 0.48</td>
</tr>
</tbody>
</table>

Crops, Staging and Rates continued on next page.
Crops, Staging and Rates  
continued

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
<th>RATE (L / acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pardner</td>
</tr>
<tr>
<td>Flax and Solin (low linolenic acid flax)</td>
<td>2 to 4 inches (5 to 10 cm)</td>
<td>0.40</td>
</tr>
<tr>
<td>Forage millet and sorghum</td>
<td>4 leaf to 8 inches (20 cm)</td>
<td>0.40</td>
</tr>
<tr>
<td>Seedling grasses (seed production only): Brome- grass, Fescue (creeping red, meadow), Orchard grass, Reed canary grass, Russian wildrye, Timothy, Wheatgrass (crested, inter-mediate, slender, (all)</td>
<td>2 to 4 leaf (Establishment year only)</td>
<td>0.40 to 0.48</td>
</tr>
<tr>
<td>Pearl millet and sorghum (grain)*</td>
<td>4 leaf to 8 inches (20 cm)</td>
<td>0.40</td>
</tr>
<tr>
<td>Prior to direct-seeding cereal crops (mixed with glyphosate only)</td>
<td>Apply according to weed stage.</td>
<td>0.40</td>
</tr>
<tr>
<td>Pre-seed / pre-plant prior to seeding canola (mixed with glyphosate only)</td>
<td>Apply according to weed stage</td>
<td>0.40 to 0.51</td>
</tr>
</tbody>
</table>

*NOTE: Since application to grain pearl millet and sorghum is registered under User Requested Minor Use Label Expansion program, the manufacturer assumes no responsibility for herbicide performance. Users of this on product grain pearl millet and sorghum do so at their own risk.

** Pardner only.
*** Brotex 480 only.

Weeds and Staging:

Weeds controlled at the 1 to 4 leaf stage:
- American nightshade
- Annual smartweed (green, pale, lady’s-thumb)
- Bluebur
- Cocklebur
- Common ragweed
- Cow cockle*
- Kochia**
- Pigweed†
- Russian thistle**
- Stinkweed*
- Wild mustard*

Weeds controlled at the 1 to 8 leaf stage:
- Common groundsel
- Lamb’-s-quarters
- Tame buckwheat
- Tartary buckwheat
- Wild buckwheat

* Controlled with high rate only.
** Apply before plants are 2 inches high.
† Not controlled in seedling alfalfa.

Application Information:

Water Volume:
Ground:
- Corn, Millet & Sorghum: 80 to 120 L per acre.
- Seedling grasses: 60 L per acre.
- Other crops: 40 L per acre.

Aerial (wheat and barley only): 8 to 16 L per acre.

Nozzles and Pressure: Maximum 40 psi (275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver ASABE medium droplets.

How it Works:
Refer to Table 2 on page 47.
Effects of Growing Conditions:
Avoid spraying if temperatures are greater than 25°C. Leaf scorching may occur in corn and flax if applied during or after adverse growing conditions, such as cool and wet or hot (greater than 27°C) and humid weather.

Tank Mixes:
**Herbicides:**

<table>
<thead>
<tr>
<th>CROP</th>
<th>TANK MIXES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring wheat</td>
<td>2,4-D†, Achieve Liquid</td>
</tr>
<tr>
<td>Winter wheat</td>
<td>2,4-D, Achieve Liquid, MCPA</td>
</tr>
<tr>
<td>Barley</td>
<td>2,4-D†, Achieve Liquid, MCPA†</td>
</tr>
<tr>
<td>Oats</td>
<td>MCPA</td>
</tr>
<tr>
<td>Fall rye, canaryseed</td>
<td>MCPA*</td>
</tr>
<tr>
<td>Flax</td>
<td>MCPA (amine, ester or K salt)</td>
</tr>
<tr>
<td>Seedling forage grasses***</td>
<td>MCPA</td>
</tr>
<tr>
<td>Corn</td>
<td>Accent® + surfactant (field corn only), Aatrex® (0.4 L per acre), Barvel II (field corn only)**</td>
</tr>
<tr>
<td>Prior to seeding: Cereals, Canola††</td>
<td>Glyphosate</td>
</tr>
<tr>
<td>Prior to seeding (Koril only)</td>
<td>Aim, CleanStart</td>
</tr>
</tbody>
</table>

* The ester formulations are preferred but other formulations can be used.
** DO NOT add oil or surfactant to this mix. DO NOT use atrazine formulations that contain oil.
*** Bromax, Brotex 240, Brotex 480 and Pardner only.
† May be applied by air.
†† Bromax 480, Koril 235 and Pardner only. Not all glyphosate products/formulations are registered for this use. Refer to individual product labels.
△ Since the use of this tank mix on corn is registered under the User Requested Minor Use program, the manufacturer assumes no responsibility for herbicide performance. Users of this tank mix on corn do so at their own risk.

Fertilizers: None registered.
Insecticides: None registered.
Fungicides: None registered.

Note: The above mixes are those listed on the bromoxynil labels only.
Bromoxynil manufacturers may also support mixes with pesticides that are not on the bromoxynil labels. Check with each manufacturer for the products they support. Mixes must be applied according to the most restrictive use limitations for all products added to the tank.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
**Rainfall:** Within 1 hour of application will reduce control.
**Re-entry:** DO NOT enter treated fields for 24 hours.
**Grazing:** DO NOT graze treated wheat, barley, oats, forage millet, sorgum or seedling alfalfa crops or cut for feed within 30 days of application.
DO NOT graze other treated crops or cut for hay prior to crop maturity.
**Re-cropping:** No restrictions.

**Aerial Application:** Registered for aerial application on wheat and barley. The use of low water volumes, 8 to 16 L per acre may result in less effective weed control than seen with ground application.

**Storage:** May be stored at freezing temperatures. Will return to original state by warming to room temperature (20 to 22°C) and agitating thoroughly.

**Buffer Zones:**

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres †)</th>
<th>Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Terrestrial habitat</td>
</tr>
<tr>
<td>Ground*</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Fixed wing aircraft**</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>Helicopter**</td>
<td>20</td>
<td>3</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy
**Wheat and barley crops only.
† Distance is measured from the downwind edge of the boom to sensitive areas.

**Sprayer Cleaning:**
Refer to page 15.

**Hazard Rating:**

**All:**

⚠️ Warning – Poison

**Brotex 240, Bromotril II:**

⚠️ Warning – Eye and Skin Irritant

**Koril 235:**

⚠️ Danger – Eye and Skin Irritant

Potential Skin Sensitizer

For an explanation of the symbols used here see page 11.
**Bromoxynil/2,4-D Ester**

**Company:**
- Bayer CropScience (Thumper)
- IPCO (Leader)
- ADAMA Canada (Thrasher II)
- Nufarm Agriculture (Approve)

**Formulation:**
- **Thumper (PCP#22659):** 280 g/L bromoxynil and 280 g/L 2,4-D ester formulated as an emulsifiable concentrate. Container size - 8 L.
- **Approve (PCP#28123), Leader (PCP#28853) & Thrasher II (PCP#30372):** 225 g/L bromoxynil and 225 g/L 2,4-D ester formulated as an emulsifiable concentrate. Container size - 10 L, 100 L*, 120 L**, 500 L*.
  * Approve only
  ** Thrasher II only

**Crops and Staging:**
Spring wheat (including durum) and barley at the 4 leaf to early flag leaf stage.
When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

**Weeds and Staging:**
- **Weeds controlled at the 1 to 4 leaf stage:**
  - American nightshade
  - Ball mustard
  - Bluebur
  - Cocklebur
  - Common ragweed
  - Cow cockle
  - Flixweed
  - Night-flowering catchfly
  - Redroot pigweed
  - Shepherd’s-purse
  - Smartweed (green, lady’s-thumb, pale)
  - Volunteer canola
  - Volunteer sunflower

- **Weeds controlled at the 1 to 8 leaf stage:**
  - Common groundsel
  - Lamb’s-quarters
  - Stinkweed
  - Tame buckwheat (up to 4 leaf stage with Approve)
  - Tartary buckwheat
  - Wild buckwheat
  - Wild mustard

**Weeds Controlled from 1 to 12 leaf (max. 2 inches tall):**
- Kochia
- Russian thistle

**Rates:**
- **Thumper:** 0.4 L per acre (one 8 L container treats 20 acres).
- **Approve, Leader or Thrasher:** 0.5 L per acre (One 10 L container treats 20 acres).

**Application Information:**
- **Water Volume:**
  - **Ground:** 20 to 40 L per acre.
  - **Aerial:** 12 to 16 L per acre. Use the higher volume when there is a heavy crop canopy, or when the majority of weeds are cow cockle, smartweed, or pigweed.

- **Nozzles and Pressure:** Use 40 psi (275 kPa) when using conventional 80° or 110° flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE coarse droplets. All strainer and nozzle screens must be 50 mesh or coarser.

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**
Less than acceptable weed control may be expected if weeds are under stress because of excessive moisture, drought, or cool weather.

**Tank Mixes:**
- **Herbicides:**
  - **In wheat (spring, durum) and barley:**
    - Liquid Achieve (0.2 L/acre) plus Turbocharge adjuvant
    - Puma Advance (label rates)*
  - **In wheat (spring, durum, winter):**
    - Varro (0.48 L/acre)*
  - **In wheat (spring, durum) only:**
    - Clodinafop 240EC (93 to 117 mL/acre)\(^\Delta\) plus adjuvant
  * **Thumper** only.
  \(^\Delta\) Manufacturers may only support specific mixes. Contact the manufacturer for more information.

**Herbicide Group**
- 4 - 2,4-D
- 6 - bromoxynil
(Refer to page 45)
Insecticides: None registered.
Fungicides: None registered.
Fertilizers: None registered.

Note: The above mixes are those listed on the Bromoxynil/2,4-D Ester labels only.

Bromoxynil/2,4-D ester manufacturers may also support mixes with pesticides that are not on the Bromoxynil/2,4-D ester labels. Check with each manufacturer for the products they support. Mixes must be applied according to the most restrictive use limitations for all products added to the tank.

Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information.

Re-Entry: DO NOT enter treated fields for at least 24 hours.

Grazing: DO NOT graze or cut for livestock feed within 30 days of application. Withdraw meat animals 3 days before slaughter.

Preharvest Interval: DO NOT harvest within 30 days of application.

Re-cropping: No restrictions the year after application.

Aerial Application: May be applied by air.

Storage: May be frozen. Shake well before using after being frozen.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres †)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground *</td>
<td>1</td>
</tr>
<tr>
<td>Fixed wing aircraft</td>
<td>20</td>
</tr>
<tr>
<td>Helicopter</td>
<td>20</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy. Hand-held or backpack sprayers, inter-row hooded sprayers and spot treatments are exempt from buffer zone requirements.

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:
Refer to page 15.

Hazard Rating:

All Products:

⚠️ Warning – Poison

⚠️ Caution – Skin and Eye Irritant

⚠️ Warning – Skin and Eye Irritant

⚠️ Potential Skin Sensitizer

For an explanation of the symbols used here see page 11.

Bromoxynil/MCPA ester

Company:
Bayer CropScience (Buctril M)
IPCO (Logic M)
Nufarm Agriculture (Mextrol 450)
ADAMA Canada (Badge II)

Herbicide Group
4 - MCPA
6 - bromoxynil
(Refer to page 45)

Formulation:

Buctril M (PCP#18022): 280 g/L bromoxynil and 280 g/L of MCPA ester formulated as an emulsifiable concentrate. Container size - 8 L.

Mextrol 450 (PCP#26999), Badge II (PCP#30370) & Logic M (PCP#28109): 225 g/L bromoxynil and 225 g/L of MCPA ester formulated as an emulsifiable concentrate. Container size - 10 L, 120 L (Badge II only). (Mextrol - 100 L, 500 L)
Crops and Staging:

Field Crops:

All Products:

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley, oats, spring wheat</td>
<td>2 leaf to early flag</td>
</tr>
<tr>
<td>(including durum)</td>
<td></td>
</tr>
<tr>
<td>Winter wheat</td>
<td>2 to 4 leaf stage in the fall or</td>
</tr>
<tr>
<td></td>
<td>after growth resumes up to early flag leaf</td>
</tr>
<tr>
<td>Fall rye</td>
<td>When growth commences in spring to early flag leaf</td>
</tr>
<tr>
<td>Canaryseed</td>
<td>3 to 5 leaf stage</td>
</tr>
<tr>
<td>Flax and Solin (low linolenic acid flax)</td>
<td>2 inches (5 cm) to early bud stage.</td>
</tr>
<tr>
<td></td>
<td>Best tolerance occurs when flax is 2 to 4 inches (5 to 10 cm) tall.</td>
</tr>
<tr>
<td>Corn</td>
<td>4 to 6 leaf stage</td>
</tr>
</tbody>
</table>

Seedling forage grasses\textsuperscript{1}:

2 to 4 leaf stage\textsuperscript{1}.

All Products:

Bromeegrass

Fescue (creeping red, meadow)

Reed canarygrass

Buctril M, Logic M and Badge only:

Fescue (tall)

Meadow bromeegrass

Meadow foxtail

Established Forage Grasses:

Timothy (seed\textsuperscript{1} or hay\textsuperscript{††})** - prior to emergence of the flag leaf.

† Maximum of two treatments per year at least 21 days apart.

†† Maximum of two treatments per year at least 90 days apart.

Perennial Cereal Rye\textsuperscript{*} (Buctril M only):

Established stands: 2 leaf up to early flag leaf stage.

Establishment year: 2 to 4 leaf stage in the fall, or from the time growth commences to early flag leaf stage in the spring.

* Since the use of this tank mix on perennial cereal rye is registered under the User Requested Minor Use Label Expansion program, the manufacturer assumes no responsibility for herbicide performance. Users of this tank mix on perennial cereal rye do so at their own risk.

** Applications onto Timothy for hay production registered with Buctril M, Logic M, and Mextrol 450 only.

Weeds and Staging:

Weeds up to 4 leaf stage:

American nightshade

Annual smartweeds (green, lady’s-thumb, pale)

Bluebur

Ball mustard

Cocklebur

Cow cockle

Flixweed

Kochia**

Night-flowering catchfly

Redroot pigweed*

Russian thistle**

Scentless chamomile***

Shepherd’s-purse

Volunteer canola

Volunteer sunflower

Weeds up to 6 leaf stage:

Wild tomato (Buctril M, Logic M & Badge II only)

Weeds up to 8 leaf stage:

Common groundsel

Common ragweed

Lamb’s-quarters

Stinkweed

Tame buckwheat

Tartary buckwheat

Wild buckwheat

Wild mustard

Wormseed mustard

Wormseed mustard

Weeds suppressed in winter wheat from the 2 to 12 leaf stage:

Prickly lettuce (All except Logic M)

Weeds where top growth is controlled:

Canada thistle

Perennial sow-thistle

Rate:

Buctril M: 0.4 L per acre. One 8 L jug treats 20 acres.

Mextrol 450, Badge II & Logic M: 0.5 L per acre.

One 10 L jug treats 20 acres.

Application Information:

Water Volume:

Corn: 80 to 120 L per acre.

Flax, Solin: 20 to 40 L per acre.

Cereals: 20 to 40 L per acre.

Seedling forage grasses: 60 L per acre.

Established timothy: 60 L per acre.

Perennial Cereal Rye: Not less than 20 L per acre.

Aerial: 8 to 16 L per acre.

Nozzles and Pressure: Use 40 psi (275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE coarse droplets.

Refer to specific labels for recommended water volumes.
How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Best weed control when humidity is high at the time of spraying and for the following day or two. Prolonged cool conditions may result in reduced weed control. Spraying during early morning may increase the risk of flax injury. Avoid spraying in temperatures greater than 25°C. DO NOT apply to flax, canaryseed or corn if daytime temperatures exceed 27°C within 48 hours before or after application.

Tank Mixes:
Herbicide Tank Mix Table:
Products listed below are at label rates for each crop. See labels for details.

<table>
<thead>
<tr>
<th>CROP &amp; TANK MIXES</th>
<th>Badge</th>
<th>Buctril M</th>
<th>Logic M</th>
<th>Mextrol 450</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flax (including Solin):</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poast Ultra + Merge adjuvant</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Clethodim + adjuvant</td>
<td>✓✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Spring wheat (including durum) and Barley:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquid Achieve</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Ally</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MCPA (amine, ester &amp; K)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Refine SG (4 g/acre)#</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cordon (label rates)</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Puma Advance (label rates)</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Puma Advance + Refine SG (rates above)</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Spring wheat (including durum):</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Everest 2.0 (label rates)</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varro (0.2 L/acre)</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Spring wheat only (NOT including durum):</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Axial BIA (0.48L/acre)</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Winter Wheat:
Refine SG (4 g/acre)# ✓

Oats:
MCPA (amine, ester & K) ✓ ✓ ✓ ✓ ✓

Corn:
Aatrex ✓ ✓ ✓ ✓ ✓

* Select only
** Select and Centurion only.
*** Buctril M only
# Requires the addition of a surfactant as per Refine SG.

Fertilizers: None registered.
Insecticides: None registered.
Fungicides: None registered.

Note: The above mixes are those listed on the bromoxynil/MCPA ester labels only.
Bromoxynil/MCPA manufacturers may also support mixes with pesticides that are not on the bromoxynil/MCPA labels. Check with each manufacturer for the products they support. Mixes must be applied according to the most restrictive use limitations for all products added to the tank.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Rainfall within 1 hour of application may reduce weed control.
Re-entry: DO NOT enter treated fields for at least 24 hours, or 15 days for corn to be harvested by hand.
Grazing: DO NOT graze treated grain or established timothy crops or cut for feed within 30 days of application. DO NOT graze meadow foxtail in the year of treatment. DO NOT graze other treated forage grasses within 56 days of treatment.
Preharvest Interval: DO NOT harvest perennial cereal rye within 30 days of application, or flax or solin within 60 days of application.
Re-cropping: No re-cropping restrictions the year after treatment.
Aerial Application: May be applied by air to wheat, barley, and oats only. Use higher water volume (see ‘Application Information’) when the majority of weeds are cow cockle, smartweed, hemp-nettle, pigweed, and Canada thistle.
Storage: May be frozen. Shake the container well when thawed to reconstitute components before use.
Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Crop</th>
<th>Buffer Zones (metres †) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground only*</td>
<td>All</td>
<td>1</td>
</tr>
<tr>
<td>Fixed wing aircraft</td>
<td>Oats</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Barley &amp; wheat</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Rye</td>
<td>1</td>
</tr>
<tr>
<td>Helicopter</td>
<td>Oats</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Barley &amp; wheat</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Rye</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

† Distance is measured from the downwind edge of the boom to sensitive areas.

Sprayer Cleaning:
Refer to page 15.

Hazard Rating:

**Badge II. Buctril M, Logic M:**

⚠️ Warning

**Mextrol 450**

⚠️ Danger – Poison

⚠️ Warning – Skin Irritant

⚠️ Potential Skin sensitizer

⚠️ Caution – Eye irritant

For an explanation of the symbols used here see page 11.

Casorone

Company:
Platform Specialty Products Canada (PCP#12533)

Formulation:
4% dichlobenil formulated as a granular.
Container size - 15 kg, 22.7 kg.

Crops:
Poplar plantations
Shelterbelts consisting of the following species:

<table>
<thead>
<tr>
<th>Ash</th>
<th>Juniper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barberry</td>
<td>Lilac</td>
</tr>
<tr>
<td>Birch (cutleaf-weeping)</td>
<td>Linden</td>
</tr>
</tbody>
</table>

Herbicide Group 20 - dichlobenil
(Refer to page 45)

Boxwood      Locust
Caragana     Maple
Cedar (White, Eastern Red) Mock orange
Crabapple    Poplar
Elm          Rose
Euonymus (Burning bush) Spirea
Forsythia    Willow
Honeysuckle

NOTE: DO NOT apply to shelterbelts with mugo pine, fir, hemlock, holly, spruce or other shallow rooted species or injury may result. DO NOT apply in or around greenhouses. DO NOT use on light sandy soils.
Weeds and Staging:
Apply in early spring or late fall prior to annual weed emergence, or after cultivation has removed existing weeds.

- Annual blugrass
- Artemisia (absinthe, wormwood, sage)
- Bindweed*
- Canada thistle*
- Chickweed
- Dandelion*
- Foxtail (green and yellow)
- Groundsel
- Horsetail
- Knotweed
- Kochia
- Lamb’s-quarters
- Loosestrife
- Mustard
- Nutsedge*
- Pigweed
- Plantain
- Purslane
- Quack grass*
- Sheep sorrel*
- Shepherd’s-purse
- Smartweed
- Sow-thistle
- Spurge
- Vetch*
- Wild buckwheat*

* Controlled with fall applications at the higher rates.

Rates:
45 to 70 kg per acre.
At the low rate, a 15 kg bag will treat a 4 yd by 407 yd (4 m by 340 m) strip of shelterbelt. At the high rate, a 15 kg bag will treat a 4 yd by 256 yd (4 m by 214 m) strip of shelterbelt. If application is followed by 0.5 to 1.0 inches (1.3 to 2.5 cm) of irrigation, the lower rates are recommended.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
DO NOT apply during periods of high soil temperatures (more than 15°C).

Tank Mixes:
None registered.

Restrictions:
Rainfall: Does not reduce activity.
Re-entry: DO NOT enter treated areas for at least 24 hours.
Grazing: DO NOT graze in treated area.
Aerial Application: DO NOT apply by air.
Storage: Store in a cool, dry place. DO NOT freeze.

Buffer Zones: Site characteristics and conditions that may lead to runoff include, but are not limited to, heavy rainfall, moderate to steep slope, bare soil, poorly draining soil (e.g., soils that are compacted, fine textured or low in organic matter). Avoid application of this product when heavy rain is forecast.

Equipment Cleaning:
Refer to page 15.

Hazard Rating:
No specific rating. Keep out of reach of children.
Harmful if swallowed.
Avoid skin or eye contact.
**CleanStart**

**Company:**
Nufarm Agriculture

**Formulation:**
One case of CleanStart contains 2 components:
- **Credit (PCP#25866):** 356 g/L glyphosate formulated as a solution.
- **Aim (PCP#28573):** 240 g/L carfentrazone formulated as an emulsifiable concentrate.

Container size - 2 x 10 or 450 L.

**Crops and Staging:**
Prior to the seeding of most crops* including the following:
- Barley
- Beans, dry
- Buckwheat
- Canola
- Chickpea
- Corn
- Fababean
- Flax
- Lentil
- Millet (pearl and proso)
- Mustard
- Oats
- Peas, field
- Potato*
- Rye
- Safflower
- Sorghum
- Soybean
- Sunflower
- Triticale
- Wheat

*Note – before using any pesticide on potatoes, consult the list of "Agricultural Pesticides Approved for Use", available from Simplot Canada and McCain Foods (Canada).

**Harvest Aid Treatment:**
CleanStart may be applied to the following crops when seed is at least 30% moisture to speed the rate of dry-down of the following crops and green weedy material. See glyphosate preharvest uses for additional staging information.

**Weeds, Rates and Staging (Pre-seeding):**
- **Credit** 0.5 to 1.0 L per acre plus Aim at 15 to 30 mL per acre (40 to 20 acres per case or 900 to 450 acre bulk): **Weeds controlled by glyphosate at the above rates plus rapid burnoff of:**
  - Chickweed
  - Tansy mustard
  - Dandelion (spring seedlings only)
  - Volunteer canola (including all herbicide tolerant varieties)*
  - Shepherd’s-purse
  - Kochia (including glyphosate resistant biotypes**)

Apply to actively growing weed up to 10 cm in height.
- 1 to 3 leaf stage for glyphosate tolerant volunteer canola
- Use highest registered rate to control glyphosate resistant kochia.

Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

**Application Information:**
- **Water Volume:** Minimum 40 L per acre. Higher water volumes will give better performance from the carfentrazone active. Use higher volumes when weed populations are dense.
- **Nozzles & Pressure:** Sprayers without drift reduction nozzles should use maximum pressure of 30 psi (210 kPa). Low drift nozzles may require higher pressures for proper performance. Apply using nozzle and pressure combination that deliver an even spray pattern with good coverage with ASABE medium droplets.

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**
Most effective control is achieved when grasses are actively growing. Weeds stressed by drought, flooding, hot or prolonged cool temperatures (<15°C) and poor fertility are more difficult to control. Symptoms of carfentrazone activity on weeds may be accelerated by warm moist conditions. Weeds hardened off by drought may be more difficult to control.

**Tank Mixes:**
- **Herbicides:**
  - Credit (glyphosate) (g ae/acre)†
  - Aim (mL/acre)
  - Acres per case
- **Barley, chickpea, dry bean, field pea, oats, wheat,** 360*** 30 20

* DO NOT apply to crops if grown for seed purpose.
† See the glyphosate page for equivalent product rates.

**Herbicide Group**
- 9 - glyphosate
- 14 - carfentrazone

(Refer to page 45)
Restrictions:
Rainfall: Rainfall within 6 to 8 hours after application may reduce activity. Avoid application when heavy rainfall is forecast.
Re-Entry: DO NOT re-enter treated fields for at least 12 hours.
Preharvest Interval: Leave a minimum of 3 days between harvest aid treatment and harvest.
Grazing: DO NOT graze the treated crop or cut for feed.
Re-cropping: CleanStart may be applied as a preseed burnoff prior to the seeding of most crops. Check the product label for a complete list. There are no rotational restrictions 12 months after application.
Aerial Application: DO NOT apply by air
Storage: Store in a cool dry location.
Buffer Zones: Leave a buffer of 3 meters from the downwind edge of the boom to sensitive upland habitats. Apply near wetlands only when wind is blowing away from wetlands.
Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

Sprayer Cleaning:
Refer to ‘Method A’ in the general section on sprayer cleaning on page 15-16.

Hazard Rating:
Caution – Skin and Eye Irritant
For an explanation of the symbols used here see page 11.

Company:
Arysta LifeScience (Select - PCP#22625)
Bayer CropScience (Centurion - PCP#27598)
ADAMA Canada (Arrow - PCP#28224)
Loveland Products Canada (Shadow RTM - PCP#29277)

Formulation:
240 g/L clethodim formulated as an emulsifiable concentrate. Container size - 3 L clethodim + 9 L adjuvant.

Crops, Rates and Staging:
Crops are tolerant at all growth stages although maximum rates but Preharvest Intervals must be observed to prevent excess residue in the grain (see ‘Restrictions.’).
**Weeds, Rates and Staging:**

DO NOT apply more than a total rate of 150 mL per acre of these products, or other products containing clethodim, to the same field per season.

**Adjuvants:** Clethodim products must be applied with 0.5 L of Amigo adjuvant (Centurion, Shadow RTM or Select) or X-ACT adjuvant (Arrow) per 100 L of spray solution (unless otherwise indicated on the label). For spray water sources high in bicarbonate ions (CO₃⁻) see ‘Effects of Growing Conditions’ section below.

Refer to the product labels for complete mixing instructions. A general guide to mixing can be found on page 14.

<table>
<thead>
<tr>
<th>WEED</th>
<th>RATE (mL/ACRE)</th>
<th>ACRES TREATED PER 3 L CONTAINER</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barnyard grass, foxtail (green, yellow)<em>†, proso millet, volunteer cereals (barley</em>†, canary seed, corn, oat*†, wheat*†), wild oat†</td>
<td>50**</td>
<td>60</td>
<td>Apply at 2 to 6 leaf stage. † Apply at the 2 to 4 leaf stage when treated with the 60 acre rate. For best results in either case, apply at the 2 to 3 leaf stage</td>
</tr>
<tr>
<td>Moderate to heavy infestations of the above grasses, plus Persian darnel</td>
<td>75</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Quackgrass (suppression only)</td>
<td>75</td>
<td>40</td>
<td>2 to 6 leaf stage when 3 to 6 inches (6 to 15 cm) tall. For best results, apply at the 3 to 5 leaf stage</td>
</tr>
<tr>
<td>Quackgrass (season long control)</td>
<td>150***</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

* Apply to light infestations of these weeds only for the 60 acre per jug rate. The manufacturers do not provide guidelines for weed densities under light infestations. When in doubt as to the level of weed infestation, use the higher rate or contact the manufacturer.

** At this rate, clethodim should NOT be tank mixed with any other pesticide and should only be applied under the following growing conditions: good crop stand, within the recommended leaf staging (2 to 3 leaf is optimum timing) prior to tillering, light weed infestations, adequate moisture and fertility, absence of stress, and good growing conditions.

*** Apply with 1 L of adjuvant per 100 L of spray solution (Amigo adjuvant with Centurion, Shadow RTM and Select, X-ACT adjuvant with Arrow).

Refer to the product labels for complete mixing instructions. A general guide to mixing can be found on page 14.
Application Information:

Water Volume:

**Ground:** 20 to 40 L per acre. Use 40 L per acre under dense weed infestations or dense crop canopies.

**Aerial:** Minimum of 11.3 L/acre.

Nozzles and Pressure: Use 40 psi (275 kPa) when using conventional 80° flat fan nozzles tilted forward at a 45° angle. Low drift nozzles may require higher pressures for proper performance. Use nozzles and pressure designed to deliver proper coverage with ASABE medium droplets or larger.

How it Works:

Refer to Table 2 on page 47.

Effects of Growing Conditions:

Clethodim will be less effective when plants are stressed by lack of moisture, excessive moisture, low temperature and/or very low relative humidity. Regrowth of tillers may occur if application is made under any of the above stress conditions.

Clethodim activity is reduced by levels of bicarbonate ions in spray water equal to or greater than 500 ppm. The addition of ammonium sulphate at 1.6 L/acre (480 g/L liquid) or 0.8 kg/acre (99% dry), or the addition of 28-0-0 liquid fertilizer at 0.5 L per acre to the tank prior to the addition of clethodim has been shown to restore control.

Tank Mixes:

Clethodim may be tank mixed with other pesticides at the 75 to 150 mL per acre rates. Add the recommended amount of adjuvant with all tank mixes unless otherwise indicated.

Herbicides:

**In flax (not including solin):**

- Bromoxynil/MCPA ester (label rates)
- Curtail M (0.6 to 0.8 L/acre)
- MCPA ester (rates for flax).
- Lontrel at 0.23 to 0.34 L/acre.

**In Solin (low linolenic flax):**

- Bromoxynil/MCPA ester (label rates)
- Curtail M (0.6 to 0.8 L/acre)
- Lontrel at 0.23 to 0.34 L/acre.

**In canola:**

- Lontrel at 0.17 to 0.34 L/acre
- Muster at 8 to 12 g/acs (redroot pigweed is controlled at the 8 g/acre rate of Muster in this tankmix).

**In Clearfield canola only:**

- Pursuit at 42 to 85 mL/acres

**In Liberty Link canola only:**

- Liberty at 1.1 to 1.35 L/acre plus clethodim at 25.5 mL/acre (120 acres/case) plus 0.5 L of the recommended adjuvant per 100L of spray solution. When mixing add adjuvant to the water first, then Liberty, then clethodim. Consult labels for detailed mixing instructions.

**In field peas:**

- Pursuit (85 mL/acre)

**In Glyphosate tolerant soybean:**

- Glyphosate (360 to 720 g ae/acre)
  - Light infestations only in Clearfield canola. For heavy infestations, use high rate of Pursuit.
  - Apply with the 75 mL/acre rate of clethodim only.
  - Manufacturers may only support specific mixes. Contact the manufacturer for more information.

- Arrow only.

Allow 4 days between application of clethodim and any other chemical not recommended as a tank mix combination on the label.

**Fertilizer:** None registered.

**Insecticide:** None registered.

**Fungicides:** None registered.

**Note:** The above mixes are those listed on the clethodim labels only.

Clethodim manufacturers also support mixes with pesticides that are not on the clethodim labels.

**Herbicides:** Liberty 150 (clethodim rates of 50 mL/acre)

Check with each manufacturer for other products they support. Mixes must be applied according to the most restrictive use limitations for all products added to the tank. Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:

**Rainfall:** Within 1 hour may reduce control.

**Re-Entry:** DO NOT enter treated fields for 12 hours.

**Grazing:** DO NOT graze or cut treated crops for forage until 60 days after application of clethodim to annual crops, and 30 days after application to seedling alfalfa.

**Preharvest Interval:**

<table>
<thead>
<tr>
<th>Preharvest Interval (days)</th>
<th>CROP(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>Alfalfa, fenugreek</td>
</tr>
<tr>
<td>60</td>
<td>Canola, coriander, dry beans, flax (including Solin), lentils, potatoes, chickpeas (Desi and Kabuli) or mustard (brown, yellow, oriental)</td>
</tr>
<tr>
<td>72</td>
<td>Sunflower</td>
</tr>
<tr>
<td>75</td>
<td>Soybeans, field peas</td>
</tr>
</tbody>
</table>

**Aerial Application:** Only Centurion, Shadow RTM and Select may be applied by air in canola, chickpea, dry bean, flax, field pea, lentil, mustard, potato, soybean, sunflower only.
**Storage:** May be stored at any temperature. Shake well before use.

**Other:** DO NOT apply more than 0.15 L per acre to the same land area per season.

**Buffer Zones:**

<table>
<thead>
<tr>
<th>Application Method</th>
<th>Crops</th>
<th>Buffer Zones (metres †) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground</td>
<td>All Crops</td>
<td>15 Terrestrial habitat</td>
</tr>
<tr>
<td>Aerial</td>
<td>Desi and Kabuli chickpeas, dry common beans</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Other Registered Crops</td>
<td>20</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

**Sprayer Cleaning:**

Refer to ‘Method B’ in the general Sprayer Cleaning section on page 15-16.

**Hazard Rating:**

*Select, Shadow and Centurion:*

⚠️ **Warning – Skin and Eye Irritant**

*Arrow:*

⚠️ **Caution – Skin and Eye Irritant**

For an explanation of the symbols used here see page 11.

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**Clever** *(this referring text to be removed in the 2018 edition)*

See quinclorac on page 278.
**Company:**
ADAMA Canada  
(Ladder - PCP#29495; ADAMA Adjuvant 80 PCP#30419)

AgriStar  
(Slam’R - PCP#30137; Slam’R COC Adjuvant - PCP#30138)

Arysta LifeSciences  
(NextStep NG - PCP#29614, built in adjuvant)

E. I. duPont Canada  
(Harmony Grass 240 EC - PCP#31689; Harmony Adjuvant - PCP#31690)

Farmers of North America  
(Aurora - PCP#29711; Chem-Spray COC Adjuvant - PCP#29712)

FMC of Canada  
(Bullwhip - PCP#30445; XA Oil Concentrate Adjuvant - PCP#11769)

Great Northern Growers  
(Foax - PCP#31261; MANA 8317 Oil Concentrate - PCP#30030)

Loveland Products Canada  
(Foothills NG - PCP#30341; built in adjuvant)

Nufarm Agriculture  
(Signal - PCP#29172; Enhance Adjuvant-PCP#29952)

Syngenta Canada  
(Horizon NG - PCP#29089; built in adjuvant)

* This product is no longer manufactured but some product still remains in the retail system. This product may not be in future editions.

**Formulation:**
Aurora, BullWhip, Foax, Harmony Grass 240EC, Ladder, Signal, Slam’R: 240 g/L clodinafop-propargyl formulated as an emulsifiable concentrate.

Container size** - 3.68 L, 11 L, 14.72L, 18.4 L, 2 x 11.04 L, 58.9 L.

MANA 8317 Oil Concentrate, Slam’R COC and XA Oil Concentrate Adjuvants: 2 x 6.4 L.

Enhance Adjuvant: 4 L, 16 L, 64 L.

ADAMA Adjuvant 80, Harmony Adjuvant: 4 L; 12 L

Horizon NG*, Foothills NG*, NextStep NG*: 60 g/L clodinafop-propargyl formulated as an emulsifiable concentrate.

Container size** - 2 x 7.57 L, 121.1 L or 424.4 L (not available for Horizon NG).

* These products have a built in adjuvant system and does not require the addition of an adjuvant.

** Package size availability varies by company. Not all sizes may be available from each company.

**Herbicide Group**

1 - clodinafop  
(Refer to page 45)

**Crops and Staging:**
Spring wheat (including durum) - prior to the emergence of the 4th tiller.
When tank mixing, check broadleaf product description for additional restrictions.

**Weeds, Rates and Staging:**

**NG Formulations:** 376 mL per acre, no additional adjuvant required (packages listed above treats 40, 322 or 1129 acres).

- **240EC Formulations:** 93 mL per acre plus recommended adjuvant at 0.8 L per 100 L spray solution. For Signal only add Enhance adjuvant, for Ladder add ADAMA Adjuvant 80, or for Harmony Grass 240EC add Harmony Adjuvant, at 0.25 L per 100L spray solution).

**For control of:**

<table>
<thead>
<tr>
<th>WEED</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barnyard grass</td>
<td>1 to 5 leaf prior to tillering</td>
</tr>
<tr>
<td>Green and yellow foxtail</td>
<td>1 to 5 leaf stage, prior to emergence of 3rd tiller</td>
</tr>
<tr>
<td>Volunteer canaryseed, wild oats</td>
<td>1 to 6 leaf, maximum 3 tillers</td>
</tr>
<tr>
<td>Volunteer oats</td>
<td>3 to 6 leaf, maximum 3 tillers</td>
</tr>
</tbody>
</table>

**NG Formulations:** 474 mL per acre, no additional adjuvant required (package sizes above treats 32, 258 or 903 acres):

- **240EC Formulations:** 115 mL per acre plus recommended adjuvant at 1.0 L per 100 L spray solution of the recommended adjuvant. For Signal only add Enhance adjuvant, for Ladder add ADAMA Adjuvant 80, or for Harmony Grass 240EC add Harmony Adjuvant, at 0.32 L per 100L spray solution).

**For control of:**

<table>
<thead>
<tr>
<th>WEED</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persian darnel</td>
<td>1 to 5 leaf prior to tillering</td>
</tr>
</tbody>
</table>

Apply at the 2 to 3 leaf stage for optimum control.
Optimum weed control and yield response occurs when weeds are controlled before tillering.
Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

**Application Information:**

**Water Volume:**
Ground – 20 L to 40 L per acre.
Aerial – 12 L/acre.
Nozzles and Pressure: 40 to 45 psi (275 to 310 kPa) when using conventional 80° or 110° flat fan stainless steel nozzles tilted forward at an angle of 45°. Low drift nozzles may require higher pressures for proper performance.

Consult with herbicide manufacturer regarding the suitability of low drift nozzles for use with this product.

Tank Mixes:
Mixes provide control of wild oat, green foxtail, and weeds/insects controlled by the tank mix partner unless otherwise noted.

Herbicides:

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Aurora</th>
<th>BullWhip</th>
<th>Foxt</th>
<th>Harmony Grass 240EC</th>
<th>Ladder</th>
<th>NG Formulations</th>
<th>Nufarm Clodinafop</th>
<th>Signal</th>
<th>Slam’R</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2,4-D amine</strong> (160 to 212 g ae/acre)**††</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Bromoxynil #</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Bromoxynil/MCPA**•** #</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Bromoxynil/2,4-D (label rates)</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Curtail M (0.6 to 0.81 L/acre)</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Dichlorprop/2,4-D (0.71 L/acre)**</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>DyVel (0.4 to 0.50 L/acre)</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Lontrel 360 (0.17 to 0.34 L/acre)</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Lontrel 360 (0.11 to 0.17 L/acre) + MCPA ester (0.45 L/acre)**††</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>MCPA 600 amine or 600 ester**†† (0.34 to 0.45 L/acre)</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>MCPA Sodium Salt (0.48 to 1.09 L/acre)*</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Mecoprop-p (2.2 to 2.8 L/acre)</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Metsulfuron (3 g/acre)**†† #</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Pulsar (80 acres / case)</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Pulsar + MCPA Ester (rates above)</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Refine SG (12 g/acre)††† or (N = Nimble (8 g/acre)††† #</td>
<td>N</td>
<td>N</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Target (0.4 to 0.6 L/acre)**</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Trophy (20 acres per case)</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

Refer to the broadleaf herbicide label for crop staging, and other information. When tank mixing clodinafop 240 EC, always add the broadleaf herbicide first, followed by clodinafop, with the adjuvant added last. Reductions in green foxtail and wild oat control may be observed when tank mixed with 2,4-D amine and MCPA amine.

Insecticides: Matador (25 to 33 mL/acre).◊
Fungicides: Tilt (0.1 L† to 0.2 L/acre).◊
Fertilizers: None registered.
Clodinafop may also be mixed with Matador plus Tilt at the rates above.◊

# Check product label for specific tank mix partners and appropriate rates
Δ NOT for use with Estaprop XT or Dichlorprop DX.
* Rate above 0.81 L/acre may cause crop injury.
** Barnyard grass also controlled.

Legend continued on next page.
*** Barnyard grass and Persian darnel also controlled. May be applied by air.
†† See 2,4-D page for equivalent formulation rates.
††† Additional adjuvants are not required.
♦ All products except Aurora

**Note:** The above mixes are those listed on the clodinafop labels only.
Clodinafop manufacturers may also support mixes with pesticides that are not on the clodinafop labels. Check with each manufacturer for the products they support. Mixes must be applied according to the most restrictive use limitations for all products added to the tank.
Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**
For optimum results, apply to actively growing weeds. Do not apply to crops or weeds that are stressed by hot or cool conditions, frost, drought, low fertility, water-saturated soil, disease or insect damage as crop injury and poor weed control may result.

**Restrictions:**

Rainfall: Within 30 minutes may reduce control.
Re-entry: DO NOT enter treated fields for at least 12 hours.
Grazing: DO NOT graze or harvest treated crops for forage within 3 days of application.
Preharvest: Leave at least 60 days from application to harvest.
Re-cropping: No restrictions in the year following treatment.
Storage: May be frozen.
Aerial Application: May be applied by air.

**Buffer Zones:**

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres †)</th>
<th>Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Aquatic Habitats</td>
</tr>
<tr>
<td>Ground *</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Aerial</td>
<td>72</td>
<td></td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

**Sprayer Cleaning:**
Refer to 'Method B' in the general tank cleaning section on page 15 to 16. If mixed with other pesticides, the cleaning method above should be combined with the method recommended for the tank mix partner if different from above.

**Hazard Rating:**
240EC formulations:

⚠️ Caution – Poison
⚠️ Warning – Eye and Skin Irritant

NG formulations:

⚠️ Caution – Eye and Skin Irritant

All except Ladder:

⚠️ Warning – contains the allergen soy.

For an explanation of the symbols used here see page 11.
Conquer

This product is a prepackaged tank mix of bromoxynil (page 116) and Aim (page 87). Information listed is restricted to Crop, Weeds, Rates and Tank mixes. For other detailed restrictions and other general information on the component products see the product pages listed above.

Company:
Nufarm Agriculture

Formulation:
The Conquer package contains the following components:
Aim (PCP#28573): 240 g/L carfentrazone formulated as an emulsifiable concentrate.
Container size – 2 x 600 mL
Koril 235 (PCP#25341): 235 g/L bromoxynil formulated as an emulsifiable concentrate.
Container size - 2 x 9.71 L

Crops and Staging:
Apply prior to the seeding of canola

Rates
Aim: 15 mL/acre
Koril 235: 243 mL/acre
One case treats 80 acres

Weeds and Staging:
Weeds controlled by Aim and bromoxynil plus:
Volunteer canola - fully expanded cotyledon to the 4 leaf stage

Tank Mixes:
Herbicides:
Glyphosate (label rates)

See component products for more information on restrictions application details and handling. Use the most limiting restrictions across all components for the mix.
**Curtail M**

**Company:**
Nufarm Agriculture (PCP#30194)

**Formulation:**
50 g/L clopyralid and 280 g/L MCPA ester formulated as an emulsifiable concentrate.
Container size - 8 L, 112 L, 960 L.

**Crops and Staging:**
Apply at the 3 leaf to just before the flag leaf stage of the following crops:

- Barley
- Canaryseed*
- Oat
- Flax and Solin (low linolenic acid flax) at 2 to 6 inches (5 to 15 cm) height.

*NOTE: Since these uses are registered under the User Requested Minor Use Label Expansion (URMULE) program, the manufacturer assumes no responsibility for herbicide performance. Those who apply these uses do so at their own risk.

When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

**Weeds, Rates and Staging:**
The following weeds are controlled at the 1 to 4 leaf stage unless specified:

**At 0.61 L per acre (8 L jug treats 13 acres):**
- Burdock
- Canada thistle (low infestations)***
- Cocklebur
- Field horsetail†
- Flixweed**
- Lamb’s-quarters
- Plantain†
- Prickly lettuce
- Ragweed
- Shepherd’s-purse**
- Stinkweed**
- Sunflower (annual)
- Volunteer sunflower
- Wild mustard
- Wild radish
- Vetch

**At 0.81 L per acre (8 L jug treats 10 acres) the above weeds and:**
- Annual sow-thistle
- Canada thistle (medium to high infestations)***
- Common groundsel
- Dandelion*
- Kochia (suppression only)**
- Perennial sow-thistle†
- Redroot pigweed
- Russian pigweed
- Scentless chamomile**
- Smartweed
- Tartary buckwheat
- Volunteer canola
- Wild buckwheat

* Spring rosettes only.
** 2 to 4 leaf stage, (spring seedlings only for winter annual weeds).
*** Season long control, some regrowth may occur in the fall. Apply from the 4 inch (10 cm) to prebud stage.
† Top growth control only.

**Application Information:**

**Water Volume:**
- Canary seed and timothy: 40 to 80 L per acre
- All other crops: 40 to 60 L per acre.

**Nozzles & Pressure:** Use 30 to 40 psi (200 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Select the nozzle and pressure combination that produces of ASABE coarse droplets while maintaining good coverage of foliage. Flat fan tips tilted forward at a 45° angle are recommended in flax.

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**
When weeds are stressed because of drought, flooding, hot or cool (less than 15°C) temperatures, weeds are not actively growing and control may be reduced. DO NOT apply to weeds stressed longer than 20 days from lack of moisture as poor control can result.

**Tank Mixes:**
Curtail M at 0.81 L per acre should be used in all tank mixes unless otherwise indicated. See labels for adjuvant rates.
Weed Control

Herbicides:
In spring wheat (including durum) and barley:
Achieve Liquid (0.20 L/acre) plus Turbocharge adjuvant
Assert (0.52 to 0.64 L/acre) plus water pH adjuster
Check product labels for additional crop staging restrictions.
Fertilizers: None registered.
Insecticides: None registered.
Fungicides: None registered.
Note: The above mixes are those listed on the Curtail M label only.
Nufarm Canada supports the following mixes not found on the label. Apply mixes according to the most restrictive use limitations for either product:
Wheat Including Durum and Barley: Assert 300SC, Achieve Liquid, Nufarm Tralkoxydim
Wheat (NOT Durum) and Barley: Axial BIA
Wheat (NOT Durum): Varro, Everest 2.0, Signal, Fenoxaprop, Traxos, Simplicity
Flax: Poast Ultra, clethodim (Select/Centurion only)
Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Within 6 hours will reduce control.
Re-entry: DO NOT enter treated fields for at least 12 hours.
Grazing: DO NOT graze treated fields or cut for hay within 7 days of application.
Preharvest Interval: Leave 60 days between application and harvest.
Re-cropping: Wheat, barley, oats, rye, corn, flax, canola, forage grasses and mustard may be planted the year after application. DO NOT under-seed crops to forage legumes the year after treatment. DO NOT seed to field peas for at least 10 months following treatment. Very dry soil conditions following application can result in a risk of injury to field peas grown in rotation. If severe drought conditions are experienced during the months of June to August inclusive in the year of application delay seeding field peas an additional 12 months (22 months following application). Contact your local Nufarm Agriculture Inc. representative or retailer for more information before seeding field peas following drought conditions in the previous year.
DO NOT sow any other crops until the second year after application. Apply manure bedded with straw from treated crops only to the crops listed above.
Aerial Application: DO NOT apply by air.
Storage: Store in a cool (above 5°C), dry area. If product is frozen, bring to room temperature and agitate before use.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres$\dagger$) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground only*</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
$\dagger$ Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.
Spray when winds are under 16 km/hr, but not dead calm.

Sprayer Cleaning:
Refer to page 15.

Hazard Rating:

\[\text{Caution – Poison}\]

\[\text{Caution – Eye Irritant}\]

For an explanation of the symbols used here see page 11.

Dicamba

Company:
BASF Canada (Banvel II) (Banvel VM - distributed by Engage Agro)
Gharda Chemicals (Oracle, VMD 480 Dicamba, Hawkeye Power - distributed by Adjuvants Plus)

Herbicide Group
4 - dicamba
(Refer to page 45)

Formulation:
Banwell II (PCP#23957), Banvel VM (PCP#29249): 480 g/L dicamba formulated as a solution of a diglycolamine salt.
Oracle (PCP#26722), VMD 480 Dicamba (PCP#29251), Hawkeye Power (PCP#29223): 480 g/L dicamba formulated as a solution of a dimethylamine salt.
Container sizes - 2 x 10 L jugs.
Crops, Rates and Staging:
Banvel II, Oracle, Hawkeye Power and VMD 480 Dicamba are registered for all of the uses below. Banvel VM is only registered for pasture and rangeland uses below.

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
<th>RATE</th>
<th>Acres per 10 L</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(mL per acre)</td>
<td></td>
</tr>
<tr>
<td>Spring wheat*</td>
<td>2 to 5 leaf.</td>
<td>93 to 117</td>
<td>107.5 to 85</td>
</tr>
<tr>
<td>Barley*</td>
<td>2 to 5 leaf.</td>
<td>93 to 117</td>
<td>107.5</td>
</tr>
<tr>
<td>Oats*</td>
<td>2 to 5 leaf.</td>
<td>93 to 117</td>
<td>107.5 to 85</td>
</tr>
<tr>
<td>Canaryseed*</td>
<td>3 to 5 leaf.</td>
<td>117</td>
<td>85</td>
</tr>
<tr>
<td>Winter wheat*</td>
<td>In spring 6 to 10 inches (15 to 25 cm) - prior to flag leaf</td>
<td>93 to 117</td>
<td>107.5 to 85</td>
</tr>
<tr>
<td>Spring rye*</td>
<td>2 to 3 leaf</td>
<td>93 to 117</td>
<td>107.5 to 85</td>
</tr>
<tr>
<td>Corn, field</td>
<td>Broadcast up to 8 inches (20 cm). When higher, use drop-nozzles.</td>
<td>243 to 505</td>
<td>41 to 20</td>
</tr>
<tr>
<td>Corn, field + 2,4-D</td>
<td>Apply no later than 2 weeks prior to tassel emergence and prior to 20 inches (50 cm).</td>
<td>117</td>
<td>85</td>
</tr>
<tr>
<td>Red fescue (for seed production)</td>
<td>Seedling: 2 inches (5 cm) tall. Established: up to the flag leaf stage.</td>
<td>243</td>
<td>41</td>
</tr>
<tr>
<td>Pastures</td>
<td>Established and actively growing</td>
<td>850 to 1,480 (0.85 to 1.48 L)</td>
<td>11.7 to 6.8</td>
</tr>
<tr>
<td>Seedling grasses (for seed and forage production): Fescue (creeping red, meadow, tall), Meadow foxtail, Orchardgrass, Smooth bromegrass, Timothy, Wheatgrass (crested, intermediate, pubescent, slender, streambank, tall)</td>
<td>2 to 4 leaf</td>
<td>93 to 117</td>
<td>107.5 to 85</td>
</tr>
<tr>
<td>Fall stubble</td>
<td>Apply according to weed stage.</td>
<td>1000 (1.0 L)</td>
<td>10</td>
</tr>
<tr>
<td>Fall stubble + glyphosate</td>
<td>Apply according to weed stage.</td>
<td>500</td>
<td>20</td>
</tr>
<tr>
<td>Pre-seeding cereals</td>
<td>Apply according to weed stage.</td>
<td>127</td>
<td>79</td>
</tr>
<tr>
<td>Chemfallow + 2,4-D</td>
<td>Apply according to weed stage.</td>
<td>93 to 117</td>
<td>107.5 to 85</td>
</tr>
<tr>
<td>Chemfallow + glyphosate</td>
<td>Apply according to weed stage.</td>
<td>117 to 243</td>
<td>85 to 41</td>
</tr>
</tbody>
</table>

* Should be mixed with a tank mix partner for broad spectrum control

Weeds, Rates and Staging:
Apply to annual broadleaf weeds at the 2 to 3 leaf stage and to winter annual rosettes up to 2 in. (5 cm) across.

**Dicamba applied alone at 93 to 117 mL per acre will control:**
- Cleavers (high rate only)
- Cow cockle
- Corn spurry
- Canada thistle*
- Perennial sow-thistle*
- Smartweed (green, lady’s-thumb)
- Tartary buckwheat
- Wild buckwheat
- Canada thistle**
- Canada fleabane
- Field bindweed**
- Lamb’s-quarters
- Mustard (hare’s-ear, Indian, tumble, wild, wormseed)
- Perennial sow-thistle**
- Pigweed (redroot, Russian)
- Ragweed (common, false, giant)

**Dicamba at 243 to 505 mL per acre will control:**
- Weeds listed above plus
Dicamba at 0.85 L per acre in rangeland or 1.0 L per acre in fallow will control:
Weeds listed above plus:
- Curled dock*
- English daisy
- Goldenrod
- Tansy ragwort

Dicamba at 1.86 L per acre will control:
Weeds listed above plus:
- Diffuse knapweed
- Goat’s-beard
- Ground cherry
- Pasture sage
- Povertyweed
- Sheep sorrel
- Thyme-leaved spurge

* Top growth only.
** Three consecutive years of treatment are required for complete control.

The following chart indicates weed and brush controlled by dicamba + 2,4-D mixes at the listed rates.

<table>
<thead>
<tr>
<th>WEEDS</th>
<th>RATE (L/acre)†</th>
<th>RATE (L/1000 L of water)‡</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dicamba</td>
<td>2,4-D (600 g/L forms)</td>
</tr>
<tr>
<td>Poison ivy</td>
<td>0.67</td>
<td>0.76</td>
</tr>
<tr>
<td>Wild carrot</td>
<td>0.85</td>
<td>0.76</td>
</tr>
<tr>
<td>Aspen poplar</td>
<td>1.48</td>
<td>1.52</td>
</tr>
<tr>
<td>Prickly rose, western snowberry†††</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alder, aspen poplar, cherry, western snowberry, willow, wild rose</td>
<td>0.85</td>
<td>1.33</td>
</tr>
</tbody>
</table>

† Applied by broadcast sprayer.
‡ Apply to the foliage and stems to the point of run-off using high volume equipment.
††† Ester formulations of 2,4-D only.

Canada thistle, Perennial sow-thistle in fallow: Apply prior to the bud stage. Must be applied to thistle plants with 6 to 10 inches (15 to 25 cm) of new growth.

Canada thistle control in fall after harvest: When thistles exhibit new growth and at least 2 weeks prior to a killing frost.

Refer to label for full lists of weeds controlled by dicamba plus tank mixes in cereals, pastures, fallow and other situations.

When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

Brush control in pastures: When brush is actively growing and is 6 feet (2 m) in height or less (in spring or early summer). Growth greater than 2 meters may be cut and allowed to regrow prior to treatment.

Application Information:
Water Volume:
- Preseeding burnoff: 20 to 45 L per acre.
- Annual crops: at least 45 L per acre.
- Pastures, fallow and stubble: 45 to 90 L per acre.
- Corn: 90 to 140 L per acre.

Brush: high volumes to the point of run-off.

Nozzles and Pressure:
Broadcast application: Maximum 40 psi (275 kPa) with conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver even coverage of ASABE coarse droplets.

Brush Control: Use high volume spray equipment producing large droplets including, but not limited to, hand-wand, boomless nozzle and Radi-Arc technologies.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Crop damage (stunting, reduced seed set) can occur if the chemical is applied at any time other than the recommended stage. DO NOT apply to crop under stress from adverse environmental conditions, such as excess moisture, drought and disease. Apply when air temperature is between 10 and 25°C.

DO NOT apply:
- when there is a risk of severe temperature fall in the night;
- under high humidity, temperatures above 30°C, or fog conditions, to prevent drift to sensitive crops;
- when wind is blowing toward a nearby sensitive crop;
- when winds are gusty up to 5 mph (8 km/hr).

Tank Mixes:
Herbicides:

<table>
<thead>
<tr>
<th>Herbicides</th>
<th>Spring wheat</th>
<th>Winter wheat</th>
<th>Barley</th>
<th>Oats</th>
<th>Seedling grasses</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,4-D Amine</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>160 g ae/L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCPA Amine</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>(0.34 L/acre)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCPA K</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>(0.44 L/acre)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sencor</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>(0.11 to 0.17 L/acre)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ally (2 g/acre)</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In Canaryseed: MCPA amine (0.34 L/acre - 500 g ai/L formulation)
In Corn, Spring rye: 2,4-D amine (160 g ae/acre)
In Corn (Banvel II only): Accent (13.5 g/acre) plus non-ionic surfactant
Option 35DF (40 g/acre) plus Hasten adjuvant plus liquid 28-0-0 (Banvel II at 0.12 L/acre) (Manitoba only).
Option 2.25 OD (0.63 L/acre) plus liquid 28-0-0 (Banvel II at 0.12 L/acre) (Manitoba only).
In Chemical fallow, stubble: 2,4-D, glyphosate products.
In Red fescue: 2,4-D amine (287 g ae/acre)
In Preseeding burnoff: Glyphosate (136 g ae/acre - see glyphosate page for product rates)

Insecticides: None registered.
Fungicides: None registered.
Fertilizers: None registered.

Note: The above mixes are those listed on the dicamba labels only.
Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information.

Re-entry: DO NOT enter treated fields for 12 hours.

Grazing and Harvest Intervals:
Canaryseed: Use only as birdseed.
Corn: DO NOT graze cattle or harvest for silage until 7 days after treatment of dicamba alone or for at least 12 weeks following dicamba tank mixes with other herbicides.
Cereals, seedling grasses, pasture: DO NOT harvest for silage for or graze lactating dairy cattle until 7 days after treatment. If treated vegetation has been consumed by dry dairy animals or meat animals within 30 days of dicamba application, feed the animal with untreated diet for 30 days before slaughter. Meat animals or dry dairy animals may graze or feed on treated pasture 3 days after dicamba application without restrictions on slaughter. Feed untreated forage within 3 days of slaughter.
Re-cropping: Grow only cereals (corn, soybeans or white beans) the year after treatment with the 1.0 L per acre rate. Grow only cereals, corn, field beans, soybeans or canola the year after applications of 0.5 L per acre. If applications are made after September 1, or if dry weather persists after application, crop injury may occur the following spring.
Aerial Application: May be applied by air on cereals only. Use a minimum water volume of 8 L per acre.
Storage: May be stored at freezing temperatures.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>CROP</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground*</td>
<td>Barley, oats, rye, wheat, canary seed, seedling forage grasses</td>
<td>0</td>
</tr>
<tr>
<td>Winged airplane</td>
<td>Barley, oats, rye, wheat,</td>
<td>0</td>
</tr>
<tr>
<td>Helicopter</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Buffers are not required for handheld and backpack applications.

Sprayer Cleaning:
Refer to page 15.

Hazard Rating:

🔺 Caution – Poison
⚠️ Warning – Eye Irritant

For an explanation of the symbols used here see page 11.
Dicamba/Mecoprop/MCPA

Company:
Syngenta Canada (Target – PCP#28028)
Loveland Products Canada (Sword – PCP#27892)
IPCO (Tracker XP – PCP#27790)

Herbicide Group
4 - dicamba, mecoprop-p & MCPA
(Refer to page 45)

Formulation:
275 g/L MCPA + 62.5 g/L mecoprop-p + 62.5 g/L dicamba formulated as a solution.
Container size - 2x10 L and 160 L (Target), 500 L (Sword), 1000 L (Sword).

Crops and Staging:
All Products:
Cereals:

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley</td>
<td>2 to 4 leaf (3 leaf for best crop safety)</td>
</tr>
<tr>
<td>Canaryseed, Oats, Spring wheat (including durum)</td>
<td>2 to 5 leaf (3 to 4 leaf for best crop safety)</td>
</tr>
<tr>
<td>Winter wheat</td>
<td>Spring application only; up to 12 inches (30 cm) high (top leaf extended)</td>
</tr>
<tr>
<td>Fallow</td>
<td>Fall stubble</td>
</tr>
</tbody>
</table>

Target and Sword only:
Seedling grasses grown for forage only (NOT for seed production)*:
Apply at the 2 to 4 leaf stage.

Creeping red fescue
Wheatgrass (crested, intermediate)
Meadow foxtail

Established grasses for forage only (NOT for seed production)*:
Apply up to flag leaf stage.

Bromegrass (meadow, smooth)
Fescue (creeping red, meadow, tall)
Kentucky bluegrass
Meadow foxtail

Orchardgrass
Smooth bromegrass
Timothy

Weeds and Staging:
Weeds controlled at the 2 to 3 leaf stage unless otherwise indicated:

Annual sow-thistle
Ball mustard
Canada thistle (6 to 8 inches (15 to 20 cm) and actively growing)*
Cleavers (1 to 2 whorls)
Common ragweed
Corn spurry
Cow cockle
Field bindweed*
Flixweed
Hedge bindweed*
Hemp-nettle (less than 2 pairs of true leaves)
Knotweed
Kochia
Lamb’s-quarters
Night-flowering catchfly

Perennial sow-thistle*
Prostrate pigweed
Redroot pigweed
Russian thistle (less than 2 inches-5 cm)
Shepherd’s-purse
Smartweed (green, lady’s-thumb)
Stinkweed
Tall mustard
Tartary buckwheat
Volunteer buckwheat
Volunteer canola
Volunteer sunflowers
Wild buckwheat
Wild mustard
Wormseed mustard
Yellow mustard

* Top Growth Control only

Rates:
0.4 to 0.6 L per acre (10 L treats 25 to 16.7 acres).
Use the higher rate under adverse weather conditions, when weed density is high, for cleavers control, winter annual control and for suppression of Canada thistle and perennial sow-thistle.

Although dicamba/mecoprop-p/MCPA is registered up to the 5 leaf stage of the crop for the rates listed here, the low rate should be used when the crop is at the 5 leaf stage for optimum crop safety.

For Canada thistle, post-harvest or fallow application, use 0.81 L per acre (one 10 L container treats 12.4 acres).
Application Information:

Water Volume:
*Ground:* Minimum 40 L per acre.
*Aerial:* Minimum of 12 L per acre

Nozzles and Pressure: 30 to 40 psi (200 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE coarse droplets. Use a 50 mesh or coarser screen and filter system.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Hot and dry or cold and wet weather prior to spraying may result in reduced weed control and increased crop injury. Do not apply within 2 weeks of a killing frost.

Tank Mixes:

**Herbicides:**
*Spring wheat (including durum):* Horizon NG *(label rates - no adjuvant required)*
*Wheat and Barley:* Sencor or linuron for chickweed control.

**Fertilizers:** None registered.

**Insecticides:** None registered.

**Fungicides:** None registered.

* Target only.

*Note: The above mixes are those listed on the dicamba / mecoprop-p/MCPA labels only.*

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:

**Rainfall:** Activity may be reduced if rainfall occurs within 3 hours of application. Contact manufacturer for more information.

**Re-entry:** DO NOT enter treated fields for 12 hours.

**Grazing:** DO NOT graze or harvest for livestock feed within 7 days of application.

**Preharvest:** Leave at least 80 days from application to harvest.

**Re-cropping:** No restrictions the year after application.

### Aerial Application:
All may be applied by air.

### Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Crops</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Aquatic Habitats of Depths</td>
<td>Terrestrial habitat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Less than 1 m</td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td>Ground *</td>
<td>Standing Crops</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Fallow and stubble</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Fixed wing airplane</td>
<td>Cereals</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Canaryseed</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Forage</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Fallow and stubble</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Helicopter</td>
<td>Cereals</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Canaryseed</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Forage</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Fallow and stubble</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Buffers are not required for handheld and backpack applications.

Sprayer Cleaning:
Refer to page 15.

### Hazard Rating:

⚠️ Caution – Poison

⚠️ Warning – Eye Irritant

Potential Skin Sensitizer

For an explanation of the symbols used here see page 11.
Dichlorprop/2,4-D

**Company/Products:**
- Loveland Products Canada (Turboprop)
- Nufarm Agriculture (Estaprop XT)
- IPCO, Loveland Products Canada (Dichlorprop-D)
- IPCO (Dichlorprop-DX)

**Formulation:**
- **Turboprop (PCP#27967); Dichlorprop-D (PCP#27966):** 300 g/L of dichlorprop and 282 g/L of 2,4-D ester formulated as an emulsifiable concentrate.
- **Estaprop XT (PCP#29660); Dichlorprop-DX (PCP#29664):** 210 g/L of dichlorprop-P* and 400 g/L of 2,4-D ester formulated as an emulsifiable concentrate.

*NOTE: dichlorprop-P is a more active version of dichlorprop.*

**Container sizes:**
- **Turboprop, Dichlorprop-D:** 2 x 10 L, 115 L
- **Estaprop XT:** 2 x 9.7 L, 97.1 L, 466.1 L
- **Dichlorprop-DX:** 2 x 10L, 115 L

**Crops and Staging:**
- **Wheat (spring, durum) and barley - 4 leaf until the early flag leaf stage.**
- **Winter wheat - in spring from tillering to the early flag leaf stage.**
- When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

**Rates:**
- **Turboprop; Dichlorprop-D:** 0.71 L per acre
  - One 10 L container treats 14 acres
  - One 10.6 L container treats 15 acres
- **Estaprop XT (PCP#29660); Dichlorprop-DX (PCP#29664):** 486 mL per acre.
  - One jug treats 20 acres

**How it Works:**
Refer to Table 2 on page 47.

**Herbicide Group 4 - dichlorprop & 2,4-D**
(Refer to page 45)

**Weeds and Staging:**
Treat weeds when young and actively growing and before they are shielded by the crop. Additional stage restrictions indicated are the minimum indicated over all labels. Check individual labels for exceptions.

- **Annual sow-thistle**
- **Ball mustard**
- **Bluebur**
- **Burdock**
- **Canada thistle**
- **Cocklebur**
- **Curl dock**
- **Dandelion**
- **Dog mustard**
- **Flixweed**
- **Hare’s-ear mustard**
- **Indian mustard**
- **Kochia (Up to 2 inches)**
- **Lamb’s-quarters**
- **Night-flowering catchfly**
- **Oak-leaved goosefoot**
- **Perennial sow-thistle**
- **Prickly lettuce (2 to 12 leaf)**
- **Ragweed (Common, Giant† ‡ ‡)***
- **Redroot pigweed**
- **Round-leaved mallow**
- **Russian pigweed**
- **Russian thistle (Up to 2 inches)**
- **Shepherd’s-purse**
- **Spreading Atriplex (cotyledon to 10 leaf) † ‡**
- **Stinkweed**
- **Stork’s-bill**
- **Toadflax**
- **Tumble mustard**
- **Volunteer canola**
- **Wild mustard**
- **Wormseed mustard**

Control the following weeds up to the 4 leaf stage:

- **Smartweed (including lady’s-thumb)**
- **Tartary buckwheat**
- **Wild buckwheat**

*Top growth control only
**Suppression only. Treat before the majority reach 6 inches (15 cm).
***Season long control in winter wheat.
†Spring annuals only
‡Treat prior to the 6 leaf stage
††Estaprop XT and Dichlorprop-D only in winter wheat.

**Application Information:**

**Water Volume:**
- **Ground:** 20 to 97 L per acre*. Use a minimum of 40 L of water per acre to reduce the risk of drift.
- **Aerial:** Minimum 12 L per acre.

**Nozzles and Pressure:** 30 to 40 psi (200 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles...
may require higher pressures for proper performance. Use nozzles and pressure designed to deliver proper coverage with ASABE coarse droplets or larger.

* May vary by product. Check label closely.

**Effects of Growing Conditions:**
Applications made under dry conditions may result in reduced control. Crops under stress from adverse environmental conditions, such as excess moisture, frost or drought, may be injured. Best weed control when adequate soil moisture is present and warm temperatures prevail. DO NOT apply when daytime temperatures exceed 27°C.

**Tank Mixes:**

**Herbicides:** Estaprop XT, Dichlorprop DX and Turboprop only

<table>
<thead>
<tr>
<th>Tank Mix Partner (Mixed at label rates unless otherwise indicated)</th>
<th>CROPS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spring wheat</td>
</tr>
<tr>
<td>ImazamethabenzΔ</td>
<td>●</td>
</tr>
<tr>
<td>ClodinafopΔ</td>
<td>●</td>
</tr>
<tr>
<td>FenoxapropΔ</td>
<td>●</td>
</tr>
<tr>
<td>Thifensulfuron/tribenuronΔ††</td>
<td>●</td>
</tr>
<tr>
<td>Tralkoxydim Δ</td>
<td>●</td>
</tr>
</tbody>
</table>

† Cordon, Vigil WB and WildCat only.
†† Estaprop XT only.
Δ Manufacturers may only support mixes with specific products. Contact the manufacturer for more information.

Note: Always refer to the label or the page for the tank mix partner in this guide for additional restrictions on staging and varieties.

**Insecticides:** None registered.

**Fungicides:** None registered.

**Fertilizers:** None registered.

Note: The above mixes are those listed on dichlorprop+2,4-D/Dichlorprop-P+2,4-D labels only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.

**Restrictions:**

**Rainfall:** No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information.

**Re-entry:** Leave 12 hours before entering treated fields.

**Grazing:** DO NOT graze the treated crop or harvest for hay or feed within 40 days of application. Withdraw meat animals from treated fields at least 3 days before slaughter.

**Preharvest Interval:** Leave 40 days from spraying until harvest of winter wheat and 60 days for other crops.

**Re-cropping:** No restrictions the year after application. Fields treated with Estaprop XT may be replanted after a minimum of 30 days.

**Aerial Application:** May be applied by air. Refer to specific product labels for full details for application by air.

**Storage:** May be frozen.

**Buffer Zones:**

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground</td>
<td>1</td>
</tr>
<tr>
<td>Fixed wing aircraft</td>
<td>10 (5††)</td>
</tr>
<tr>
<td>Helicopter</td>
<td>10 (3††)</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

** Handheld or backpack sprayers do not require a buffer zone.

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

†† Dichlorprop - DX and Estaprop XT.

**Sprayer Cleaning:**

Refer to ‘Method A’ in the general section on sprayer cleaning on page 15-16.

**Hazard Rating:**

* Warning – Poison

* Warning – Skin Irritant (Turboprop)

* Caution – Skin Irritant (Dichlorprop-D)

For an explanation of the symbols used here see page 11.
### Crops and Staging:

*Diquat* is used to dry immature green material at top of indeterminate crops and green weeds to facilitate harvest. *Diquat* will not speed maturity of green crops. Treatment before the recommended stage can result in reduced yield and quality. Add 0.1 L of *Agral 90* or 0.25 L of LI 700 per 100 L of spray solution for all applications of 240 g/L formulations. **Do not** add adjuvant for applications of *Reglone Ion*. Refer to product labels for specific recommendations for adjuvant use.

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
<th>RATE (L/ACRE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>240 g/L formulations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>Canola*</td>
<td>80-90 percent of seed has turned brown.</td>
<td>0.50 to 0.69†</td>
</tr>
<tr>
<td>Dry Beans - Red and white kidney</td>
<td>Crop has lost 80 to 90 percent of leaves and 80 percent of pods are yellow.</td>
<td></td>
</tr>
<tr>
<td>Soybeans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faba beans</td>
<td>Most plants are ripe and dry. Pods fully filled, bottom pods are tan or black in colour.</td>
<td></td>
</tr>
<tr>
<td>Flax and Solin (low linolenic acid flax)</td>
<td>75 percent of bolls brown.</td>
<td></td>
</tr>
<tr>
<td>Lentils</td>
<td>Lowest pods are light brown and rattle when shaken.</td>
<td></td>
</tr>
<tr>
<td>Mustard (condiment type only)</td>
<td>75 percent of seed has turned brown.</td>
<td></td>
</tr>
<tr>
<td>Peas</td>
<td>Bottom pods are ripe and dry, seeds detached from pods.</td>
<td></td>
</tr>
<tr>
<td>Sunflowers</td>
<td>Backs of sunflower heads and bracts are turning yellow and seed moisture is 20 to 50 percent.</td>
<td></td>
</tr>
<tr>
<td>Chickpeas</td>
<td>Plants yellow, pods mature, seeds changed colour and detached from pods.</td>
<td>0.50 to 0.69†</td>
</tr>
</tbody>
</table>

Crops and Staging continued on next page.
Crops and Staging continued

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
<th>RATE (L/ACRE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potatoes (top growth mature and few weeds)</td>
<td>Two weeks prior to harvest.</td>
<td>0.5</td>
</tr>
<tr>
<td>Potatoes (some top growth and/or some weeds)</td>
<td>Requires 2 Passes</td>
<td>0.69 to 0.93**†</td>
</tr>
<tr>
<td>Potatoes (dense crop, heavy weed infestations)</td>
<td>Pass #1: 0.69 to 0.93 L/acre** Pass #2: (4 to 5 days later) at 0.5 L/acre</td>
<td>1.42**†</td>
</tr>
<tr>
<td>Alfalfa, bird’s-foot trefoil, red and white clover (for seed production only)***</td>
<td>Pods are ripe but before shattering. Harvest within 7 days.</td>
<td>0.69 to 1.09† 0.69 to 1.09† 0.81 to 1.32† 0.81 to 1.32†</td>
</tr>
</tbody>
</table>

† Use high rates for dense crops and/or heavy weed infestations.
* This product can cause shattering losses in canola. It should only be used on B. napus canola to assist in the harvest of a severely lodged crop.
** DO NOT use an adjuvant on potatoes except at the 0.5 L per acre ground application rate.
*** DO NOT use on forage legumes that have been treated with a residual herbicide in the previous 12 months.

Application Information:

Water Volumes:
Ground applications: 91 to 222 L per acre. Use 222 to 445 L per acre on potatoes.
Aerial applications: 18 L per acre. Use the highest water volumes when crop canopy is heavy or if weed growth is dense.

Nozzles and Pressure: 20 to 30 psi (150 to 200 kPa) when using conventional Flat fan nozzle tips are recommended for proper coverage. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE medium droplets.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Best results under cloudy conditions or in evening. Shattering losses can increase if heavy winds, rain or hail occur after the crop has dried down.

Tank Mixes:
Herbicides: None registered.
Insecticides: None registered.
Fungicides: Fungicides may be added when applying diquat to potatoes for vine killing.
Fertilizers: None registered.

Restrictions:
Rainfall: Within 15 minutes may reduce effectiveness.
Re-entry: Leave 24 hours before entering treated fields.
Grazing: Crop residues remaining after harvest may be fed to livestock.
Preharvest Interval:
Fababean, Lentil: Wait 4 to 7 days to harvest.
Forage Legumes: DO NOT exceed 7 days.
Canola, Mustard: Wait 7 to 10 days; maximum 14.
Sunflowers: Wait 15 to 20 days.
Flax, Peas: When sample tests dry.
Re-cropping: No restrictions the year after application.
Aerial Application: May be applied by air in a minimum of 18 L per acre water volume.
Storage: DO NOT freeze.
Weed Control

Company:
BASF Canada (PCP#25811)

Formulation:
20% diflufenzopyr and 50% dicamba, sodium salt formulated as a water dispersible granule.
Container size - 2 x 2.3 kg.

Crops and Staging:
Fallow and Post-Harvest applications
Corn - 2 to 6 leaf stage

Sprayer Cleaning:
When finished spraying diquat, rinse the sprayer out with clean water. Run through pump, lines and nozzles. Drain tank by spraying out on an untreated portion of a crop on which the product is registered, or by spraying on uncropped land. Refill sprayer with water and Agral 90 at 0.6 L per 1,000 L spray solution. Run the solution through pipes and boom. Spray out, then refill with clean water. Leave equipment standing overnight, then drain water out. Refer to page 36 for an explanation of the different habitats.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Crops</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
<th>Aquatic Habitats of Depths</th>
<th>Terrestrial habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Less than 1 m</td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td>Ground</td>
<td>Potatoes</td>
<td>10</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Other crops under Crops: section</td>
<td>5</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Winged aircraft</td>
<td>Potatoes</td>
<td>200</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Beans, Legume forage seed</td>
<td>150</td>
<td>80</td>
<td>90</td>
</tr>
<tr>
<td>Helicopter</td>
<td>Potatoes</td>
<td>125</td>
<td>65</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Beans, Legume forage seed</td>
<td>100</td>
<td>55</td>
<td>70</td>
</tr>
</tbody>
</table>

* Buffer zones for ground applications can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Hazard Rating:
⚠️ Warning – Poison
⚠️ Caution – May cause eye damage
Potential Skin Sensitizer

For an explanation of the symbols used here see page 11.

Distinct

Herbicide Group
4 - dicamba
19 - diflufenzopyr
(Refer to page 45)

Weeds, Rates and Staging:
Corn:
Distinct applied post-emergent to weeds below at 115 grams per acre plus a non-ionic surfactant (see page 42) and UAN (liquid 28-0-0) will control:
Biennial wormwood (2 to 8 leaf)
Canada thistle*
Cocklebur (6 leaf)
Kochia (up to 15 cm)***
Lady's-thumb
Lamb's-quarters
Ragweed (common, giant** Wild buckwheat
(2 to 8 leaf))
Fallow or post-harvest:
*It is recommended that Distinct be tank-mixed with glyphosate and Merge adjuvant (200 mL per acre).
Distinct at 58 g per acre (40 acres per jug), as a tank mix with glyphosate, provides enhanced control of the following weeds:

- Dandelion*
- Lamb’s-quarters
- Narrow-leaved hawk’s-beard
- Redroot Pigweed
- Round-leaved mallow
- Sowthistle, spiny annual
- Wild buckwheat

Distinct at 115 g per acre (20 acres per jug) controls:
Weeds listed above plus:

- Biennial wormwood (2 to 8 leaf)
- Canada thistle*
- Cocklebur
- Kochia (up to 15 cm)***
- Lady’s-thumb
- Lamb’s-quarters
- Ragweed, common
- Sow-thistle, perennial**
- Tall waterhemp
- Velvetleaf
- Volunteer canola (up to 4 leaf)
- Wild buckwheat

* Top growth control only.
** Suppression only.
*** Including group 2 and 9 resistant biotypes.

A general guide to mixing can be found on page 14.
DO NOT exceed a maximum application rate of 115 g per acre of Distinct per season.

Application Information:
Water Volume: 20 to 80 L per acre. High water volumes are required for adequate coverage, particularly when weed densities are high or weed staging is large.

Nozzles and Pressure: Use 40 psi (275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE coarse droplets. Use 50 mesh (or coarser) filter screens.

Effects of Growing Conditions:
DO NOT spray if temperatures of +5°C or less are forecast within 3 days of application or when temperatures are expected to exceed +27°C on the day of application. Under cool or dry conditions, control of some weeds may be severely reduced.

Tank Mixes:
Herbicides:
Fallow and Post-harvest:
Glyphosate (180 to 360 g ae/acre) - recommended
Corn: None registered in western Canada.

Insecticides: None registered.
Fungicides: None registered.
Fertilizers: None registered.

Restrictions:
Rainfall: Rain within 4 hours may reduce control.
Re-entry: Leave 12 hours before entering treated fields.
Grazing: DO NOT graze or cut as feed for 75 days.

Preharvest Interval: DO NOT apply within 120 days of harvesting corn.
Re-cropping: A plant back interval of 30 days is required for the planting of rotational crops. Consult BASF for further information on rotational cropping.
Aerial Application: DO NOT apply by air.

Storage: Store in a cool, dry place above 5°C.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td>Ground only</td>
<td>Less than 1 m</td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:
Distinct can cause injury to sensitive crops at very low concentrations. Sprayers used to spray this product should be flushed out immediately after use.

Use ‘Method B’ on page 15-16 to clean sprayers after using Distinct.

Hazard Rating:

⚠️ Caution – Poison

For an explanation of the symbols used here see page 11.


**Dual II Magnum**

**Company:**
Syngenta Canada (PCP#25729)

**Formulation:**
915 g/L s-metolachlor formulated as an emulsifiable concentrate. Container size - 2 x 10 L.

**Crops and Staging:**
Pre-plant incorporated. In areas with good rainfall or under irrigation, *Dual II Magnum* may be applied as a pre-emergence surface treatment. When applied to the soil surface, after planting but prior to emergence, at least 0.5 inches of water (1.25 cm) is required within 10 days of application for proper activity. Refer to product label for more specific information on timing and rates of applications for each crop type.

- **Corn (field, sweet, silage)**
- **Dry beans (white, kidney, and pinto)**
- **Potatoes**
- **Soybeans**
- **Sweet white lupins**

* Beans should be planted at least 4 cm deep to avoid crop injury. Dry bean varieties vary in their tolerance to *Dual II Magnum*. Test a limited acreage on all new varieties first.

**Weeds and Staging:**

**Pre-emergent and Pre-Plant Incorporated Treatments:**
Apply prior to weed emergence.

- **American nightshade**
- **Barnyard grass**
- **Eastern black nightshade**
- **Green foxtail**
- **Old witch grass**
- **Redroot pigweed**
- **Yellow foxtail**
- **Yellow nutsedge**

* Suppression only.
** Pre-plant incorporated treatment only.

**Rates:**
0.47 to 0.7 L per acre (12 L treats 24 to 17 acres).
Use higher rates on heavy textured soils or when high populations of weeds are expected.
DO NOT apply to soils with less than 1% or more than 10% organic matter.
Make only one application per season.
Refer to product label for more specific information on timing and rates of applications for each crop type.

**Application Information:**

- **Water Volume:** A minimum of 60 L per acre.
- **Pressure:** 30 to 45 psi (200 to 300 kPa).
- **Nozzles:** Use flat fan nozzles, 50 mesh screens.

**Incorporation:**
Apply to a firm seed bed free of large clods or lumps. If using tandem disks, set disks to work the soil at a depth of 4 inches (10 cm) and operate at a speed of 6 km/hr (4 mph). If using an S-tine cultivator, set the implement to work the soil to a depth of 4 inches (10 cm) and operate at a speed of 10 km/hr (6 mph). Incorporation equipment should include rolling or western harrows.

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**
A moderate rainfall or equivalent irrigation is required within 10 days to activate pre-emergent surface treatments. If rain does not occur, a shallow cultivation or use of a rotary hoe is necessary. Drought conditions that persist after any application may reduce annual grass control. On sandy soils, heavy rainfall following application may cause leaching of *Dual II Magnum*, resulting in reduced weed control.

**Tank Mixes:**

**Herbicides:**
* **In Corn:** AAtrex in both PPI and pre-emergent applications.
* **In Soybeans:** Sencor, and *glyphosate*, in both PPI and pre-emergent applications.

**Fertilizers:** May be applied with liquid fertilizer. May be impregnated onto dry bulk fertilizers (except nitrate fertilizers, superphosphate fertilizers or limestone).

**Insecticides:** None registered.

**Note:** The above mixes are those listed on the *Dual II Magnum* label only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.
Restrictions:
Rainfall: When applying as a pre-emergent surface treatment, 0.5 inches (1.25 cm) of rain or irrigation is required after application for proper activity.
Re-entry: DO NOT enter treated fields for at least 12 hours.
Grazing: DO NOT graze the treated immature crop or cut for hay. In corn, immature means before ear emergence.
Preharvest Interval: DO NOT harvest corn within 80 days of post-emergent application.
Re-cropping: In the year of treatment, seed only corn, soybeans, white beans, potatoes, snap beans, lima beans, processing peas, sweet white lupins, or (a minimum of 4.5 months after application) winter cereals. If Dual II Magnum has been applied in a tank mix with another product, consult those products’ labels for additional re-cropping restrictions.
Aerial Application: DO NOT apply by air.
Storage: May be frozen.
Buffer Zones: Leave a buffer zone of 29 meters between last spray swath and the edge of important wildlife habitats such as wetlands, sloughs and water bodies.

Sprayer Cleaning:
Refer to page 15.

Hazard Rating:
⚠️ Warning – Eye Irritant
⚠️ Potential Skin Sensitizer
For an explanation of the symbols used here see page 11.

DyVel

Company:
BASF Canada (PCP#16545)

Formulation:
84 g/L of dicamba and 336 g/L of MCPA K+ formulated as a solution.
Container size - 10 L, 55 L, 110 L, 1000 L

Crops and Staging:
Spring wheat (including durum), barley or oats - 2 to 5 leaf stage.
Winter wheat - apply in spring when crop is 6 to 10 inches (15 to 25 cm) tall but before shot blade stage.
Note: Crop damage can occur if applications are made at other than the recommended crop stage.
When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

Weeds and Staging:
Weeds controlled in the 2 to 4 leaf stage unless otherwise stated:
- Burdock
- Cleavers (suppression only)
- Cocklebur
- Corn spurry (2 to 3 leaf)
- Cow cockle (2 to 3 leaf)
- Flixweed
- Hemp-nettle (2 to 3 leaf)
- Kochia
- Lamb’s-quarters
- Mustards (ball, hare’s ear, Indian, tumble, wild, wormseed)
- Pigweed (prostrate, redroot, Russian)
- Ragweed (common, false, giant)
- Russian thistle
- Shepherd’s-purse
- Smartweed (green, lady’s-thumb)
- Stinkweed
- Tartary buckwheat
- Wild buckwheat
- Wild radish
- Volunteer canola (2 to 4 leaf)
- Volunteer sunflowers

Herbicide Group
4 - dicamba & MCPA
(Refer to page 45)

Top growth control:
- Canada thistle
- Perennial sow-thistle
Rate:
0.51 L per acre (one 10 L jug treats 19.7 acres).

Application Information:
Water Volume:
Ground: 40 L per acre.
Aerial: Minimum 8 L per acre
Nozzles and Pressure: Maximum 40 to 45 psi (275 to 310 kPa) when using conventional flat fan nozzles. To reduce the risk of drift damage to sensitive non-target crops when using conventional nozzles, 20 to 30 psi (150 to 200 kPa) as well as higher water volumes are recommended. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE coarse droplets.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
For best weed control, apply when temperature is between 10 and 25°C. Do not treat crops under stress from excessive moisture or drought. To avoid crop injury, do not apply when temperature is expected to exceed 30°C, or when there is a risk of a severe drop in overnight temperature.

Tank Mixes:
None registered.

Note: No mixes are listed on the DyVel label with currently marketed products.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: No rainfast period is specified on the label; required interval may be up to 8 hours. Avoid applying this product when heavy rain is forecast. Contact manufacturer for more information.
Re-entry: Do not enter treated fields for at least 12 hours.
Grazing: Do not graze treated crop or cut for hay within 30 days of application.
Preharvest Interval: Leave 60 days between application and harvest.
Re-cropping: No restrictions the year after treatment.
Aerial Application: May be applied by air.
Storage: May be frozen.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres↑) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground only*</td>
<td>1</td>
</tr>
<tr>
<td>Fixed wing aircraft</td>
<td>1</td>
</tr>
<tr>
<td>Helicopter</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:
Refer to "Method A" in the general sprayer cleaning section on page 15 to 16. If mixed with other pesticides, the cleaning method above should be combined with the method recommended for the tank mix partner if different from above.

Hazard Rating:

⚠️ Caution – Poison

For an explanation of the symbols used here see page 11.
DyVel DSp

Herbicide Group
4 - dicamba, 2,4-D & mecoprop
(Refer to page 45)

Company:
BASF Canada (PCP#27856)

Formulation:
110 g/L dicamba, 295 g/L 2,4-D amine and 80 g/L mecoprop-p formulated as a solution.
Container size - 10 L, 55 L, 100 L.

Crops, Rates and Staging:

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
<th>RATE</th>
<th>ACRES PER 10 L JUG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring wheat (including durum)</td>
<td>3 to 5 leaf</td>
<td>0.34 to 0.45</td>
<td>29 to 22</td>
</tr>
<tr>
<td>Barley</td>
<td>2 to 3 leaf</td>
<td>0.34</td>
<td>29</td>
</tr>
<tr>
<td>Winter wheat</td>
<td>Before crop is 12 inches (30 cm) tall in spring</td>
<td>0.34 to 0.45</td>
<td>29 to 22</td>
</tr>
<tr>
<td>Corn (field)** (DO NOT apply to sweet corn)</td>
<td>Before corn reaches 6 inches (15 cm) in height with the top leaf extended or by directed spray with drop nozzles once over 12 inches (30 cm).</td>
<td>0.34 to 0.45</td>
<td>29 to 22</td>
</tr>
<tr>
<td>Native range and permanent grass pasture*</td>
<td>Established</td>
<td>1.3</td>
<td>7.7</td>
</tr>
<tr>
<td>Fall stubble, fallow</td>
<td>Stage according to weed</td>
<td>0.45 to 0.71</td>
<td>22 to 14</td>
</tr>
</tbody>
</table>

* Legumes will be severely injured by this application.
** NOTE: Under environmental stress corn will become brittle for 2 weeks after application. In-field mechanical processes and strong winds may cause stalk lodging during that time.
Applications outside the recommended stage may result in crop injury.
When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

Weeds and Staging:
The low registered rate for each crop will control the following weeds at the 2 to 3 leaf stage unless otherwise indicated:
Annual smartweed (including lady’s-thumb)
Annual sow-thistle
Cocklebur
Common ragweed
Corn spurry
Hedge bindweed
Knotweed
Kochia
Lamb’s-quarters
Mustards (wild, ball, tall, wormseed, yellow)
Pigweed (prostrate, redroot)
Russian thistle
Stinkweed*
Volunteer canola (2 to 4 leaf, prior to bolting)
Volunteer tame buckwheat
Wild buckwheat

Use the high registered rate for each crop to control the following weeds:
Canada thistle (top growth only)***
Cleavers (1 to 2 whorls)**
Cow cockle
Field bindweed†
Velvetleaf
Flixweed*
Jerusalem artichoke
Round-leaved mallow**
Shepherd’s-purse*
Tartary buckwheat

† Apply when actively flowering.
* Rosette stage in winter wheat.
** Suppression only.
*** Canada thistle should be treated when 6 to 8 inches (15 to 20 cm) of new growth is present after harvest and in the early bud stage in fallow.
Rates for Native Range and Pasture will control:

- Alder
- Bull thistle
- Chicory
- Goat’s-beard
- Poison ivy
- Ragwort
- Sheep laurel
- White cockle

The high rate for each crop should be used for all weeds under adverse growing conditions, when weeds are at an advanced stage of growth or when weed densities are high. Guidelines are not provided for weed densities under light or heavy infestations. When in doubt as to the infestation level, use the high rate or contact the manufacturer.

NOTE: It is possible that poisonous plants such as ragworts, hemlocks and death camas could be more palatable to livestock after treatment with DyVel DSp. Suitable precautions should be taken to avoid livestock access when such plants are present.

Application Information:

Water Volume:
- Cereals: Minimum 40 L per acre.
- Corn: 81 to 142 L per acre.

Nozzles and Pressure:
- Maximum 30 to 40 psi (200 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE coarse classification or larger droplets.

How it Works:

Refer to Table 2 on page 47.

Effects of Growing Conditions:

Crops under stress from excess moisture, drought or disease may suffer a setback when this herbicide is applied. DO NOT apply when temperature exceeds 27°C or when relative humidity is high. Stubble treatments for thistle control in fall should be made at least 2 weeks prior to killing frost. DO NOT apply DyVel DSp at wind speed greater than 5 mph (8 km/hr).

Tank Mixes:

Herbicides:
- In corn: Attrex Liquid (0.91 L/acre).
- Insecticides: None registered.
- Fungicides: None registered.
- Fertilizers: None registered.

Note: The above mixes are those listed on the DyVel DSp label only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:

Rainfall: No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information. DO NOT irrigate for 24 hours after application.

Re-entry: DO NOT enter fields for at least 12 hours for field corn and leave 14-days from application to hand harvest sweet corn.

Grazing: DO NOT harvest for livestock feed within 30 days of application. DO NOT permit lactating dairy animals to graze fields within 7 days of application. Withdraw meat animals from treated fields at least 3 days before slaughter.

Pre-harvest Interval: Leave 30 days between application and harvest.

Re-cropping: No restrictions the year after treatment.

Aerial Application: DO NOT apply by air.

Storage: May be frozen.

Buffer Zones:
- If there are sensitive plants within 400 m, apply only when there is a light breeze away from the sensitive area. DO NOT contaminate wetlands or water used for domestic or livestock consumption, irrigation or natural habitat.

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Handheld or backpack sprayers do not require a buffer zone.

Sprayer Cleaning:

No cleaning information provided on the label. Refer to ‘Method B’ in general sprayer cleaning section on page 15 to 16.

Hazard Rating:

⚠️ Warning – Poison

⚠️ Warning – contains the allergen soy

For an explanation of the symbols used here see page 11.
**Eclipse III**

This product is a prepackaged tank mix of *Eclipse III A* (Lontrel page 234) and *Eclipse III B* (Vantage Plus Max II pages 195). Information listed is restricted to Crop, Weeds and Rates. For other detailed information on the component products see the product pages listed above.

**Company:**
Dow AgroSciences

**Formulation:**

*Eclipse III A* (PCP#29032): 360 g/L clopyralid formulated as a solution.

*Eclipse III B* (PCP#29033): 480 g/L glyphosate present as an dimethylamine (DMA) salt and formulated as a solution.

Container size -

*Eclipse III A*: 4.45 L jug

*Eclipse III B*: 2 x 7.5 L jugs

**Crops and Staging:**

Glyphosate tolerant canola varieties only in the 2 to 6 leaf stage. Some yellowing may occur when applied at the 4 to 6 leaf stage. This effect is temporary and will not influence crop growth, maturity or yield.

**Weeds and Staging:**

No staging is specified on the label.

The weeds controlled by glyphosate at 180 g ae per acre plus:

**Annual broadleaf weeds:**

<table>
<thead>
<tr>
<th>Weed</th>
<th>Herbicide Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chickweed</td>
<td>4 - clopyralid</td>
</tr>
<tr>
<td>Corn spurry</td>
<td>9 - glyphosate</td>
</tr>
<tr>
<td>Cow cockle</td>
<td>(Refer to page 45)</td>
</tr>
<tr>
<td>Kochia</td>
<td></td>
</tr>
<tr>
<td>Night-flowering catchfly</td>
<td></td>
</tr>
</tbody>
</table>

**Perennial weeds (season long control):**

<table>
<thead>
<tr>
<th>Weed</th>
<th>Herbicide Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada thistle</td>
<td>4 - clopyralid</td>
</tr>
<tr>
<td>Dandelion less than 15 cm</td>
<td>9 - glyphosate</td>
</tr>
<tr>
<td>Dandelion greater than 15 cm</td>
<td>(Refer to page 45)</td>
</tr>
</tbody>
</table>

* Not including glyphosate tolerant (Roundup Ready) varieties.
** Top growth only.
*** Suppression only.

**Rates:**

*Eclipse III A*: at 112 mL per acre

*Eclipse III B*: at 375 mL per acre

One case treats 40 acres.

To prepare spray solution, add *Eclipse III A* to the spray tank. Once it is half filled with water, add *Eclipse III B* as the remaining water is added to the tank.

**Application Information:**

- **Water Volume:** 40 L per acre.
- **Nozzles and Pressure:** Maximum 30 to 40 psi (200 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage and a minimum of fine droplets that are prone to drift. DO NOT use with galvanized sprayer tanks since explosive hydrogen gas can be produced.

**Restrictions:**

**Re-cropping:** Wheat, oat, barley, rye (not underseeded to legumes such as alfalfa and clover), forage grasses, flax, canola, mustard and field pea* can be grown the year after application. Apply manure bedded with straw from treated crops only to the crops listed above excluding field pea.

*DO NOT seed to field peas for at least 10 months following treatment. Very dry soil conditions following application can result in a risk of injury to field peas grown in rotation. If severe drought conditions are experienced during the months of June to August inclusive in the year of application delay seeding field peas an additional 12 months (22 months following application). Contact your local Dow AgroSciences representative or retailer for more information before seeding field pea following drought conditions in the previous year.

**Aerial Application:** DO NOT apply by air.
**Edge Granular**

**Company:**
Dow AgroSciences (PCP#20980)

**Formulation:**
5% ethalfluralin formulated as a granular.
Container size - 25 kg or 544 kg.

**Crops and Staging:**
*Edge* can be applied prior to seeding the following crops:
- Seedling alfalfa (seed production only)
- Canola
- Caraway
- Coriander
- Dry beans (white or kidney)
- Fababean

† See special instructions for lentils section below

**Weeds and Staging:**
For pre-emergent control of the following weeds:

**Grasses:**
- Barnyard grass
- Crabgrass
- Foxtail (green & yellow)

**Volunteer barley**
**Volunteer spring wheat**
**Wild oat**

**Broadleaf Weeds:**
- Cleavers
- Chickweed
- Corn spurry
- Cow cockle
- Hemp-nettle
- Kochia
- Lady’s-thumb

† Suppression only.

**Herbicide Group**
3 - ethalfluralin
*(Refer to page 45)*

**Rates:**

<table>
<thead>
<tr>
<th>TIME OF APPLICATION</th>
<th>LIGHT TEXTURED SOILS</th>
<th>MEDIUM TO HEAVY TEXTURED SOILS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4-6% Organic Matter/Black</td>
<td>6-15% Organic Matter/Deep Brown</td>
</tr>
<tr>
<td>Spring</td>
<td>6.9</td>
<td>6.9</td>
</tr>
<tr>
<td>Fall *</td>
<td>8.9</td>
<td>11.3</td>
</tr>
</tbody>
</table>

* To conserve crop residue, one incorporation may be completed in the fall and the second incorporation completed in the spring prior to planting.

DO NOT apply to peat soils, mineral soils containing less than 2 percent organic matter or soils containing greater than 15 percent organic matter. Application to eroded knolls or grey-wooded soils with highly variable texture or organic matter may result in reduced crop stand, delayed development or reduced yields in either the treated or rotational crop.

To reduce the possibility of injury to the treated crop, use good quality certified seed. Seed shallow into a warm, moist, firm seedbed using recommended agronomic practices that will promote rapid and even crop germination and emergence.

† **Special instructions for lentils:**
Registered for use on lentils for fall application only. One incorporation must be completed in the fall. Seeding depth is critical - DO NOT seed more than 1.5 inches (4 cm) deep. Avoid loose seedbeds and planting into cold soils.
Application Information:

**Equipment:** Apply using a calibrated granular applicator.

**Incorporation:** Two incorporations are required at right angles for thorough mixing. The first incorporation must be completed within 24 hours of application. Delay the second incorporation for at least three days after the first. When applying *Edge* in the fall, it is preferred that both incorporations be done in the fall. The second incorporation may be delayed until spring to conserve crop residues; however, both incorporations must be done to the same depth.

Incorporate with a tandem disc, discer or field cultivator (Vibrashank type). Cultivators should have 3 to 4 rows of sweeps spaced 8 inches apart and staggered so that no soil is left unturned. Set equipment to work at a depth of 3 to 4 inches (8 to 10 cm). Operate disc implements at 4 to 6 mph (7 to 10 km/hr), cultivators at 6 to 8 mph (10 to 13 km/hr).

How it Works:

Refer to Table 2 on page 47.

Effects of Growing Conditions:

Crops stressed by cold weather, excessive moisture or drought may be injured by *Edge*. Dry soil conditions between application and emergence may result in decreased weed control.

Tank Mixes:

Not applicable.

Restrictions:

**Rainfall:** No effect once incorporated.

**Grazing:** DO NOT graze or cut treated crops for livestock feed prior to crop maturity.

**Re-cropping:** DO NOT grow sugar beets, oats, and small-seeded annual grasses such as timothy, canaryseed and creeping red fescue in rotation following a crop treated with *Edge*. DO NOT seed wheat as a rotational crop onto land that has been treated with trifluralin and/or ethalfluralin at oilseed/special crop/barley rates for two consecutive crop years. Thinning of crop may occur in areas that have received abnormally low amounts of precipitation or in crops that are emerging slowly.

**Aerial Application:** DO NOT apply by air.

**Storage:** Store in a cool, dry place. May be frozen. DO NOT expose to prolonged sunlight or heat.

**Buffer Zones:** Toxic to fish and other aquatic organisms. DO NOT contaminate water bodies or wetland areas.

Sprayer Cleaning:

Not applicable.

Enforcer D

**Company:**
Nufarm Agriculture (PCP#30690)

**Formulation:**
80 g/L fluroxypyr, 190 g/L bromoxynil and 240 g/L 2,4-D ester formulated as an emulsifiable concentrate.

Container size: 2 x 10 L, 120 L or 480 L.

**Crops and Staging:**
Spring wheat (including durum) and barley at the 4 leaf stage until the flag leaf is fully emerged.

When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

**Herbicide Group**

4 – fluroxypyr and 2,4-D
6 - bromoxynil

(Refer to page 45)

**Weeds, Rates and Staging:**
Apply to emerged weed seedlings up to the 5 leaf stage unless otherwise indicated.

**Weeds controlled at the 0.24 L per acre rate:**

<table>
<thead>
<tr>
<th>Broadleaf plantain</th>
<th>Lamb's-quarters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleavers</td>
<td>Night-flowering catchfly</td>
</tr>
<tr>
<td>Common groundsel</td>
<td>Shepherd's-purse</td>
</tr>
<tr>
<td>Kochia (up to 5 cm tall)</td>
<td>Stinkweed</td>
</tr>
<tr>
<td>Hemp-nettle</td>
<td>Stork's-bill</td>
</tr>
<tr>
<td>Knotweed</td>
<td>Volunteer canola</td>
</tr>
<tr>
<td>Lady's-thumb</td>
<td>Wild mustard</td>
</tr>
</tbody>
</table>
Weeds controlled at the 0.48 L per acre rate:
Weeds listed above plus:
- Canada thistle (supression)
- Dandelion
- Field horsetail
- Redroot pigweed
- Round-leaved mallow
- Russian thistle
- Volunteer flax
- Wild buckwheat

Application Information:
Water Volume: Minimum 20 to 40 L per acre. Use the higher volume when there is a heavy crop canopy or weeds are at an advanced stage.
Nozzles and Pressure: Use 40 psi (275 kPa) if applying without drift reduction nozzles. Drift reduction nozzles may require higher pressures for proper performance. Select the nozzle and pressure combination that produces of ASABE coarse droplets while maintaining good cover-
age of foliage.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Optimum activity is experienced between 12 to 24 °C when weeds are actively growing. Weeds may not be actively growing and as a result reduced activity will occur when temperatures are below 8 °C or above 27 °C. Frost 3 days before or after an application may reduce crop tolerance and weed control efficacy.

Tank Mixes:
Tank mix partners applied at all label rates and include recommended adjuvants unless otherwise noted.

Herbicides:
- In spring wheat (including durum) and barley:
  - Tralkoxydim (Nufarm Tralkoxydim and Liquid Achieve only)
  - Fenoxaprop (Cordon or Puma Advance only)
  - Thifensulfuron/tribenuron (Boost only) - 2.7 g/acre.
- In spring wheat (including durum) only:
  - Clodinafop (Signal or Nufarm Clodinafop only)
  - Simplicity
  - Varro

Insecticides: None registered.
Fungicides: None registered.
Fertilizers: None registered.

Note: The above mixes are those listed on the Enforcer D labels only. Nufarm Agriculture also supports the following mixes that are not on the Enforcer D label. Apply mixes according to the most restrictive use limitations for either product:
- Herbicides: Everest 2.0, Traxos.

Adding ingredients in the correct order is critical for opti-

Hazard Rating:
\(\text{\ding{56}}\) Caution – Poison
\(\text{\ding{57}}\) Caution – Skin and Eye Irritant

For an explanation of the symbols used here see page 11.
**Company:**
Nufarm Agriculture (PCP#30691)

**Formulation:**
80 g/L fluroxypyr, 200 g/L bromoxynil and 200 g/L MCPA ester formulated as an emulsifiable concentrate.
Container size: 2 x 10 L, 120 L or 480 L.

**Crops and Staging:**
*Wheat (durum, spring) and barley* - 2 leaf stage until the flag leaf is fully emerged.
*Winter wheat* – in spring once tillered until the flag leaf is fully emerged.
*Canaryseed* - from the 3 to 5 leaf stage.
When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

**Weeds, Rates and Staging:**
Apply to emerged weeds up to the 6 leaf stage unless otherwise indicated.

**Weeds controlled at the 0.25 L per acre (10 L treats 40 acres) rate:**
- Kochia (up to 5 cm tall)
- Lamb’s-quarters
- Lamb’s-quarters

**Weeds controlled at the 0.51 L per acre (10 L treats 20 acres) rate:**
Weeds listed above plus:
- American nightshade
- Buckwheat (Tame, Tartary, Wild)
- Canada thistle (top growth control only)
- Chickweed
- Cleavers (up to 6 whorls)
- Cocklebur
- Common groundsel
- Common ragweed
- Cow cockle
- Flixweed
- Hemp-nettle
- Mustard (ball, wild, wormseed)
- Night-flowering catchfly
- Perennial sow-thistle (top growth control only)
- Redroot pigweed
- Russian thistle (< 5 cm tall)
- Scentless chamomile
- Shepherd’s-purse
- Smartweed (green, lady’s-thumb, pale)
- Stinkweed
- Stork’s-bill
- Velvetleaf
- Volunteer canola/rapeseed
- Volunteer flax
- Volunteer sunflower

* Suppression only.
† Up to 4 leaf stage only.

**Application Information:**

**Water Volume:** Minimum 20 to 40 L per acre. Use the higher volume when there is a heavy crop canopy or weeds are at an advanced stage.

**Nozzles and Pressure:** Use 40 psi (275 kPa) if applying without drift reduction nozzles. Drift reduction nozzles may require higher pressures for proper performance. Select the nozzle and pressure combination that produces of ASABE coarse droplets while maintaining good coverage of foliage.

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**
Optimum activity is experienced between 12 to 24 °C when weeds are actively growing. Weeds may not be actively growing and as a result reduced activity will occur when temperatures are below 8 °C or above 27 °C. Frost 3 days before or after an application may reduce crop tolerance and weed control efficacy.

**Tank Mixes:**

**Herbicides:**
Tank mix partners applied at all label rates and include recommended adjuvants unless otherwise noted.

*In wheat (durum, spring, winter) and barley:*
Tralkoxydim (Liquid Achieve and Nufarm Tralkoxydim only)

*In wheat (spring and durum only) and barley:*
Fenoxaprop (Cordon or Puma Advance only)

*In spring wheat (including durum) only:*
Clodinafop (Signal only)
Flucarbazone (Everest 2.0 only)
Simplicity
Varro

**Insecticides:** None registered.

**Fungicides:** None registered.

**Fertilizers:** None registered.

**Note:** The above mixes are those listed on the Enforcer M labels only. Nufarm Agriculture also supports the following mixes that are not on the Enforcer M label. Apply
mixes according to the most restrictive use limitations for either product:

**Herbicides:** Axial BIA, Traxos

Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.

**Restrictions:**

**Rainfall:** No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information.

**Re-Entry Interval:** DO NOT enter treated fields for 24 hours.

**Grazing:** DO NOT graze or cut for livestock feed within 30 days of application. Withdraw meat animals from treated feed 3 days before slaughter.

**Pre-harvest Interval:** DO NOT harvest within 60 days of application.

**Re-cropping:** Barley, canola, flax, forage grasses, lentil, mustard, oat, pea, rye and wheat can be seeded the following year or fields can be fallowed.

**Aerial Application:** DO NOT apply by air.

**Storage:** Store in a ventilated room above freezing. If frozen, allow container to warm and shake well before using.

### Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground only*</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.  
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.  
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.  
Spray when winds are under 16 km/hr, but not dead calm.

### Sprayer Cleaning:

The manufacturer provides no recommendations on how to clean equipment used to apply this product. As a petroleum based emulsifiable concentrate, ‘Method B’ in the general section on sprayer cleaning on page 15 to 16 may be the most effective.

### Hazard Rating:

- **Warning – Poison**
- **Caution – Skin and Eye Irritant**
  Potential skin sensitizer.

For an explanation of the symbols used here see page 11.
Enforcer MSU

This product is the equivalent of a prepackaged mix of Enforcer M (page 156) and thifensulfuron/tribenuron 75WDG (Boost – see page 301). Information listed is restricted to Crops, Weeds and Rates. For other detailed information on the component products see the product pages listed for the components.

Company:
Nufarm Agriculture

Formulation:
The Enforcer MSU package has two components:
Enforcer M (PCP# 30691): 80 g/L fluroxypyr, 200 g/L bromoxynil and 200 g/L MCPA ester formulated as an emulsifiable concentrate.
Container size – 2 x 7.5 L
Boost (PCP# 30377): 50% thifensulfuron and 25% tribenuron formulated as a water dispersible granule.
Container size – 108 g.

Crops and Staging:
Wheat (durum, spring) and barley - 2 leaf up until the flag leaf is fully emerged.
Winter wheat – in spring from fully tillered up until the flag leaf is fully emerged.
When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

Weeds and Staging:
Weeds controlled by the component products plus
Narrow-leaved hawk’s-beard (suppression)

Rates:
Enforcer M: 375 mL per acre
Boost: 2.71 g per acre
(One case treats 40 acres)
Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

Tank Mixes:
Nufarm Agriculture also supports the following mixes that are not on the Enforcer M and Boost labels. Apply mixes according to the most restrictive use limitations for either product:
Herbicides: Axial BIA, Traxos

See component products for more information on restrictions, application details and handling. Use the most limiting restrictions across all components for the mix.

Herbicide Group
2 – thifensulfuron/tribenuron
4 – fluroxypyr and MCPA
6 - bromoxynil
(Refer to page 45)
Eptam 8-E

Company:
Gowan Canada (PCP#11284)

Formulation:
800 g/L of EPTC formulated as an emulsifiable concentrate.
Container size - 10 L, 1000 L

Caution:
The level of weed control may be reduced where Eptam 8-E is used on soils that have been treated with Eptam 8-E the previous growing season. It is expected that the reduction in control will be greater where Eptam 8-E have been used repeatedly for 2 or more years.

Crops, Rates and Staging:
Eptam 8-E is applied as a preplant incorporated treatment prior to seeding the following crops:

<table>
<thead>
<tr>
<th>CROP</th>
<th>RATE (L/ACRE)</th>
<th>ACRES TREATED PER 10 L CONTAINER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry beans</td>
<td>1.72 to 2.23</td>
<td>5.8 to 4.5</td>
</tr>
<tr>
<td>Alfalfa, Bird’s-foot trefoil, Cicer milk-vetch**, Sweet clover**, Sunflowers*</td>
<td>1.72</td>
<td>5.8</td>
</tr>
<tr>
<td>Potatoes</td>
<td>1.72 to 3.44</td>
<td>5.8 to 2.9</td>
</tr>
<tr>
<td>Flax*</td>
<td>1.42 to 1.72</td>
<td>7.0 to 5.8</td>
</tr>
</tbody>
</table>

* May also be applied in late fall prior to freeze-up
** Seed production only

NOTE: The use of Eptam 8-E on flax is not recommended in Saskatchewan because of the risk of crop injury.
Where a rate range appears, use the lower rate on light textured soils and the higher rate on heavy textured soils. DO NOT use on soils with less than 3 percent organic matter or more than 15 percent organic matter.

Weeds and Staging:
Must be applied prior to the emergence of the following weeds. Emerged weeds will not be controlled.

- Barnyard grass
- Chickweed*
- Corn spurry*
- Green foxtail
- Hairy nightshade*
- Henbit *
- Lamb’s-quarters*
- Nettleleaf goosefoot*
- Pigweed (prostrate, redroot, tumble)*
- Purslane*
- Quackgrass (suppression)**
- Volunteer cereals (wheat, barley, oats)
- Wild oat
- Yellow foxtail
- Yellow nutedge**

* Will be controlled only if treatment is made when conditions are favourable for germination and growth.
** Roots of perennial weeds must be thoroughly chopped prior to application.

Application Information:
Carrier Volume: Minimum of 40 L per acre of water or liquid fertilizer (see label for liquid fertilizer compatibility).
Pressure: 30 to 40 psi (200 to 275 kPa).
Equipment and Nozzles: Since Eptam 8-E is highly volatile, the product must be incorporated immediately. This is best accomplished by mounting spraying equipment directly onto the incorporation equipment (tandem disks, field cultivators on light soil).
May also be applied to cleanly cultivated soil for potatoes, by metering into the irrigation water to achieve the recommended rate per acre (“herbigation” or “chemigation”). See label for detailed instructions.
Incorporation: All growth and stubble should be thoroughly worked into the soil before treatment. Apply to a dry soil surface. Incorporate immediately after application preferably during the spraying operation as Eptam 8-E is volatile. Set disc and cultivator implements to cut to a depth of 4 to 6 inches (10 to 15 cm). A second operation at a right angle to the first is required. The disc or cultivator must be followed with a harrow or other levelling device that extends beyond the width of the implement. Speeds in excess of 5 mph (8 km/h) will result in excessive pulverization and crop residue destruction leaving the field susceptible to erosion. The maximum recommended tillage depth is 4 inches (10 cm).
How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Crop injury can occur if stressful environmental conditions (cold, wet soils, drought or excessive heat) prevail after seeding. To minimize crop injury, delay seeding 10 days if these conditions prevail at the time of application, or select an alternative product. Very cold or dry soil conditions during weed emergence will reduce control.

Tank Mixes:
Herbicides:  
*Dry beans (white and red kidney only)*: Liquid formulations of *Treflan* and *Rival*.
*Insecticides*: DO NOT tank mix with insecticides.
*Fungicides*: None registered.
*Fertilizers*: May be mixed with liquid fertilizer. Compatibility test should be conducted according to instructions on the herbicide label.
Dry bulk fertilizers, except nitrate fertilizers, may be impregnated or coated with *Eptam 8-E*. The impregnated fertilizer should be spread uniformly onto the field using a double overlap pattern immediately after impregnation. The impregnated fertilizer must be applied to the field when the soil surface is dry to at least 1/2 inch (1.5 cm) depth. The first incorporation must be done immediately after application.

Note: The above mixes are those listed on the *Eptam 8-E* label only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
*Rainfall*: No effect once incorporated. DO NOT apply prior to pre-irrigation.
*Re-entry*: DO NOT enter treated fields for 24 hours.
*Grazing*: DO NOT graze or feed treated crops to livestock in the year of application.
*Re-cropping*: Will not injure crops the year after spring application.
*Aerial Application*: DO NOT apply by air.
*Storage*: May be frozen.
*Buffer Zones*: DO NOT apply within 15 m of fish bearing waters or wildlife habitat.
*Soil Type*: DO NOT use on soils with less than 3 percent organic matter as crop injury will result.

Sprayer Cleaning:
Refer to page 15 to 16.

Hazard Rating:

Caution – Poison

For an explanation of the symbols used here see page 11.
Crops and Staging:
Pasture, rough turf, and rangeland - No stage restrictions.

Weeds, Rates and Staging:
For seedling weeds apply to young plants up to 4 inches (10 cm) tall or wide. For established non-woody plants (biennial or perennial) apply up to the early bud stage. For western snowberry, wild rose and other woody species, apply between mid-June and mid-August after the brush has leafed out, but before the leaves begin to turn their fall colours.

<table>
<thead>
<tr>
<th>RATE (g/acre)</th>
<th>WEEDS CONTROLLED</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 g/acre</td>
<td>Canada thistle*</td>
</tr>
<tr>
<td></td>
<td>Dandelion*</td>
</tr>
<tr>
<td></td>
<td>Russian thistle*</td>
</tr>
<tr>
<td></td>
<td>Sow-thistle*</td>
</tr>
<tr>
<td>10 g/acre</td>
<td>Above weeds plus:</td>
</tr>
<tr>
<td></td>
<td>Western snowberry</td>
</tr>
<tr>
<td>12 g/acre</td>
<td>Above weeds plus:</td>
</tr>
<tr>
<td></td>
<td>Wild rose</td>
</tr>
<tr>
<td></td>
<td>Dandelion</td>
</tr>
<tr>
<td>40 g/acre**</td>
<td>Balsam poplar</td>
</tr>
<tr>
<td>60 g/acre**</td>
<td>Cherry</td>
</tr>
<tr>
<td></td>
<td>Trembling aspen</td>
</tr>
</tbody>
</table>

At all rates add Agral 90, Agsurf II, or Citowett at 0.2 L per 100 L of spray solution.
* Suppression only.
** Rangeland only. See label for detailed application instructions.
Refer to the product label for complete mixing instructions.
A general guide to mixing can be found on page 14.

Application Information
Water Volume: 40 to 91 L per acre for weedy growth and up to 809 L per acre applied to the point of run-off for woody species. See the label for details.
Nozzles and Pressure: 30 to 40 psi (200 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE coarse droplets.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
DO NOT apply during periods of intense rainfall or to soil saturated with water. Warm, moist conditions following treatment enhance the activity of Escort, while cold, dry conditions may reduce or delay activity. Brush hardened off by cold weather and drought stress may not be controlled.

Tank Mixes:
Herbicides: 2,4-D amine or ester (371 g ae/acre) plus surfactant.
Insecticides: None registered.
Fungicides: None registered.
Fertilizers: None registered.
Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information.
Re-Entry: DO NOT re-enter treated fields for 12 hours.
Grazing: May be grazed by cattle on the day of treatment.
Aerial Application: DO NOT apply by air.
Storage: Store in a cool, dry place. May be frozen.

Buffer Zones:

<table>
<thead>
<tr>
<th>Rate (g/acre)</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>8 to 12</td>
<td>1</td>
</tr>
<tr>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>60</td>
<td>3</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
** Terrestrial buffers are not required for transport and utility rights of way.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.
Handheld or backpack sprayers do not require a buffer zone.

Sprayer Cleaning:
Escort can cause severe injury to sensitive crops at very low concentrations. Use 'Method A' on pages 15 to 16 to clean sprayers immediately after using Escort.

Hazard Rating:
Caution – Eye Irritant
For an explanation of the symbols used here see page 11.
**Company:**
Arysta LifeScience Canada

**Formulation:**
*Everest 2.0 (PCP# 30342):* 397 g/L flucarbazone formulated as a suspension concentrate.
Container size - 1.937 L container

*GBX (PCP# 29958):* 333 g a.e./L of fluroxypyr formulated as an emulsifiable concentrate.
Container size - 2 x 5 L

**Crops and Staging:**
Spring wheat (including durum) with 2 leaf to a maximum of 4 main stem leaves plus 2 tillers (6 total leaves).
Tank mix options are listed in the tank mix section.

*Note: Some of the tank mix partners may have more limiting staging than Everest GBX. When tank mixing use the most restrictive application stage or injury may result.*

**Weeds, Rates and Staging:**

<table>
<thead>
<tr>
<th>RATE (Acres per case)</th>
<th>WEEDS</th>
</tr>
</thead>
</table>
| 100                  | Weeds controlled by *Everest 2.0* at 19.4 mL per acre plus:  
Cleavers from the 1 to 4 whorl stage  
Kochia (2 to 8 leaf stage) (2,4-D ester mix only)  
Wild buckwheat (1 to 4 leaf stage) |
| 80                   | Weeds controlled by *Everest 2.0* at 24.3 mL per acre plus:  
Kochia (2 to 8 leaf stage)  
Volunteer flax (1 to 12 cm)  
Stork’s-bill (Suppression only) (1 to 8 leaf) |

As well as any of the weeds controlled by the tank mix partner.

**Herbicide Group**
2 - flucarbazone  
4 - fluroxypyr  
(Refer to page 45)

This product MUST also be mixed with one of either 2,4-D Ester, MCP A Ester or Curtail M.
Add non-ionic surfactant (such as Agral 90, Agsurf) at 0.25 L per 100 L of spray solution.
Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

**Tank Mixes:**

**Herbicides:**
*Note: All mixes must be applied with a registered surfactant unless otherwise indicated. Only one registered surfactant is required.*

In spring wheat (including durum):  
2,4-D Amine or Ester at recommended rates up to 170 g ae/acre (see 2,4-D page for product amounts)

In spring wheat (NOT including durum):  
2,4-D Amine or Ester at recommended rates up to 227 g ae/acre (see 2,4-D page for product amounts)

Curtail M (0.6 to 0.8 L/acre)  
MCP A Amine or Ester at recommended rates up to 0.38 L/acre (600 g/L formulation)

**Insecticides:** None registered.

**Fungicides:** None registered.

**Fertilizers:** None registered.

*Note: The above mixes are those listed on the Everest GBX label only.*
Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

**Restrictions:**

**Rainfall:** Within 1 hour of application may reduce control.

**Re-Entry:** Wait at least 12 hours before re-entering treated fields.

**Grazing:** DO NOT graze treated fields. Mature grain or straw may be fed to livestock.

**Preharvest:** Leave at least 80 days from application to harvest.
**Re-cropping Interval:** Follow the chart below for *Everest GBX* components only. If mixing with *Curtail M* as well check for any additional recropping restrictions on the *Curtail M* page:

<table>
<thead>
<tr>
<th>Soil Zones and Rotational Crops</th>
<th>Grey-Wooded</th>
<th>Black and dark brown</th>
<th>Brown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring Wheat</td>
<td></td>
<td>Wheat (Spring &amp; durum)</td>
<td></td>
</tr>
<tr>
<td>Barley</td>
<td></td>
<td>Barley</td>
<td></td>
</tr>
<tr>
<td>Canola (all varieties)</td>
<td></td>
<td>Canola (all varieties)</td>
<td></td>
</tr>
<tr>
<td>Field Pea*</td>
<td></td>
<td>Field Pea*</td>
<td></td>
</tr>
<tr>
<td>Flax</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Field pea may be grown the year following *Everest GBX* application in fields where precipitation has been equal to or above the 10 year average during the growing season, and where organic matter content is above 4%, and pH is below 7.5. The company suggests a minimum of 100 mm (4 inches) of rain is needed in the 60 days following application for adequate breakdown to take place.

**NOTE:** Other rotational crops may also be affected if rainfall is less than the 10 year average for the area. Soils in the grey wooded, black and dark brown soil zones with a combination of low organic matter (less than 2%), light textured soils or high pH (greater than 7.5) (i.e. eroded knolls, sandy soils) may result in delayed growth and development in rotational crops.

**Aerial Application:** DO NOT apply by air.

**Storage:** Store in closed original container in a cool, dry area away from fertilizers, food or feed. DO NOT freeze. If frozen bring *Everest GBX* component to room temperature and agitate (shake) before use. The GBX component is combustible – DO NOT store near heat or open flame.

**Buffer Zones:** Leave at least 20 m from the downwind edge of the spray swath to sensitive upland plants like shelterbelts and woodlots and at least 35 m to water sources or wetland habitats. Avoid drift onto sensitive crops like canola and tame oat. DO NOT mix or load within 10 m of water sources or wetland habitats.

**Sprayer Cleaning:**

*Everest GBX* residues in the spray tank can cause severe injury to sensitive crops at very low concentrations. Sprayers should be cleaned out immediately before using another product. Follow ‘Method A’ on page 15 to 16 to clean sprayers immediately after *Everest GBX* application. Since the GBX component is petroleum based, it is recommended that detergent as indicated in ‘Method B’ also be included in the cleaning process.

**Hazard Rating:**

**Everest Component:**

- Warning – Contains the Allergen Milk

**GBX component:**

- Danger – Poison
- Warning – Eye and Skin Irritant
- Caution – Skin Irritant
- Caution – Flamable

For an explanation of the symbols used here see page 11.
Company:
E.I. DuPont Canada

Formulation:
The Express FX package contains the following components:
Express SG (PCP#28262): 50% tribenuron formulated as a soluble granule.
Container size: 486 g
Dupont Dicamba L (PCP#31536): 480g/L dicamba dimethylamine salt formulated as a solution
Container size: 4.7 L.

Crops and Staging:
Prior to seeding the following crops:
Spring wheat Barley
Durum wheat

Rates:
Express SG: 6 g/acre
Dupont Dicamba L: 58.7mL/acre
One case treats 80 acres
No adjuvant is required when mixing with glyphosate at 180 gae per acre or more.

Weeds and Staging:
Weeds controlled by the pressed use of Express SG and glyphosate when mixed with glyphosate plus:
Kochia resistant to Group 2 herbicides and glyphosate

Tank Mixes:
Herbicides:
Glyphosate (180 g ae per acre – see glyphosate page 195)

See component products for more information on restrictions, application details and handling. Use the most limiting restrictions across all components for the mix.

Express FX
This product is a prepackaged tank mix of Express SG (see tribenuron - page 317) and the equivalent of dicamba 480 (page 135). Information listed is restricted to Crop, Weeds, Rates and Tank mixes. For other detailed restrictions and other general information on the component products see the product pages listed above.

Herbicide Group
2 – tribenuron
4 – dicamba
(Refer to page 45)

Express Pro
See Tribenuron/Metsulfuron on page 320.
**Fenoxaprop**

Company:
ADAMA Canada (Bengal WB)
Bayer CropScience (Puma Advance)
Farmers of North America (HellCat)
FMC of Canada (Cougar)
IPCO (Vigil WB)
Loveland Products Canada (WildCat)
Nufarm Agriculture (Cordon)

Formulation:
Bengal WB (PCP#30843), Cordon (PCP#29494), Cougar (PCP#30473), HellCat (PCP#30055), Vigil WB (PCP#30844), WildCat (PCP#29151):
120 g/L fenoxaprop-p-ethyl formulated as an emulsifiable concentrate.
Container size* - 6.2 L, 12.4 L, 18.6 L, 99.3 L, 312 L.
Puma Advance (PCP#29615): 90 g/L fenoxaprop-p-ethyl.
Container size - 8.25 L, 123.75 L, 412.5 L.

* Check with individual suppliers for the container sizes they have available.

Crops and Staging:
Application beyond the maximum rates provided below may result in crop injury.

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring wheat (including durum), Barley†</td>
<td>1 to 6 leaves on the main stem plus 3 tillers</td>
</tr>
<tr>
<td>Barley‡</td>
<td>1 to 5 leaves on the main stem plus 2 tillers</td>
</tr>
<tr>
<td>Perennial ryegrass for seed production only* (seedling or established†)</td>
<td>2 to 4 leaves</td>
</tr>
<tr>
<td>Meadow bromegrass (seedling or established) (forage or seed production)**</td>
<td></td>
</tr>
</tbody>
</table>

† *Puma Advance only.* Late application of other products could result in injury to barley.
‡ *Bengal WB, Cordon, HellCat, Vigil WB, or WildCat only.* Apply to barley only when tank mixed with a registered broadleaf product. **NOTE: Application of other fenoxaprop products to barley can result in crop injury.
* Perennial ryegrass with *Bengal WB, Cordon, Cougar, Vigil WB* or *WildCat* by ground only.

Herbicide Group
1 - fenoxaprop
(Refer to page 45)

** Meadow bromegrass with *Puma Advance* by ground only.

NOTE: Since the uses on forage grasses were registered under the User Requested Minor Use Label Expansion (URMULE) program, the manufacturer assumes no responsibility for herbicide performance. *Those who apply this use do so at their own risk.*

Durum wheat, forage grasses and barley may experience some initial, temporary stunting and yellowing that rarely results in yield loss. Injury is more likely under stress conditions (see “Effect of Growing Conditions” section).

Treatment at the 3 to 4 leaf stage of cereal crops and weeds will maximize crop tolerance and weed control. Temporary crop injury such as shortening or discoloration may be observed after application. Such injury is more likely to occur in barley and also when *fenoxaprop* is applied outside recommended stages.

Application Information:
Water Volume:
*Ground application:* 23 to 45 L per acre. Use higher water volumes for dense canopies.
*Aerial application:* A minimum of 14 L per acre.

Nozzles and Pressure: Use 40 psi (275 kPa) when using conventional 80° or 110° flat fan nozzles. Angle nozzles forward at 45° to improve contact with vertical leaf surfaces. Low drift nozzles may require higher pressures for proper performance. Use nozzles and pressure designed to deliver proper coverage with ASABE medium droplets or larger.
DO NOT use flood jet nozzles, controlled droplet application equipment or Spra-foil equipment.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
DO NOT apply *fenoxaprop* 2 to 3 days prior to, or following, temperatures of 3°C or lower as crop injury may occur. Under stressful conditions (hot/dry, water logging, disease or insect damage) or heavy crop canopy, early application will improve weed control.
DO NOT apply by air when both the temperature is greater than 25°C and the relative humidity is less than 30%.
Weeds, Rates and Staging:
Apply from the 1 to 6 leaf stage up to emergence of 3rd tiller of the weeds below. Apply at the 3 to 4 leaf stage for optimum control. Optimum weed control and yield response occurs when weeds are removed before tillering. DO NOT apply fenoxaprop or products containing fenoxaprop to a crop more than once per year.

<table>
<thead>
<tr>
<th>WEEDS</th>
<th>RATE (mL/ACRE)</th>
<th>RATE (ACRES PER PACKAGE†)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green foxtail only</td>
<td>206</td>
<td>156</td>
</tr>
<tr>
<td>Low wild oat infestations*</td>
<td>360</td>
<td>271</td>
</tr>
<tr>
<td>Moderate-heavy wild oat infestations, barnyard grass, green and yellow foxtail</td>
<td>413</td>
<td>312</td>
</tr>
</tbody>
</table>

† Based on 12.4 L for 120g/L formulations and 16.5 L for Puma Advance.
* Low wild oat rate for use on WHEAT AND DURUM ONLY, and when applied alone and NOT in a tank-mix. NOT for use with perennial ryegrass or meadow bromegrass.

Tank Mixes:
Herbicides:
DO NOT apply Bengal WB, Cordon, Vigil WB or WildCat in barley without a broadleaf herbicide mix. ALWAYS tank mix with a registered broadleaf herbicide.

2,4-D Ester (170 g ae/acre† - see 2,4-D page for product rates)
Ally (2 to 3 g/acre)†
Attain XC (label rates)†
Bromoxynil/2,4-D ester (label rate)†
Bromoxynil/MCPA ester (label rate)†
Curtail M (0.6 to 0.8 L/acre)
Dichlorprop/2,4-D (label rate)†
Estaprop XT (label rates)†††
DyVel (0.5 L/acre)**
DyVel DSp (0.45 L/acre)*** △△
Infinity (0.33 L/acre)†††△△
Lontral 360*** (0.17 L/acre)
Lontral 360*** (0.17 L/acre) + MCPA 500 Ester (0.34 L/acre)†
Lontral 360*** (0.112 L/acre) + MCPA 500 Ester (0.34 to 0.45 L/acre)†
MCPA Amine or Ester (0.28 L/acre) (600 g ai/L formulation)
Mecoprop-p*** (2.2 to 2.8 L/acre)△△
Prestige XC (label rates)††
Refine SG (12 g/acre)††
Refine SG (12 g/acre) + MCPA (rates above)††
Refine SG (4 g/acre) + Buctril M (0.4 L/acre)††
Spectrum (20 acres/case rate)**††
Triton C (label rate)△△△
Trophy (20 acres per case)†††
† All products except HellCat.
†† Puma Advance and Cougar *** only.
††† Cordon and Cougar only.
△ Manufacturers may only support mixes with specific brands. Contact the manufacturers for more information.
△△ Puma Advance, Cordon and Cougar only.
△△△ Puma Advance only.
* Use only at the high rate of fenoxaprop.
** Use only at the green foxtail rate of fenoxaprop.
*** Use in wheat only

Insecticides: None registered.
Fungicides: None registered.
Fertilizers: None registered.

Note: The above mixes are those listed on the fenoxaprop label only.

Fenoxaprop manufacturers may also support mixes with pesticides that are not on the fenoxaprop labels. Check with each manufacturer for the products they support. Mixes must be applied according to the most restrictive use limitations for all products added to the tank.

Leave an interval of 7 days prior to application or 4 days after application of fenoxaprop, when applying any pesticide that is not registered as a tank mix.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Within 1 hour may reduce control.
Re-Entry: DO NOT re-enter treated fields for 12 hours.
Grazing: DO NOT graze or cut cereal crops or meadow bromegrass for hay, within 25 days of application. DO NOT graze or cut perennial ryegrass crop for hay within 65 days of application.
Preharvest Interval: DO NOT harvest within 65 days of application.
Re-cropping: No restrictions in the year after application. Only one application may be made per year.
Aerial Application: May be applied by air.
Storage: DO NOT freeze.
Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats</td>
<td>Terrestrial habitat</td>
</tr>
<tr>
<td>Ground*</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Aerial</td>
<td>3</td>
<td>33</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* These distances can be reduced by 30% using cones on individual nozzles and by 70% using a full shield (shroud, curtain) that extends to the crop canopy.
† Distance is measured from the downwind edge of the boom to sensitive areas.

Sprayer Cleaning:
Refer to 'Method B' in the general section on sprayer cleaning on page 15 to 16.

Hazard Rating:

⚠️ Caution – Poison.

Cougar, HellCat and WildCat:
⚠️ Warning – Eye and Skin Irritant.

Bengal:
⚠️ Danger – Eye and Skin Irritant

All:
⚠️ Warning – Contains the allergen soy

For an explanation of the symbols used here see page 11.
**Flexstar GT***

*(For use only in the Red River Valley of Manitoba)*

**Company:**
Syngenta Canada (PCP#30412)

**Formulation:**
67 g/L fomesafen and 271 g/L glyphosate formulated as a solution.
Container size: 2x10 L and 450 L

**Crops and Staging:**
*Flexstar GT* may be applied as a pre-seed burn down or as pre-emergent to the crop of soybeans or as early post-emergent on 1 to 2 trifoliate leaf stage of glyphosate tolerant soybeans only.
For use in the Red River Valley of Manitoba only.

**Weeds and Staging:**
Control of the following weeds at the cotyledon to 3 or 4 true leaf stage.

**Grasses**
- Barnyard grass
- Bromegrass (smooth)
- Cattail (common)
- Crabgrass (large, smooth)
- Downy brome
- Foxtail barley
- Foxtail (green, yellow)
- Persian darnel

**Broadleaf Weeds**
- Absinthe
- Canada thistle
- Chickweed, common
- Cleavers
- Clover, white
- Cocklebur
- Cow cockle
- Curled dock
- Dandelion
- Field bindweed
- Fleabane (Canada)
- Flixweed
- Hemp-nettle
- Horsetail
- Knotweed (Japanese, prostrate)
- Kochia
- Lamb’s-quarters
- Milkwed (common)
- Narrow-leaved hawk’s-beard
- Night-flowering catchfly

**Rates:**
840 mL per acre.
DO NOT apply *Flexstar GT* or other products containing the ingredient fomesafen more than once in two consecutive years.
Add *Turbocharge* adjuvant at 0.25 L per 100 L spray solution only when weeds are under stress conditions and for larger weeds.
A general guide to mixing can be found on page 14.

**Application Information:**

**Water Volume:** Minimum of 60 to 80 L clean, clear water per acre. Higher spray volume is required for dense weed stands.

**Pressure:** 210 kPa (35 psi). Increase pressure to 420 kPa (70 psi) for fields with heavy weed densities or with weeds at the upper limit of their recommended stage.

**Nozzles:** Use nozzles capable of delivering appropriate pressures and volumes.

**How it Works:**
Refer to Table 2 on page 47.
Effects of Growing Conditions:
Moisture is necessary to activate the herbicide for residual weed control. Dry weather following application of the herbicide may reduce effectiveness. Extremes in environmental conditions such as temperature, moisture, soil conditions, and cultural practices may affect activity.

Tank Mixes:
Herbicides:
Touchdown Total (0.28 to 1.0 L per acre)
Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Within 4 hours may reduce control.
Re-entry: DO NOT re-enter treated fields for 12 hours.
Pre-harvest Interval: Leave at least 90 days from application to harvest.
Grazing: DO NOT graze treated crop or cut for hay. There is insufficient data to support such use.
Re-cropping: Winter wheat may be sown 4 months after application. Spring wheat, dry beans, soybeans and field corn may be grown the year following an application. DO NOT apply Flexstar GT to any field more often than once every 2 years. These re-cropping restrictions refer only to the Red River Valley of Manitoba. Use outside this is region is not registered as re-cropping options have not been determined.

Aerial Application: DO NOT apply by air.
Storage: Store above -10°C, in a dry place in original container, away from food or feed.
Buffer Zones: Leave a buffer zone of at least 15 m between the last spray swath and the edge of sensitive terrestrial areas such as shelterbelts, hedgerows and shrublands as well as aquatic areas such as ponds, streams, rivers, prairie potholes and sloughs. Do not apply when winds are greater than 15 km/hr.

Sprayer Cleaning:
Refer to 'Method B' in the general section on sprayer cleaning on page 15 to 16.

Hazard Rating:
Warning – Eye Irritant.
For an explanation of the symbols used here see page 11.

Florasulam + 2,4-D

Company:
Dow AgroSciences (Frontline 2,4-D)
FMC of Canada (Spitfire)
Farmers of North America (MPower Battlefront)

Herbicide Group
2 - florasulam
4 - 2,4-D

Formulation:
The Frontline 2,4-D XC package has 2 components:
Frontline 2,4-D XC A (PCP# 30060): 50 g/L florasulam formulated as a suspension concentrate
Frontline 2,4-D XC B (PCP# 30061): 660 g/L 2,4-D LV ester formulated as an emulsifiable concentrate.

Container sizes:
Frontline 2,4-D XC A: 1.6 L.
Frontline 2,4-D XC B: 2 x 6.8 L

-or-
Spitfire (PCP# 31252), MPower Battlefront (PCP# 31325): 50 g/L florasulam formulated as a suspension concentrate.

Container size - 2 x 6.4L
(2,4-D Ester component purchased separately)
Crops and Staging:
Spring wheat (including durum) - 3rd leaf fully expanded to 6 leaf stage.
When mixing, always check the tank mix partner recommendations for additional staging restrictions.

Weeds and Staging:
Broadleaf weeds controlled at the 2 to 4 leaf stage:
Bluebur  Redroot pigweed
Burdock   Russian thistle
Chickweed  Shepherd’s-purse
Cleavers  Smartweed (including lady’s-thumb)
Cocklebur  Sow-thistle (annual)
Dandelion*  Stinkweed
Flixweed   Sunflower (annual)
Lamb’s-quarters  Tartary buckwheat
Mustard (all, wild)  Vetch
Narrow-leaved hawk’s-beard (up to 2 leaf)  Volunteer canola†
Plantain   Wild buckwheat
Prickly lettuce   Wild radish
Ragweed (common)
Broadleaf weeds suppressed:
Canada thistle (top growth control only)  Perennial sow-thistle (top growth control only)
Hemp-nettle
* Seedlings and overwintered rosettes
† Including all herbicide-tolerant canola varieties

Rates:
Frontline 2,4-D XC A: 40 mL per acre
Frontline 2,4-D XC B: 340 mL per acre.
One package treats 40 acres.
-or-
Spitfire or MPower Battlefront: 40 mL per acre. (2 x 6.4 L treats 320 acres)
-plus-
2,4-D Ester: 227 g ae per acre (purchased separately).
Note: Maximum one application of this product or other products containing florasulam within a two year time span.
Refer to the product label for complete mixing instructions for this product and its mixes.
A general guide to mixing can be found on page 14.

Application Information:
Water Volume: 40 L per acre.
Nozzles and Pressure: Maximum 30 to 40 psi (200 to 275 kPa) with conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use nozzles and pressure designed to deliver thorough, even coverage with ASABE coarse droplets.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Warm, moist growing conditions promote active weed growth and enhance activity of florasulam + 2,4-D. Weeds hardened off by cold weather or drought stress may not be adequately controlled or suppressed and re-growth may occur. Under conditions of low crop and high weed density, control may be reduced. Extreme growing conditions such as drought or near freezing temperature prior to, at, or following time of application may reduce weed control and increase the risk of crop injury at all stages of growth.

Tank Mixes:
Herbicides:
In spring wheat (including durum):
Assert 300 SC (0.65 L/acre) plus Acidulate
Everest 2.0* (15 to 29 mL/acre) plus non-ionic surfactant
*Refer to the Everest 2.0 product label for additional information on rates. Application of this tank mix to wheat under environmental stress may result in injury.
Insecticides: None registered.
Fertilizers: None registered.
Note: The above mixes are those listed on the florasulam + 2,4-D label only.
Floralsulam + 2,4-D manufacturers may also support mixes with pesticides that are not on the product labels. Check with each manufacturer for the products they support. Mixes must be applied according to the most restrictive use limitations for all products added to the tank.
Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information. DO NOT apply excessive irrigation following application as product may leach.
Re-entry: DO NOT enter treated fields for at least 12 hours.
Grazing: DO NOT allow lactating dairy animals to graze treated areas within 7 days of application. Withdraw meat animals from treated fields at least 3 days before slaughter. DO NOT harvest forage or cut hay within 30 days of application.
Preharvest Interval: Leave 60 days between application and harvesting mature crop.
Re-cropping: Wheat, barley, canola, chickpea*, corn*, dry beans*, flax*, lentil*, mustard* (brown, oriental, yellow, and oilseed quality B. juncea types), oats, peas, potato* (except seed potato), soybean* or sunflower* may be grown the year following an application.
* Frontline 2,4-D only.

Aerial Application: DO NOT apply by air.

Storage: Store in dry, heated area. If frozen, bring to room temperature and agitate before use.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground only*</td>
<td>5</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:
Refer to page 15.

Hazard Rating:

⚠️ Warning – Poison

May cause skin and eye irritation.

For an explanation of the symbols used here see page 11.

Florasulam + Curtail M

Company:
Dow AgroSciences (Spectrum)
FMC of Canada (Spitfire)
Farmers of North America (MPower Battlefront)

Formulation:
Each case of Spectrum contains 2 components:

Spectrum A (PCP# 27031): 50 g/L florasulam formulated as a suspension concentrate. Container size - 0.8 L

Spectrum B (PCP# 27032): 50 g/L clopyralid and 280 g/L of MCPA ester formulated as an emulsifiable concentrate. Container size - 12 L.

- or -

Spitfire (PCP# 31252), MPower Battlefront (PCP# 31325): 50 g/L florasulam formulated as a suspension concentrate. Container Size - 2 x 6.4 L
(Curtail M component purchased separately)

Crops and Staging:
All Products:
Spring wheat (including durum), barley and oats in the 2 to 6 leaf stage.

Spectrum only:
Forage Grasses* (seedling and established) grown for seed production:
No staging indicated for forage grasses.

Bromegrass (meadow, smooth, hybrid)
Fescue (chewings, creeping red, hard, tall)

Perennial Ryegrass
Timothy
Wheatgrass (crested, intermediate)

* NOTE: Since these uses are registered under the User Requested Minor Use Label Expansion (URMULE) program, the manufacturer assumes no responsibility for herbicide performance. Users of this product on forage grasses do so at their own risk.
Weeds and Staging:

Broadleaf weeds controlled at the 2 to 4 leaf stage:
- Canada thistle
- Chickweed (common)
- Cleavers
- Dandelion**
- Flixweed*
- Hemp-nettle
- Lamb’s-quarters
- Redroot pigweed
- Shepherd’s-purse
- Smartweed
- Sow-thistle (annual)
- Sow-thistle (perennial)†
- Stinkweed
- Stork’s-bill
- Volunteer canola (all varieties)
- Wild mustard
- Wild buckwheat

Broadleaf weeds suppressed:
- Dandelion***
  * Spring seedlings only.
  ** Seedlings and overwintered rosettes < 15 cm.
  *** Overwintered rosettes > 15 cm; mature plants.
  † Top growth control only.

Rates:
- **Spectrum A**: 40 mL per acre
- **Spectrum B**: 600 mL per acre
  (One case treats 20 acres.)
- or-
- **Spitfire or MPower Battlefront**: 40 mL per acre (one 6.4 L container treats 160 acres)
- plus-
- **Curtail M (must be purchased separately)**: 600 mL per acre

Note: Maximum one application of these products or other products containing florasulam within a two year time span.

Application Information:

Water Volume: 40 L per acre.

Nozzles & Pressure: Maximum 30 to 40 psi (200 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use nozzles and pressure designed to deliver thorough, even coverage with ASABE coarse droplets.

How it Works:

Refer to Table 2 on page 47.

Effects of Growing Conditions:

Warm, moist growing conditions promote active weed growth and enhance activity of Spectrum. Weeds hardened off by cold weather or drought stress may not be adequately controlled or suppressed and regrowth may occur. Under conditions of low crop and high weed density, control may be reduced. Extreme growing conditions such as drought or near freezing temperature prior to, at, or following time of application, may increase the risk of crop injury at all stages of growth.

Tank Mixes:

**Herbicides:**

In spring wheat (including durum) and barley:
- **Assert** (0.65 L/acre) plus **Acidulate Everest 2.0** (15 to 29 mL/acre) plus non-ionic surfactant

*Refer to the Everest 2.0 product label for additional information on rates. Application of this tank mix to wheat under environmental stress may result in injury.

In spring wheat (including durum) and winter wheat:
- **Simplicity** (0.15 to 0.20 L/acre)

**Insecticides:** None registered.

**Fungicides:** None registered.

**Fertilizers:** None registered.

Note: The above mixes are those listed on the florasulam + Curtail M labels only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:

**Rainfall:** No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information.

**Re-Entry:** DO NOT re-enter treated fields for 12 hours.

**Grazing:** DO NOT graze treated crop or cut for feed within 7 days of application. Withdraw meat animals from treated fields at least 3 days before slaughter.

**Preharvest:** DO NOT apply within 60 days of harvest.

**Re-cropping:** Barley, canola, corn, field pea*, flax, oat, mustard (brown, oriental, and yellow) and wheat may be grown the year following an application or the field can be fallowed.

* DO NOT seed to field pea for at least 10 months following treatment. Very dry soil conditions following application can result in a risk of injury to field pea grown in rotation. If severe drought conditions are experienced during the months of June to August inclusive in the year of application delay seeding field pea an additional 12 months (22 months following application). Contact your local Dow AgroSciences representative or retailer for more information before seeding field pea following drought conditions in the previous year.

**Aerial Application:** DO NOT apply by air.

**Storage:** Store in dry, heated (greater than 5°C) area. **Spectrum A** will freeze at -10°C. If frozen, bring to room temperature and agitate before use.
Florasulam + glyphosate

Company:
Dow AgroSciences (PrePass XC, PrePass Flex)
ADAMA Canada (Priority)
FMC of Canada (Spitfire)
Farmers of North America (MPower Battlefront)
Loveland Products Canada (Blitz)

Formulation:
The PrePass XC package contains 2 components:
PrePass XC A (PCP#29651): 50 g/L florasulam formulated as a suspension concentrate.
Container size - 1.6 L (40 acre), 4 x 12 L (1200 acre).
PrePass XC B (PCP#29652): 480 g/L glyphosate DMA salt formulated as a solution.
Container size - 2 x 7.5 L (40 acre); 4 x 112.5 L or 450 L (1200 acre).
- or -
PrePass Flex (PCP#31259): 25% florasulam formulated as a water dispersible granule.
Container size - 8 x 0.65 kg (640 acres)
- or -
Priority (PCP#30831), Spitfire (PCP#31252), MPower Battlefront (PCP#31325), Blitz (PCP#31687): 50 g/L florasulam formulated as a suspension concentrate.
Container size - 2 x 6.4L (320 acre)
PrePass Flex, Priority, Spitfire, MPower Battlefront and Blitz DO NOT come packaged with glyphosate. Glyphosate must be purchased separately.

Sprayer Cleaning:
Refer to ‘Method A’ in the general section on sprayer cleaning on page 15 to 16. Check the cleanout requirements of pesticides mixed with this product. Additional cleanout measures may need to be integrated into those provided here.

Hazard Rating:
Caution – Poison
May cause eye irritation
For an explanation of the symbols used here see page 11.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
<th>Aquatic Habitats of Depths</th>
<th>Terrestrial habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less than 1 m</td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td>Ground only*</td>
<td></td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance is measured from the downwind edge of the boom to sensitive areas.
Handheld or backpack applications do not require a buffer.

Weeds and Staging:
Florasulam + glyphosate will control the following weeds:
Weeds controlled by glyphosate at the 180 g ae/acre rate plus enhanced control of the following weeds:

Broadleaf weeds controlled at the 2 to 4 leaf stage:
Canada fleabane (up to 8 cm)
Common chickweed
Cleavers
Cow cockle††
Dandelion (up to 30 cm across)
Flixweed†
Hemp-nettle
Kochia*
Lamb’s-quarters
Narrow-leaved hawk’s-beard (up to 8 cm)††
Ragweed (common)
Redroot pigweed
Russian thistle†
Scentless chamomile†
Shepherd’s-purse
Stinkweed
Smartweed (including lady’s-thumb)
Volunteer canola (all varieties)
Wild buckwheat (up to 5 leaf)
Wild mustard

Broadleaf weeds suppressed:
Annual sow-thistle
Perennial sow-thistle***

* Note: Florasulam + glyphosate will not control glyphosate resistant kochia.
** Earlier applications provide better results.
† PrePass XC and PrePass Flex only.
†† PrePass XC, PrePass Flex, Priority and Blitz only.

Rate:
PrePass XC A: 40 mL per acre.
- plus-
PrePass XC B: 375 mL per acre.
- or-
Prepass Flex: 8.1 g per acre.
- or-
Priority, Spitfire, MPower Battlefront or Blitz: 40 mL per acre.
- plus-
Glyphosate (purchased separately): 180 g ae per acre (see glyphosate page for product rates).
(See "Formulations:" section for package rates.)

Maximum one application of these products or other products containing florasulam within a two year time span.

Application Information:
Water Volume: 20 to 40 L per acre.
Nozzles and Pressure: Use 30 to 40 psi (200 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use nozzles and pressure designed to deliver thorough, even coverage with ASABE coarse droplets.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Florasulam: Warm, moist growing conditions promote active weed growth and enhance activity. Weeds hardened off by cold weather or drought stress may not be adequately controlled or suppressed and re-growth may occur.
Glyphosate: Best results are achieved when temperatures are relatively warm, in bright sunshine and when weeds are actively growing. Frost that kills more than 40% of above ground tissue will reduce control. Heavy dust layer on leaves will also reduce control.

Tank Mixes:
PrePass XC: None registered.
PrePass Flex: glyphosate IPA, DMA or K+ salt at 180 to 1020 g ae/acre.
Priority, Spitfire, MPower Battlefront or Blitz: must be mixed with glyphosate IPA or DMA salt at 180 g ae/acre.
Supported unlabelled mixes - Apply mixes according to the most restrictive use limitations for either product:
Dow AgroSciences supports the following mixes that are not on the PrePass label:
Herbicides: 2,4-D ester, MCP A ester, Vantage Plus Max II**
** NOTE: Dow AgroSciences does not support the topping up of PrePass XC with other salts of glyphosate as they may have a negative reaction with the florasulam component. PrePass Flex may be topped up with any formulation of glyphosate, as indicated above.
ADAMA supports the following mixes that are not on the Priority label.
Herbicides: glyphosate (all salts).
Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Heavy rainfall immediately after application may wash the chemical off the foliage. DO NOT apply if rainfall is forecast for the time of application. Contact manufacturer for more information. DO NOT apply excessive irrigation following application as product may leach.
Re-entry: DO NOT enter treated fields for at least 12 hours.
Grazing: DO NOT graze treated crop or cut for feed within 7 days of application.
Re-cropping: Spring wheat (including durum), barley and oat, may be seeded, or the field may be fallowed, after applications made in the spring prior to seeding, or the previous year after August 1. Barley, canola, chickpeas*, dry beans*, field peas, flax*, lentils*, mustard* (brown, oriental, yellow and oilseed quality B. juncea) oat, soybeans*, sunflower* and wheat, may be grown following applications made prior to August 1 of the previous season.

Aerial Application: DO NOT apply by air.
Storage: Store in dry, heated area. DO NOT freeze.
Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground only*</td>
<td>15</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:
Refer to ‘Method A’ in the general section on sprayer cleaning on page 15 to 16.

Hazard Rating:

\[\text{Caution – Poison}\]

\[\text{Caution – Irritant, may cause eye irritation.}\]

For an explanation of the symbols used here see page 11.

Florasulam + MCPA Ester

Company:
Dow AgroSciences (Frontline XL)
ADAMA Canada (Topline)
FMC of Canada (Spitfire)
Farmers of North America (MPower Battlefront)

Formulation:

Frontline XL (PCP#28804): 4 g/L florasulam and 280 g/L MCPA ester formulated as an emulsifiable concentrate.
Container size - 2 x 10 L.
The Topline package contains two components:
Florasulam SC (PCP#30814): 50 g/L florasulam formulated as a suspension concentrate.
Checkmate MCPA Ester 600 (PCP#27804): 600 g/L MCPA Ester formulated as an emulsifiable concentrate.
Container size - Florasulam SC: 1.6 L; MCPA Ester: 9.33
Spitfire (PCP#31252), MPower Battlefront (PCP#31325): 50 g/L florasulam formulated as a suspension concentrate.
(MCPA Ester component purchased separately)
Container size - 2 x 6.4L

Crops and Staging:
All Products:
Spring wheat (including durum), barley and oats in the 2 to 6 leaf stage.

Frontline XL only:
Seedling and established timothy for forage and seed production*:
Seedlings: from the 2 leaf fully expanded stage up to the flag leaf stage.
Established: no stage restrictions.

* NOTE - Since applications to timothy has been registered under the User Requested Minor Use program, the manufacturer assumes no responsibility for herbicide performance. Application to timothy is at the risk of the user.

When tank-mixing, always check the tankmix partner recommendations for additional staging restrictions.

Herbicide Group
2 - florasulam
4 - MCPA
(Refer to page 45)
Weeds and Staging:

Broadleaf weeds controlled at the 2 to 4 leaf stage:
- Ball mustard
- Burdock**
- Chickweed
- Cleavers
- Cow cockle††
- Flixweed**
- Hemp-nettle
- Lamb's-quarters
- Prickly lettuce**
- Ragweed (common)
- Redroot pigweed§
- Russian pigweed**
- Shepherd’s-purse
- Smartweed
- Stinkweed
- Sunflower (annual)**
- Volunteer canola*
- Wild mustard
- Wild buckwheat

Broadleaf weeds suppressed:
- Canada thistle§
- Dandelion***
- Plantain†
- Stork’s-bill
- Sow-thistle (annual)
- Sow-thistle (perennial)
- Sow-thistle ( annual)
- Top growth control

* including all herbicide-tolerant canola varieties
** up to the 4 leaf stage of development
*** seedlings and overwintered rosettes less than 15 cm (6 inches)
§ for improved control of this weed add an additional 47.5 mL per acre of MCPA LV600.
† top growth control
†† Frontline XL and Priority only.

Rate:

Frontline XL: 0.5 L per acre
-or-
Topline (sold with Checkmate MCPA 600 Ester), Spitfire or MPower Battlefront (MCPA ester sold separately)†
Florasulam: 40 mL per acre
-plus-
MCPA 600 Ester: 0.23 L per acre

(One case of Frontline XL or Topline treats 40 acres. One case of Spitfire or MPower Battlefront treats 320 acres.)

Note: Maximum one application of these products or other products containing florasulam within a two year time span.

Refer to the product label for complete mixing instructions for this product and its mixes. A general guide to mixing can be found on page 14.

Application Information:

Water Volume: A minimum of 40 L per acre.
Nozzles and Pressure: Maximum 30 to 40 psi (200 to 275 kPa) with conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use nozzles and pressure designed to deliver thorough, even coverage with ASABE coarse droplets.

How it Works:

Refer to Table 2 on page 47.

Effects of Growing Conditions:

Warm, moist growing conditions promote active weed growth and enhance activity of florasulam + MCPA ester. Weeds hardened off by cold weather or drought stress may not be adequately controlled or suppressed and re-growth may occur. Under conditions of low crop and high weed density, control may be reduced. Extreme growing conditions such as drought or near freezing temperature prior to, at or following time of application may increase the risk of crop injury at all stages of growth.

Tank Mixes:

Herbicides:
In spring wheat (including durum) and barley only:
- Assert (0.65 L / acre) plus Acidulate.
In spring wheat (including durum) only:
- Simplicity at 0.2 L / acre (no adjuvant required).†

Insecticides: None registered.
Fungicides: None registered.
Fertilizers: None registered.

* This tank mix may result in reduced levels of green foxtail control.
† Frontline XL only.

Note: The above mixes are those listed on the florasulam + MCPA ester labels only.

Dow AgroSciences also supports the following mixes that are not on the Frontline XL label. Apply mixes according to the most restrictive use limitations for either product:
Herbicides: Axial BIA, Clodinafop (Signal and NextStep)

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:

Rainfall: No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information. DO NOT apply excessive irrigation following application as product has the potential to leach.
Re-Entry: DO NOT enter treated fields for at least 12 hours.
Grazing: DO NOT allow lactating dairy animals to graze treated crops or cut for feed or hay within 7 days of application. Withdraw meat animals from treated feed 3 days prior to marketing. DO NOT graze timothy or cut for forage within 7 days of treatment.
Preharvest Interval: DO NOT apply within 60 days of harvest.
Re-cropping: Wheat, barley, canola, chickpea*, corn*, dry beans*, flax*, lentil*, mustard* (brown, oriental, yellow and oilseed quality B. juncea types), oats, peas, potato* (except seed potato), soybean* or sunflower* may be grown the year following an application.

* Frontline XL only.
Aerial Application: DO NOT apply by air.
Storage: Store in dry, heated area. If frozen, bring to room temperature and agitate before use.

Buffer Zones:

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</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:
Refer to ‘Method A’ in the general section on sprayer cleaning on pages 15 to 16. When mixing with other pesticides, combine the method above with the method recommended for the tank mix partner if different from above for thorough cleaning.

Hazard Rating:

**Frontline XL:**

⚠️ Warning – Potential skin sensitizer.

**Florasulam SC:**

⚠️ Caution – Poison.

**MCPA 600 Ester:**

⚠️ Warning – Poison

Both may cause eye and skin irritation irritation.

For an explanation of the symbols used here see page 11.

Florasulam/fluroxypyr + MCPA ester

Company:

ADAMA (Outshine)
Dow AgroSciences (Stellar)

Formulation:

**Stellar A** (PCP# 29286, Outshine (PCP# 31646)): 2.5 g/L florasulam and 100 g/L fluroxypyr formulated as a suspension concentrate.

Container size - 2 x 8 L.

**Stellar B** (PCP# 29165), MCPA 2 EH Ester 600 (PCP# 31699): 600 g/L of MCPA ester formulated as an emulsifiable concentrate.

Container size - 1 x 9.33 L.

Crops and Staging:

Barley, oat (Stellar only) and spring wheat (including durum) - 2 to 6 leaf stage.

When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

Weeds and Staging:

Apply when weeds are at the 2 to 4 leaf stage.

- Burdock†
- Chickweed (Common)
- Cleavers
- Cocklebur†
- Flixweed
- Hemp-nettle
- Kochia
- Lamb’s-quarters
- Plantain†
- Prickly lettuce†
- Ragweed
- Pigweed (redroot, Russian†)

* Suppression only
† Stellar only.

Weeds and Staging:

Apply when weeds are at the 2 to 4 leaf stage.

- Shepherd’s-purse
- Smartweed
- Stinkweed†
- Stork’s-bill*
- Sunflower (annual)
- Vetch†
- Volunteer canola
- Volunteer flax
- Wild buckwheat
- Wild mustard
- Wild radish†
Rates:
Stellar A: 0.4 L per acre  
Stellar B: 0.24 L per acre  
(One case treats 40 acres)

Application Information:
Water Volume: Minimum 40 L per acre.
Nozzles & Pressure: For conventional flat fan nozzles use a pressure of 30 to 40 PSI (200 to 275 kPa). Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE coarse droplets. Low drift nozzles may require higher pressures for proper performance.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
DO NOT apply to crops or weeds that are stressed (frost, low fertility, drought or flooding, disease or insect damage) as crop injury or reduced weed control may result.

Tank Mixes:
Herbicides:
Barley, spring wheat, and durum only:
Assert (0.65 L/acre)

Spring Wheat (including durum) only:
Everest 2.0 (19.4 to 29.1 mL/acre plus adjuvant - see flucarbazone)

Spring wheat (including durum) only:
Simplicity (0.15 to 0.20 L/acre)

Insecticides: None registered.
Fungicides: None registered.
Fertilizers: None registered.

Note: The above mixes are those listed on the Stellar label only.

Manufacturers may also support the following mixes that are not on the Florasulam/fluroxypyr + MCPA ester labels. Check with each manufacturer for the products they support. Mixes must be applied according to the most restrictive use limitations for all products added to the tank.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information.
Re-entry: DO NOT enter treated fields for at least 12 hours.
Preharvest: Leave 60 days between treatment and harvest.
Grazing: DO NOT graze or harvest for livestock feed within 7 days of treating the crop.
Recropping: Wheat, barley, oat, canola, and pea may be grown the season following application or the field may be fallowed. There are no recropping restrictions the second year after application.
Aerial Application: DO NOT apply by air.
Storage: May be frozen. If frozen, bring to room temperature and agitate before use. This product is combustible. DO NOT store near heat or open flame.
Buffer Zones: Leave 30 metres between the downwind edge of the boom and sensitive terrestrial habitats such as forested areas shelterbelts, woodlots, hedgerows, and shrub lands and 15 metres to sensitive freshwater habitats such as lakes, rivers, sloughs ponds, prairie potholes, creeks marshes streams reservoirs and wetlands.

Sprayer Cleaning:
Refer to ‘Method A’ in the general section on sprayer cleaning on page 15 to 16. If mixed with another pesticide additional clean-out measures may be necessary.

Hazard Rating:

⚠️ Warning – Poison
⚠️ Warning – Eye and Skin Irritant.
⚠️ Potential skin sensitizer.

For an explanation of the symbols used here see page 11.
Flucarbazone

Company:
Arysta LifeScience Canada (Everest 2.0)
Syngenta Canada (Sierra 2.0)

Formulation:
*Everest 2.0 (PCP# 30342), Sierra 2.0 (PCP# 30430): 397 g/L flucarbazone formulated as a suspension concentrate.
Container size - 1.94 L

Crops and Staging:
Spring application to wheat (spring, durum, winter) with 1 leaf to a maximum of 4 main stem leaves plus 2 tillers (6 total leaves).

Note: Several of the tank mix partners have more limiting staging than flucarbazone. When tank mixing use the most restrictive application state or injury may result.

Weeds, Rates and Staging:

Grass weeds: Maximum of 4 main stem leaves and 2 tillers

<table>
<thead>
<tr>
<th>WEED</th>
<th>RATE</th>
<th>mL PER ACRE</th>
<th>ACRES PER 1.937 L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green foxtail*</td>
<td>14.6</td>
<td>134</td>
<td></td>
</tr>
</tbody>
</table>

Weeds listed above plus:
Wild oat* (light infestations) (< 100 plants/m²), volunteer oat, green smartweed, redroot pigweed*, shepherd’s-purse*, volunteer canola*, wild mustard*, stinkweed* (2 to 9 leaf stage)

<table>
<thead>
<tr>
<th>WEED</th>
<th>RATE</th>
<th>mL PER ACRE</th>
<th>ACRES PER 1.937 L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild oat* (heavy populations) (&gt; 100 plants/m²), Japanese brome up to 4 leaf stage, both growing under ideal growing conditions</td>
<td>19.4</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Weeds listed above plus:
Wild oat* (heavy populations) (> 100 plants/m²), Japanese brome up to 4 leaf stage, both growing under poor growing conditions or when mixing with herbicides containing the a.i. dicamba (see pages 20-23)

<table>
<thead>
<tr>
<th>WEED</th>
<th>RATE</th>
<th>mL PER ACRE</th>
<th>ACRES PER 1.937 L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild oat* (heavy populations) (&gt; 100 plants/m²), Japanese brome up to 4 leaf stage, both growing under poor growing conditions or when mixing with herbicides containing the a.i. dicamba (see pages 20-23)</td>
<td>24.3</td>
<td>80</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WEED</th>
<th>RATE</th>
<th>mL PER ACRE</th>
<th>ACRES PER 1.937 L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild oat* (heavy populations) (&gt; 100 plants/m²), Japanese brome up to 4 leaf stage, both growing under poor growing conditions or when mixing with herbicides containing the a.i. dicamba (see pages 20-23)</td>
<td>29.1</td>
<td>67</td>
<td></td>
</tr>
</tbody>
</table>

Requires the addition of a non-ionic surfactant (Agral 90, Agsurf II, Liberate, ProSurf, Super Spreader, LI700) at 0.25 L per 100 L of spray solution.

* Will not control imidazolinone tolerant (CLEARFIELD) canola volunteers or Group 2 resistant weed biotypes.

DO NOT apply more than 29.1 mL per acre flucarbazone per growing season.

Refer to the product label for complete mixing instructions.
A general guide to mixing can be found on page 14.
Application Information:

Water Volume:
- **Ground:** 22.5 to 45 L per acre.
- **Aerial:** 11 L per acre.

Nozzles and Pressure: Use 30 to 50 psi (200 to 345 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE medium droplets. Orienting nozzles at a 45 degree angle forward may improve coverage of vertical leaves (grasses).

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Crop tolerance and weed control may be reduced if applications are made to plants growing under stress. Stress includes saturated or water-logged soil, drought, extreme temperatures, low fertility or visible disease symptoms at application. Adopting practices to increase crop vigour will improve crop tolerance.

Tank Mixes:
Herbicides:
Note: - All mixes must be applied with a registered surfactant unless otherwise indicated. Only one registered surfactant is required.
- All products below may be mixed at label rates with Flucarbazone unless otherwise indicated.
- Flucarbazone at all rates may be mixed with the products listed below unless otherwise indicated.

**In wheat (spring and durum) only:**
- 2,4-D Amine or Ester at rates up to 170 g ae/acre*
- Enforcer M
- Florasulam + Curtail M (Spectrum only)*
- Paradigm
- Paradigm + MCPA Ester
- Paradigm + Curtail M
- Pixxaro

**In wheat (spring and winter) only:**
- 2,4-D Amine or Ester up to 227 g ae/acre
- Bromoxynil/MCPA (Buctril M/Logic M only)
- MCPA Amine or Ester at rates up to 0.38 L/acre (600 g/L formulation)
- Thifensulfuron/tribenuron (Refine SG/Deploy WDG only)

**In spring wheat (NOT including durum) only:**
- Bromoxynil (Brotex 240/Pardner only)
- Bromoxynil/2,4-D (Leader/Thumper only)
- Curtail M#
- Dicamba/mecoprop/MCPA (Target only)##†
- Dichlorprop+2,4-D (Estaprop/Dichlorprop-D only)
- DyVel ##†
- Florasulam + 2,4-D (Frontline 2,4-D only)
- Florasulam + MCPA (Frontline XL only)*
- Florasulam/Fluroxypyr+MCPA (Stellar only)#*
- Fluroxypyr + 2,4-D (Attain XC, OcTTain XL only)#*
- Fluroxypyr+MCPA (Trophy only)
- Metsulfuron (Ally only) + 2,4-D Amine or Ester up to rates above*
- Optica Trio##*
- Prestige XC##
- Thifensulfuron/Tribenuron (Refine SG/Deploy only) plus 2,4-D Amine or Ester at rates above
- Triton C
- * Apply in 40 L/acre of water only.
- † Wild oat control may be reduced with this mix.
- # Tank mix only with the 24.3 to 29.1 mL/acre rate of flucarbazone.
- ## Tank mix only with the 29.1 mL/acre rate of flucarbazone.

Fertilizers: None.
Insecticides: None
Note: The above mixes are those listed on the flucarbazone labels only.

Flucarbazone manufacturers may also support mixes with pesticides that are not on the flucarbazone labels. Check with each manufacturer for the products they support. Mixes must be applied according to the most restrictive use limitations for all products added to the tank.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Rainfall within 1 hour of application may reduce control.
Re-entry: DO NOT re-enter treated area within 12 hours.
Grazing: DO NOT graze treated fields. Mature grain or straw may be fed to livestock.
Preharvest Interval: Leave at least 80 days from application to harvest.
Re-cropping Interval: Follow the chart below:

<table>
<thead>
<tr>
<th>Soil Zones and Rotational Crops</th>
<th>Black</th>
<th>Dark Brown</th>
<th>Brown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grey-Wooded</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring Wheat</td>
<td>Spring Wheat</td>
<td>Spring Wheat</td>
<td>Spring Wheat</td>
</tr>
<tr>
<td>Wheat</td>
<td>Wheat</td>
<td>Wheat</td>
<td>Wheat</td>
</tr>
<tr>
<td>Barley</td>
<td>Barley</td>
<td>Barley</td>
<td>Barley</td>
</tr>
<tr>
<td>Canola (all varieties)</td>
<td>Canola (all varieties)</td>
<td>Canola (all varieties)</td>
<td>Canola (all varieties)</td>
</tr>
<tr>
<td>Field Pea*</td>
<td>Field Pea*</td>
<td>Flax</td>
<td>Field Pea*</td>
</tr>
<tr>
<td>Field Bean</td>
<td>Flax</td>
<td>Flax</td>
<td>Flax</td>
</tr>
</tbody>
</table>

* Field pea may be grown the year following flucarbazone application in fields where precipitation has been equal to or above the 10 year average during the growing season, and where organic matter content is above 4%, and pH is below 7.5. The company suggests a minimum of 100 mm (4 inches) of rain is needed in the 60 days following application for adequate breakdown to take place.

NOTE: Other rotational crops may also be affected if rainfall is less than the 10 year average for the area. Soils in the grey wooded, black and dark brown soil zones with a combination of low organic matter (less than 2%), light textured soils or high pH (greater than 7.5) (i.e. eroded knolls, sandy soils) may result in delayed growth and development in rotational crops.

Aerial Application: May be applied by aircraft.

Storage: Store in closed original container in a cool, dry area away from fertilizers, food or feed. DO NOT freeze.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres) (†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitat</td>
</tr>
<tr>
<td>Field sprayer*</td>
<td>35</td>
</tr>
<tr>
<td>Fixed wing aircraft</td>
<td>325</td>
</tr>
<tr>
<td>Helicopter</td>
<td>300</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

† Distance is measured from the downwind edge of the boom to sensitive areas.

Sprayer Cleaning:
Refer to ‘Method A’ in the general section on sprayer cleaning on page 15 to 16. When mixing with other pesticides, combine the method above with cleanout methods for the tank mix partner.

Hazard Rating:

⚠️ Warning – Contains the Allergen Milk

For an explanation of the symbols used here see page 11.
Flumioxazin (Chateau/Valtera)

Company:
Valent Canada, Inc. (Distributed by Nufarm Agriculture)

Formulation:
51.1% flumioxazin formulated as a water dispersible granule.
Container size -
Chateau (PCP#29231): 1.13 kg
Valtera (PCP#29230): 2.27 kg

Crops, Rates, and Staging:

Valtera:
In the fall just prior to freeze-up or spring prior to seeding or up to 3 days after seeding but prior to emergence of the following crops:
Soybeans - seed at least 1.5 inches (4 cm) deep
Field peas
Chickpeas

In the fall or in the spring at least 7 days prior to the direct seeding of:
Spring wheat (NOT including durum)*
* seed wheat at least 1 inch deep.
If weeds are emerged apply Valtera in a mix with glyphosate (see tank mix section).

Dry Bean Desiccation:
Apply 42.5 g per acre when beans are mature to dry green weed material. Add metholated seed oil at 1 L per acre.

Chateau:
Potatoes: Apply after hilling. A minimum of 2 inches (5 cm) of soil must cover the vegetative portion of the potato or crop injury may result.
Add MSO (methylated seed oil) Concentrate at 1 L per acre or Nufarm Enhance Adjuvant at 0.125 to 0.25 L per 100 L of spray solution.

Both Chateau and Valtera:
Bare Ground areas intended to be maintained weed free:
NOT for use in high traffic areas or powdery soils that will generate dust.

Apply products containing flumioxazin only once per growing season.

Weeds, Rates, and Staging:
Apply prior to crop and weed emergence.

<table>
<thead>
<tr>
<th>WEEDS</th>
<th>Soil Type (all must have less than 5% organic matter)*</th>
<th>RATE (g/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chateau - In potatoes only.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suppression of:</td>
<td>Coarse or medium textured soils applied in spring</td>
<td>42.5</td>
</tr>
<tr>
<td>Canada fleabane</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Common ragweed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern black nightshade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kochia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lamb's-quarters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hairy nightshade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pigweed (green, redroot)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **Valtera - For soybeans only.** | | |
| Control of the weeds above plus; | Coarse textured soils - spring or fall applied | 56.7 |
| Common chickweed | | |
| Dandelion | | |
| Suppression of: | Medium textured soils - spring or fall applied | 85** |
| Green foxtail | | |
| Volunteer canola (all varieties) | | |

| **Valtera - For chickpea, field pea and spring wheat only.** | | |
| Weeds as listed for Soybean above; | Coarse textured soils - spring or fall applied | 56.7 |
| | Medium textured soils*** | 85*** |
| | Spring applied only | |

Herbicide Group
14 - flumioxazin
(Refer to page 45)

* DO NOT apply on soils with > 5% organic matter, or fine soils. Soils such as clay, clay loam, silty clay or silty clay loam are considered fine textured soils. DO NOT apply to soils composed of more than 90% sand and gravel.
Weed Control

** Injury may occur to soybean at this rate.
*** The duration of residual control may be reduced.

Spray within 6 hours of mixing.

Application Information:

Water Volume: Minimum application volume is not indicated on the label. Use appropriate water volumes to ensure good spray coverage.

Nozzles & Pressure: Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE medium droplets.

DO NOT perform any tillage operations after application otherwise weed control will be reduced.

When applied prior to seeding crops must be direct seeded with minimum disturbance systems.

How it Works:

Refer to Table 2 on page 47.

Effects of Growing Conditions:

Rainfall is required to activate flumioxazin in the soil. Crop injury may occur when soils are wet and cool following application or soils are poorly drained. Severe injury may occur with flooded soils. Newly emerging foliage can be temporarily injured by heavy rain splashing treated soil on leaves. Heavy crop residues may reduce weed control.

Irrigation: If rainfall is not received after application, 5 to 10 mm of irrigation may be applied to improve weed control activity. DO NOT apply irrigation to wheat after emergence until the main head is fully emerged.

Tank Mixes:

Herbicides:

** Soybean, and Bare Ground uses only:**

Glyphosate (IPA or K salts) 486 g ae per acre.

Note: DO NOT mix when applying prior to soybean with Dual II Magnum or Frontier/Outlook herbicides or injury could occur.

** Field pea only:**

Glyphosate (IPA or K salts) 360 g ae per acre.

** Dry Bean Desiccation only:**

Glyphosate (IPA or K salts) at preharvest rates.

Fertilizers: None registered.

Fungicides: None registered.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:

Rainfall: Rain or irrigation shortly after application is required for activation. If rainfall does not occur, irrigation with at least 5 mm of water is recommended before ground crack occurs.

Re-entry: DO NOT re-enter treated fields for 12 hours.

Grazing: DO NOT graze or cut crops for livestock feed from treated fields.

Preharvest: Desiccation: Leave 5 days between application and harvest. Leave 7 days to harvest if mixing with glyphosate.

Re-cropping: Soybeans, chickpea, field pea, and spring wheat may be seeded immediately after treatment or in the spring following a fall application. Winter wheat may be seeded 7 days after dry bean desiccation or in the fall following spring application. Alfalfa, barley, canola, field corn, sorghum, dry edible beans**, and sunflower may be seeded the season after spring application. All other crops require a minimum of 12 months and a successful bioassay prior to indicate safe seeding.

** Note: Not all varieties of dry beans have been tested for recrop tolerance. Test new varieties of dry beans on a small area before attempting large acreages.

Aerial Application: DO NOT apply by air.

Storage: Store in a cool, dry place. May be frozen.

Buffer Zones:

<table>
<thead>
<tr>
<th>Crops</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Potato, Dry bean desiccation</td>
<td>2</td>
</tr>
<tr>
<td>Chickpea, field pea, soybean, Spring wheat</td>
<td>3</td>
</tr>
<tr>
<td>Bare Ground uses</td>
<td>5</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance is measured from the downwind edge of the boom to sensitive areas.

Sprayer Cleaning:

Refer to 'Method A' in the general section on sprayer cleaning on page 15 to 16. See product label for further information.

Hazard Rating:

⚠️ Caution – Poison

For an explanation of the symbols used here see page 11.
**Fluroxypyr + 2,4-D**

**Company:**
Dow AgroSciences (Attain XC, OcTTain XL)
Nufarm Agriculture (Flurox 2,4)
ADAMA Canada (Rush 24)

**Formulation:**
The Attain XC package has 2 components:
*Attain XC A (PCP#29463):* 333 g/L fluroxypyr
Container sizes - 5 L, 8 x 15 L.
*Attain XC B (PCP#29264):* 660 g/L 2,4-D LV ester
Container sizes - 2 x 6.8 L, 4 x 82 L.

- or -
The Flurox-24 package has 2 components:
*Nufarm Fluroxypyr (PCP#30194):* 180 g/L fluroxypyr.
Container size - 7.28 L.
*2,4-D Ester 700 (PCP#27820):* 660 g/L 2,4-D LV ester.
Container sizes - 10.3 L.

- or -
The Rush 24 package has 2 components:
*Fluroxypyr 180 EC (PCP#30815):* 180 g/L fluroxypyr.
Container size - 9.6 L.
*Salvo 2,4-D Ester 700 (PCP#27818):* 660 g/L 2,4-D LV ester.
Container sizes - 9.8 L.

- or -
*OcTTain XL (PCP#30077):* 90 g/L fluroxypyr plus 360 g/L 2,4-D LV ester.
Container size - 2 x 9 L, 576 L

All products above are formulated as emulsifiable concentrates.

**Crops and Staging:**

**Spring wheat (including durum), barley:**
4 leaf up to the emergence of the flag leaf.

**Winter wheat:** Apply to winter wheat in the spring from the 3 tiller stage to just before the flag leaf stage. (*Attain XC and OcTTain XL only*)

**Weeds, Rates and Staging:**
The following weeds are controlled at the 2 to 4 leaf stage, unless otherwise specified:

*Attain XC A 95 mL/acre plus Attain XC B 260 mL/acre or; Nufarm or ADAMA Fluroxypyr 180 at 180 mL/acre plus 2,4-D Ester 700 at 260 mL/acre (Flurox-24 treats 40 acres per case, Rush 24 treats 52 acres per case) controls the following weeds:

- Bluebur
- Burdock
- Cleavers*
- Clover (sweet)
- Cocklebur
- Field horsetail**
- Flixweed
- Goat's-beard
- Hoary cress**
- Kochia
- Lamb's-quarters
- Mustards (except dog and tansy)
- Plantain
- Prickly lettuce
- Ragweed
- Shepherd's-purse
- Stinkweed
- Sunflower (annual)
- Vetch
- Volunteer canola
- Wild radish
- Wild mustard
- Wild buckwheat (1-4 leaf with Flurox-24 and 1 to 6 leaf with Attain XC, Rush 24 and OcTTain only)

* 1 to 4 whorls with Flurox-24 and Rush 24; 1 to 6 whorls with Attain XC only.

*NOTE: Since these uses are registered under the User Requested Minor Use Label Expansion (URMULE) program, the manufacturer assumes no responsibility for herbicide performance. Those who apply these uses do so at their own risk.

When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.
**OcTTain XL** at 0.45 L per acre (2 x 9 L treats 40 acres, 108 L treats 240 acres, 576 L treats 1280 acres) controls:

All weeds listed above plus:

- Common chickweed (up to 8 cm or 3 inches)†
- Cleavers (1 to 8 leaf)
- Hemp-nettle (2 to 6 leaf)
- Redroot pigweed†

**Attain XC A** at 125 mL per acre plus **Attain XC B** at 340 mL per acre (40 acres per case) or;

- NuFarm or ADAMA Fluroxypyr 180 at 240 mL per acre plus 2,4-D Ester 700 at 340 mL per acre (Flurox-24 treats 30 acres per case, Rush 24 treats 40 acres per case) or;
- OcTTain XL at 0.45 L per acre (one 2 x 9 L case treats 40 acres and 576 L treats 1280 acres) plus 2,4-D ester (LV700 at 81 mL/acre or LV600 at 95 mL/acre) controls:

All weeds listed above plus:

- Annual sow-thistle†
- Blue lettuce**
- Canada thistle**†
- Cleavers (1-8 whorls)†
- Dandelion***
- Docks
- Dog mustard
- Field bindweed**
- Field peppergrass
- Gumweed
- Hairy galinsoga
- Hedge bindweed
- Hemp-nettle (2 to 6 leaf stage) ††

† Attain XC and OcTTain XL only.

∆∆ Attain XC, Flurox-24 and Rush 24 only.

† Suppression only

†† Control with OcTTain XL, suppression with other products.

** Top growth only

*** Spring rosettes only.

Make only one application per year of any of these products or other products containing the same active ingredients. Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

**Nozzles and Pressure:** Maximum 30 to 40 psi (200 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE coarse droplets.

**How it Works:**

Refer to Table 2 on page 47.

**Effects of Growing Conditions:**

The activity these products is influenced by weather conditions. The temperature range for optimum activity is 12°C to 24°C. Reduced activity will occur when temperatures are below 8°C or above 27°C. Frost 3 days before or after application may reduce weed control and crop tolerance. Weed control may be reduced during stress conditions (drought, heat or cold stress) or if extremely heavy infestations exist.

**Tank Mixes:**

**Herbicides:**

The following mixes may be used with each of the combinations above unless noted otherwise.

**In spring wheat (including durum) and barley:**

- Tralkoxydim† (0.2 L/acre) plus adjuvant*
- Assert (0.53 to 0.65 L/acre)

**In spring wheat (including durum) only:**

- Clodinafop 240EC† (93 mL/acre) plus adjuvant†
- Simplicity (0.15 to 0.20 L per acre)††

**Insecticides:** None registered.

**Fungicides:** None registered.

**Fertilizer:** None registered.

* Temporary crop injury or reduced wild oat control may occur with this tank mix.

† See product labels for specific brands registered.

†† Low rate of Attain XC or OcTTain XL without additional 2,4-D ester only.

**Note:** The above mixes are those listed on the fluroxypyr + 2,4-D product labels only.

Manufacturers may also support mixes between their products and other pesticides that are not on their labels. Check with each manufacturer for the products they support. Mixes must be applied according to the most restrictive use limitations for all products added to the tank.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.
Restrictions:

Rainfall: *Attain XC and Flurox 2,4* Within 2 hours will reduce control. *OcTTain XL* Wet foliage at application will reduce control.

Re-entry: DO NOT re-enter treated area within 12 hours.

Grazing: DO NOT permit lactating dairy animals to graze cereal fields within 7 days of application. DO NOT harvest cereal crops for forage or cut hay within 30 days of application. Withdraw meat animals from treated fields at least 3 days before slaughter. DO NOT feed or cut forage grasses for hay

Preharvest Interval: Leave 60 days between application and harvest.

Re-cropping: Barley, canola, flax, forage grasses, lentils, mustard, oats, peas, rye, and wheat, may be grown the year after application. Alfalfa, corn, dry beans, potatoes, soybeans, and sunflowers may also be seeded the year following *Attain XC* and *OcTTain XL* only. There are no re-cropping restrictions the second year after application.

Aerial Application: *Attain XC* and *OcTTain XL* may be applied by air.

Storage: Avoid freezing. If frozen, bring to room temperature and agitate before use. These products are combustible. DO NOT store near heat or open flame.

Buffer Zones:

*Flurox-24, Rush 24:* Leave a buffer of 15 meters from water bodies, wetland areas and plants that may be injured.

*Attain XC:*

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres)† Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground only*</td>
<td>1</td>
</tr>
<tr>
<td>Fixed wing aircraft</td>
<td>6</td>
</tr>
<tr>
<td>Helicopter</td>
<td>6</td>
</tr>
</tbody>
</table>

*OcTTain XL* only:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres)† Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freshwater Habitat of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Field sprayer</td>
<td>1</td>
</tr>
<tr>
<td>Fixed wing aircraft</td>
<td>1</td>
</tr>
<tr>
<td>Helicopter</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

† Distance is measured from the downwind edge of the boom to sensitive areas.

Sprayer Cleaning:

Refer to ‘Method A’ in the general section on sprayer cleaning on page 15 to 16.

Hazard Rating:

*Attain XC, Flurox-24 and Rush 24:*

/problems/ danger – Poison.

*OcTTain XL:*

/problems/ caution – Poison

All products:

/problems/ warning – Eye Irritant.

/problems/ caution – Skin Irritant.

For an explanation of the symbols used here see page 11.
Weed Control

Company:
ADAMA (Rush M)
Nufarm Agriculture (Trophy)

Formulation:
The Fluroxypyr + MCPA package has 2 components:
Nufarm fluroxypyr (PCP#30194) or MANA Fluroxypyr 180 EC (PCP#30815): 180 g/L fluroxypyr.
MCPA Ester 600 (PCP#27803) or MANA MCPA 2 EH Ester 600 (PCP#31669): 600 g/L MCPA ester.
Container size - Fluroxypyr component – 4.8 L, MCPA Ester 600 component – 7.5 L
All components above are formulated as emulsifiable concentrates.

Crops and Staging:
Spring wheat (including durum), canaryseed* & barley:
- 3 leaf up to to full emergence of the flag leaf.
* Trophy only - Since the use of this product on canaryseed is registered under the User Requested Minor Use registration system, the manufacturer assumes no responsibility for herbicide performance. Users of this product on canaryseed do so at their own risk.
When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

Weeds and Staging:
Weeds controlled at the 2 to 4 leaf stage, unless specified include:
Burdock
Cleavers (1 to 4 whorls)
Cocklebur
Flixweed
Hemp-nettle (2 to 6 leaf)
Kochia
Lamb’s-quarters
Mustards (except dog and tansy)
Prickly lettuce
Ragweed (common)
Redroot pigweed
Shepherd’s-purse
Stinkweed
Sunflower (annual)
Vetch
Volunteer canola
Volunteer flax (1 to 12 cm)
Wild mustard
Wild radish
Wild buckwheat (1 to 4 leaf)
Stork’s-bill (1 to 8 leaf)

Rate:
Fluroxypyr component: 0.24 L per acre
MCPA Ester 600 component: 0.38 L per acre.
(One case treats 20 acres)
Make only one application of products containing fluroxypyr per year.

Application Information:
Water Volume: Minimum 40 L per acre.
Nozzles and Pressure: 30 to 40 psi (200 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE coarse droplets

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Trophy activity is influenced by weather conditions. The temperature range for optimum activity is 12°C to 24°C. Reduced activity will occur when temperatures are below 8°C or above 27°C. Frost 3 days before or after application may reduce weed control and crop tolerance. Weed control may be reduced during stress conditions (drought, heat or cold stress) or if extremely heavy infestations exist.
Tank Mixes:
Tank mix partners may be mixed at all label rates and include recommended adjuvants unless otherwise noted.

Herbicides:
*In spring wheat (including durum) and barley:*
  Assert plus pH adjuster.
  Tralkoxydim (Achieve Liquid or Bison only)
*In spring wheat (including durum) only:*
  Clodinafop (Ladder only)*
Insecticides: None registered.
Fungicides: None registered.
Fertilizers: None registered.*
Rush M only.

Note: The above mixes are those listed on the Trophy label only.
Individual manufacturers may also support additional mixes that are not on the Fluroxypyr+MCPA labels. Check with manufacturers for more details.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information.

Re-Entry: DO NOT enter treated fields for at least 12 hours.
Grazing: DO NOT graze, harvest forage or cut hay within 7 days of application. Remove meat animals from treated fields at least 3 days before slaughter.
Preharvest: Leave 60 days from application to harvest.
Re-cropping: Wheat, barley, oat, rye, forage grasses, flax, canola, mustard, lentil and pea may be grown the year after application. There are no re-cropping restrictions the second year after application.
Aerial Application: DO NOT apply by air.
Storage: May be frozen. If frozen, bring to room temperatures and agitate before use.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres$^*$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground only*</td>
<td>15</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy. Hand-held or backpack sprayers, inter-row hooded sprayers and spot treatments are exempt from buffer zone requirements.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat. Handheld or backpack applications do not require a buffer.

Sprayer Cleaning:
No specific cleaning procedures are indicated on the label. Based on products with similar chemistry, 'Method B' found in the general sprayer cleaning section on page 15 to 16 or a commercial spray sprayer cleaning product, may provide adequate cleaning. Contact the manufacturer for more information.

Hazard Rating:

 Danger – Poison.
 Warning – Eye Irritant.
 Caution – Skin Irritant.

For an explanation of the symbols used here see page 11.
Company:
FMC of Canada

Formulation:
The Focus package contains:
Aim EC Herbicide (PCP#28573): 240 g/L carfentrazone formulated as an emulsifiable concentrate.
Container size - 1 x 2 L
Pyroxasulfone 85 WG (PCP#30572): 85% pyroxasulfone formulated as a water dispersible granule.
Container size - 2 x 2 kg

Crops, Rates and Staging:
Apply prior to seeding of or up to 3 days after seeding Wheat (spring and winter, NOT durum)*, Corn, Soybean:

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>RATE BY SOIL TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coarse to Medium</td>
</tr>
<tr>
<td>Aim</td>
<td>30mL per acre</td>
</tr>
<tr>
<td>Pyroxasulfone 85 WG</td>
<td>60g per acre</td>
</tr>
<tr>
<td>Per case</td>
<td>66 acres</td>
</tr>
</tbody>
</table>

* DO NOT apply prior to seeding durum wheat.

Weeds and Staging:
Control of the following weeds emerging from seed (not controlled if emerged at application):
Barnyard grass
Brome (downy, Japanese)
Cleavers
Foxtail (green, yellow)
Lamb’s-quarters*
Redroot pigweed
Ryegrass (Italian)
Stinkweed
Waterhemp (Common)
Wild oats*

*Suppression only.

Control of the following weeds up to 10 cm tall (post-emergent):
Cocklebur
Kochia
Lamb’s-quarters
Nightshade (eastern black, hairy)
Pigweed (prostrate, red-root, smooth, tumble)
Purslane
Round-leaved mallow
Stinkweed
Tansy mustard
Volunteer canola (all varieties)

Application Information:
Water Volume: Minimum of 40 L per acre. Higher spray volume is required for dense weed stands. Weed control improves with the amount of coverage.
Nozzles & Pressure: Maximum 35 psi (210 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE medium droplets.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Moisture is necessary to activate the Pyroxasulfone component in soil for effective weed control. Dry weather following applications may reduce effectiveness.
Extremes in environmental conditions such as temperature, moisture, soil conditions, and cultural practices may affect activity.

Note: Focus or other products containing carfentrazone or pyroxasulfone may only be applied once per season.

Use Agral 90 or Ag-Surf at 0.25 L per 100 L of spray solution or Merge at 1 L per 100 L of spray solution for emerged broadleaf weeds.

Refer to the product label for complete mixing instructions for this product and its mixes. A general guide to mixing can be found on page 14.

WARNING – application to emerged crops will result in severe damage to the crop. DO NOT use on peat or muck soils and soils with 7% or more organic matter content.

Herbicide Group
14 – carfentrazone
15 – pyroxasulfone
(Refer to page 45)
Tank Mixes:

Herbicides:

Prior to Corn only:
AAtrex (0.85 to 1.25 L per acre) (soil activity).

Prior to All Crops:
Glyphosate* (180 to 360 grams ae per acre)
*IPA or K salt only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:

Rainfall: Rainfall 6 to 8 hours after application may reduce activity of the Aim component. Heavy rainfall shortly after application may reduce weed control. Moderate rainfall beyond the above limitations will improve the activity of the Pyroxasulfone component.

Re-entry: DO NOT re-enter treated fields for 12 hours.

Grazing: DO NOT graze treated corn or soybean or cut for feed. Spring or winter wheat may be grazed or cut for feed or hay 42 days after seeding.

Preharvest Interval: Not applicable.

Re-cropping: Conduct a field bioassay to confirm crop safety prior to seeding any rotational crops other than field corn or soybeans.

Aerial Application: DO NOT apply by air.

Storage: Store in a cool, dry place in original container.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application Method</th>
<th>Buffer Zones (métres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td></td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td>Ground *</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

Sprayer Cleaning:

Refer ‘Method B’ in the general section on sprayer cleaning on page 15 to 16.

Hazard Rating:

⚠️ Warning – Contains the allergen, sulfites.

Potential skin sensitizer

For an explanation of the symbols used here see page 11.

Fortress

Company:

Gowan Canada (PCP#19521)

Formulation:

10% triallate and 4% trifluralin formulated as a granular.
Container size - 22.7 kg, 454 kg

Crops and Staging:

Prior to planting wheat (spring and durum), barley, canola, flax (not including Solin - low linolenic acid flax), mustard.

Preplant incorporated: In fall after September 15 until soil freeze-up or in the spring prior to seeding crop.

Herbicide Group

3 - trifluralin
8 - triallate

(Refer to page 45)

Surface application: Apply in the fall after October 1 and when soil temperature is less than 4°C at a depth of 2 inches (5 cm) and delay incorporation until the following spring. DO NOT apply to fields with heavy crop residues or after snow has fallen. Some wheat or barley injury may be noted on eroded knolls.

Weeds and Staging:

Pre-emergent control of wild oats, green foxtail, yellow foxtail.

Suppression of lamb’s-quarters, kochia, redroot pigweed, Russian thistle, wild buckwheat.
Weed Control

Rates:

Fortress – Fall Treatment

<table>
<thead>
<tr>
<th>CROP</th>
<th>RATE (KG/ACRE)</th>
<th>ACRES TREATED PER 454 KG BAG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Organic Matter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Less than 2%</td>
<td>2 to 4%</td>
</tr>
<tr>
<td>Wheat</td>
<td>N.R.*</td>
<td>4.4</td>
</tr>
<tr>
<td>Barley</td>
<td>4.4</td>
<td>5.7</td>
</tr>
<tr>
<td>Canola, flax†, mustard</td>
<td>5.7</td>
<td>5.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CROP</th>
<th>RATE (KG/ACRE)</th>
<th>ACRES TREATED PER 454 KG BAG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Organic Matter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Less than 2%</td>
<td>2 to 4%</td>
</tr>
<tr>
<td>Wheat</td>
<td>N.R.*</td>
<td>N.R.*</td>
</tr>
<tr>
<td>Barley</td>
<td>N.R.*</td>
<td>4.4</td>
</tr>
<tr>
<td>Canola, flax†, mustard</td>
<td>5.7</td>
<td>5.7</td>
</tr>
</tbody>
</table>

* N.R. -Not Recommended.
** For fall incorporated applications (not surface) apply 6.88 kg/acre when organic matter exceeds 8 percent.
† Excluding Solin (low linolenic acid flax).

Application Information:

Fortress may be applied in the fall with or without a fall tillage operation, or in the spring as a preplant incorporated treatment. Before application of this product, the soil must be in good working condition. Application to a field that is wet, lumpy, rough or ridged will result in reduced weed control and promote crop thinning.

Fall Surface Application: Where fields are prone to water and/or wind erosion, and tillage is therefore undesirable, fall surface application should be made within 3 weeks of soil freeze-up, when the soil begins to cool (less than 4°C), which typically begins on or around October 1. Application can be made to standing stubble or to previously worked fields with incorporation delayed until spring. For best results on heavy wild oat infestations, use the incorporated treatment.

Fall Incorporated Application: Fortress must be applied after September 15 and before soil freeze-up. Application prior to September 15 may result in reduced weed control.

Initial incorporation may be completed within 24 hours of application. The second incorporation may be done in the fall (prior to soil freeze-up) or in the spring prior to, or after, seeding. If performed after seeding, it must be completed with harrows prior to emergence of the crop. Fall incorporation is not recommended on soils where a lack of crop residue cover combined with the required incorporation operation could result in soil erosion.

Spring Application: Fortress can be applied before seeding but must be incorporated within 24 hours of application. The second incorporation must be delayed at least 48 hours after the first and may be performed at any time prior to crop emergence.

Incorporation:

Fortress applications require two incorporations, with the second incorporation at right angles to the first. Seeding with a seeder that provides soil disturbance equivalent to a cultivator may replace one incorporation. Incorporate
to a maximum depth of 2 inches (5 cm) by setting disk or cultivator implements to cut a maximum of 3 inches (7.5 cm) into the soil. Mixing the product to greater depths will dilute the herbicide, decrease wild oat control, and may cause injury to cereals. If the second incorporation is conducted after seeding, it should be done with harrows or other suitable tillage equipment adjusted so as not to disturb the seed. Harrowing does not provide effective incorporation if compact soil prevents penetration of harrow teeth, if crop residue accumulates in the harrow sections, or if the harrows bounce.

**Seeding Requirements:** Accurate seeding depth control is critical. Thinning of wheat and barley has been known to occur when seeding depth has been inadequate. Ensure that cereals are seeded below the treated layer (2 to 3 inches or 5 to 7.5 cm). Do not seed deeper than 3 inches (7.5 cm). To ensure an even crop stand, increase the usual seeding rate of wheat or barley by 10 percent, especially if soil conditions are cold or dry. See product label for more information.

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**
Crop injury can occur on fields where *Fortress* has been applied and heavy rainfall or cold weather occur after seeding but prior to crop emergence. Seeding under warm soil conditions (greater than 10°C and generally after May 15) will ensure optimum crop germination and emergence and will reduce the risk of crop injury. Very dry conditions in spring or prolonged cool soil temperatures at time of wild oat germination will result in reduced control. Poor results may be expected from incomplete incorporation due to wet, cloddy soil or heavy crop residues. Ridges left at seeding may disrupt the treated layer and allow weed escapes.

**Restrictions:**
**Rainfall:** Moisture is required for activation. Rainfall of at least 0.6 inches (1.5 cm) within 2 weeks of seeding is required to ensure optimum results.

**Re-entry:** DO NOT enter treated fields for at least 12 hour

**Grazing:** DO NOT graze or cut treated crops for livestock feed prior to crop maturity.

**Re-cropping:** *Fortress* will leave a residue in the soil. Oats, canaryseed, and small seeded forage grasses may be injured if planted within 24 months of application. DO NOT apply *Fortress* on land to be sown to wheat if the land has been treated with trifluralin since June 1 of the previous year.

**Aerial Application:** May be applied by airplane with attachments designed for applying low volumes of granules.

**Storage:** Store in a cool, dry place.

**Hazard Rating:**

⚠️ Warning – contains the allergen soy.

May cause Skin and Eye Irritation

For an explanation of the symbols used here see page 11.
Frontier Max

Company:
BASF Canada (PCP#29194)

Formulation:
720 g/L dimethanamid-P formulated as an emulsifiable concentrate.
Container size - 3 L to 1000 L.

Rates:
Pre-plant incorporated treatments:
Apply at 0.35 to 0.39 L per acre. Apply at the higher rate on fine-textured or high organic soils and for heavier anticipated weed problems.

Pre-emergence surface treatments:

<table>
<thead>
<tr>
<th>SOIL TYPE (Texture)</th>
<th>Less than 3% Organic Matter</th>
<th>3 to 6% Organic Matter</th>
<th>7 to 10% Organic Matter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse</td>
<td>0.31</td>
<td>0.31</td>
<td>0.35</td>
</tr>
<tr>
<td>Medium and Fine</td>
<td>0.31</td>
<td>0.35</td>
<td>0.39</td>
</tr>
</tbody>
</table>

Crops and Staging:
Pre-plant incorporated:
Corn (NOT sweet corn, popcorn, or corn grown for seed).
Dry beans (white and kidney beans only).

Pre-emergence surface:
Dry beans (white and kidney beans only).

Weeds and Staging:
Pre-emergent control of green foxtail.

Application Information:
Water Volume: A minimum of 40 L per acre.
Pressure: 30 to 43 psi (200 to 300 kPa).
Nozzles: Flat fan or flood-jet. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE medium droplets. Use 16 mesh suction screen, 50 mesh elsewhere on sprayer.
Incorporation: For pre-plant incorporated treatments, apply Frontier Max as a broadcast treatment and incorporate using a harrow, rolling cultivator or other implement capable of giving uniform, shallow incorporation into the top 5 cm (2 inches) of soil within 7 days of planting. Avoid deeper incorporation or reduced weed control and/or crop injury may result. Immediate incorporation after application is not necessary.

Beans must be planted at least 4 cm (1.5 inches) deep or crop injury may occur.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Rainfall is required within 7 to 10 days of application to activate and move Frontier Max into the soil zone. If dry conditions persist, a shallow cultivation or the use of a rotary hoe is necessary to move the herbicide into moist soil and control weed escapes. Shallow tillage is important to minimize dilution of the herbicide. If drought conditions persist after pre-plant incorporated or pre-emergence applications, weed control may not be adequate.
Tank Mixes:

Herbicides: None registered.

Fertilizers: May be applied with a liquid fertilizer carrier. Test compatibility with liquid fertilizer by mixing a small amount of herbicide with a proportional quantity of liquid fertilizer in a jar. May also be impregnated on dry bulk fertilizers for pre-plant incorporated treatments. A minimum of 90 kg/acre of dry bulk fertilizer should be applied. DO NOT impregnate Frontier Max on nitrate fertilizers, superphosphates or limestone.

Insecticides: None registered.

Note: The above mixes are those listed on the Frontier Max label only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:

Rainfall: Rainfall after application is important for good weed control.

Re-entry: DO NOT enter treated fields for 24 hours.

Grazing: DO NOT graze or feed the treated corn crop within 40 days of application. DO NOT graze the treated bean crop or feed bean forage, hay or straw to livestock.

Re-cropping: DO NOT plant winter wheat within 120 days of application.

Aerial Application: DO NOT apply by air.

Storage: DO NOT freeze. Must be stored under heated warehouse conditions.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†)</th>
<th>Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
<td>Terrestrial habitat</td>
</tr>
<tr>
<td>Ground only*</td>
<td>Less than 1 m</td>
<td>Greater than 1 m</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

° Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:

Refer to ‘Method A’ in the general section on sprayer cleaning on pages 15 to 16. When mixing with other pesticides, combine the method above with the method recommended for the tank mix partner if different from above for thorough cleaning.

Hazard Rating:

⚠️ Caution – Poison.

⚠️ Warning – Eye Irritant and Potential Skin Sensitizer.

For an explanation of the symbols used here see page 11.

Frontline 2,4-D (this referring text to be removed in the 2018 edition)

See florasulam + 2,4-D on page 169.

Frontline XL (this referring text to be removed in the 2017 edition)

See florasulam + MCPA Ester on page 175.
**Product names, Company, Formulation and Package sizes:**

All products are formulated as solutions.

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Company</th>
<th>Salt type*</th>
<th>Active** content (g a.e. /L)</th>
<th>Package sizes***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheminova Glyphosate (PCP#26828)</td>
<td>FMC of Canada</td>
<td>IPA</td>
<td>356</td>
<td>2, 3, 7</td>
</tr>
<tr>
<td>ClearOut 41 Plus (PCP#28322)</td>
<td>Farmers of North America</td>
<td>IPA</td>
<td>360</td>
<td>2, 7</td>
</tr>
<tr>
<td>Credit 45 (PCP#29124)</td>
<td>Nufarm Agriculture</td>
<td>IPA</td>
<td>450</td>
<td>1, 3, 7</td>
</tr>
<tr>
<td>Crush’R Plus (PCP#29995)</td>
<td>AgriStar</td>
<td>IPA</td>
<td>360</td>
<td>1, 2, 7, 11</td>
</tr>
<tr>
<td>Crush’R 540</td>
<td>AgriStar</td>
<td>K+</td>
<td>540</td>
<td>1, 2, 10, 11</td>
</tr>
<tr>
<td>Glyfos (PCP#24359)</td>
<td>FMC of Canada</td>
<td>IPA</td>
<td>360</td>
<td>1, 2, 3, 7</td>
</tr>
<tr>
<td>Glyphosate 480</td>
<td>AgriStar</td>
<td>IPA</td>
<td>480</td>
<td>1, 2, 10, 11</td>
</tr>
<tr>
<td>Laji Plus (PCP#29677)</td>
<td>Ray Glenn Commodities</td>
<td>IPA</td>
<td>360</td>
<td>1, 2</td>
</tr>
<tr>
<td>Matrix (PCP#29775)</td>
<td>IPCO</td>
<td>DMA</td>
<td>480</td>
<td>1, 2, 3, 6</td>
</tr>
<tr>
<td>Maverick III (PCP#28977)</td>
<td>Dow AgroSciences</td>
<td>DMA</td>
<td>480</td>
<td>1, 2, 3, 6</td>
</tr>
<tr>
<td>MPower Glyphosate (PCP#29290)</td>
<td>Farmers of North America</td>
<td>IPA</td>
<td>360</td>
<td>2, 4, 7</td>
</tr>
<tr>
<td>Roundup Transorb HC (PCP#28198)</td>
<td>Monsanto</td>
<td>K+</td>
<td>540</td>
<td>1, 2, 3, 7, 10</td>
</tr>
<tr>
<td>Roundup Ultra 2 (PCP#28486)</td>
<td>Monsanto</td>
<td>K+</td>
<td>540</td>
<td>1, 2, 3, 8</td>
</tr>
<tr>
<td>Roundup WeatherMax (PCP#27487)</td>
<td>Monsanto</td>
<td>K+</td>
<td>540</td>
<td>1, 2, 3, 7, 10</td>
</tr>
<tr>
<td>R/T 540 (PCP#28487)</td>
<td>Monsanto</td>
<td>K+</td>
<td>540</td>
<td>1, 2, 5, 10</td>
</tr>
<tr>
<td>Smoke (PCP#31063)</td>
<td>Great Northern Growers</td>
<td>IPA</td>
<td>360</td>
<td>2, 7</td>
</tr>
<tr>
<td>Sharpshooter (PCP#28631)</td>
<td>Loveland Products Canada</td>
<td>IPA</td>
<td>356</td>
<td>2, 5, 7</td>
</tr>
<tr>
<td>Sharpshooter Plus (PCP#28623)</td>
<td>Loveland Products Canada</td>
<td>IPA</td>
<td>360</td>
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</tr>
<tr>
<td>StartUp (PCP#29498)</td>
<td>Loveland Products Canada</td>
<td>K+</td>
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<td>1, 2, 3, 4</td>
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<tr>
<td>Touchdown Total (PCP#28072)†</td>
<td>Syngenta Canada</td>
<td>K+</td>
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<tr>
<td>Traxion (PCP#29201)†</td>
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<td>K+</td>
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<tr>
<td>Vantage Plus Max II (PCP#28840)</td>
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<td>K+</td>
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<td>1, 2, 3, 6</td>
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<tr>
<td>Vector (PCP#30319)</td>
<td>Federated Co-operatives</td>
<td>DMA</td>
<td>480</td>
<td>1, 2, 3, 6</td>
</tr>
<tr>
<td>Vector 540 (PCP#31327)</td>
<td>Federated Co-operatives</td>
<td>K+</td>
<td>540</td>
<td>1, 2, 3, 6</td>
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<tr>
<td>Wise-Up (PCP#29126)</td>
<td>Adjuvants Plus</td>
<td>IPA</td>
<td>356</td>
<td>2, 5</td>
</tr>
</tbody>
</table>

* Salt type: IPA = Isopropylamine, MA = Monoammonium, DA = Diammonium, DMA = dimethylamine, K+ = Potassium
** Formulation concentration is expressed as “grams of acid equivalent per litre of product (g a.e./L). Glyphosate acid is the herbicidally active component of the formulation and is proportional to the activity of the formulation
Note: Some products may be more effective due to formulation differences (not related to higher glyphosate content) under adverse conditions, but that benefit is reduced when applications are made under optimal conditions for activity (i.e. rapid weed growth, clean leaf surfaces). When selecting a glyphosate product, consult the product
*** Container sizes available: 1) 2 x 10 L or 1 x 20L, 2) 115 L, 3) 450 L, 4) 667 L, 5) 750 L, 6) 960 L, 7) 1000 L, 8) 1150 L, 9) 1200 L, 10) 800 L, 11) 510 L.
† Note: This product is no longer manufactured but inventories still remain in distribution. This product may be removed from future editions.
## Product volumes (per acre) for various formulations strengths based on grams acid equivalent (g ae) rate

<table>
<thead>
<tr>
<th>RATE (G ae per ACRE)</th>
<th>Glyphosate formulation concentration (g ae/L)</th>
<th>356/360</th>
<th>450</th>
<th>480</th>
<th>500</th>
<th>540</th>
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</thead>
<tbody>
<tr>
<td>36.5</td>
<td>100 mL</td>
<td>81 mL</td>
<td>76 mL</td>
<td>73 mL</td>
<td>67 mL</td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>200 mL</td>
<td>162 mL</td>
<td>152 mL</td>
<td>146 mL</td>
<td>134 mL</td>
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</tr>
<tr>
<td>110</td>
<td>0.3 L</td>
<td>0.24 L</td>
<td>0.23 L</td>
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<tr>
<td>120</td>
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<td>145</td>
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<tr>
<td>180</td>
<td>0.5 L</td>
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<td>0.38 L</td>
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<tr>
<td>275</td>
<td>0.77 L</td>
<td>0.61 L</td>
<td>0.57 L</td>
<td>0.54 L</td>
<td>0.51 L</td>
<td></td>
</tr>
<tr>
<td>325</td>
<td>0.91 L</td>
<td>0.73 L</td>
<td>0.68 L</td>
<td>0.65 L</td>
<td>0.61 L</td>
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</tr>
<tr>
<td>360</td>
<td>1.0 L</td>
<td>0.81 L</td>
<td>0.76 L</td>
<td>0.73 L</td>
<td>0.67 L</td>
<td></td>
</tr>
<tr>
<td>510</td>
<td>1.42 L</td>
<td>1.13 L</td>
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<td>1.0 L</td>
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</tr>
<tr>
<td>540</td>
<td>1.5 L</td>
<td>1.21 L</td>
<td>1.13 L</td>
<td>1.09 L</td>
<td>1.0 L</td>
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<tr>
<td>650</td>
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<td>-</td>
<td>1.30 L</td>
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</tr>
<tr>
<td>690</td>
<td>1.9 L</td>
<td>1.54 L</td>
<td>1.44 L</td>
<td>1.38 L</td>
<td>1.28 L</td>
<td></td>
</tr>
<tr>
<td>720</td>
<td>2.0 L</td>
<td>1.62 L</td>
<td>1.5 L</td>
<td>1.46 L</td>
<td>1.34 L</td>
<td></td>
</tr>
<tr>
<td>1020</td>
<td>2.8 L</td>
<td>2.27 L</td>
<td>2.13 L</td>
<td>2.02 L</td>
<td>1.89 L</td>
<td></td>
</tr>
<tr>
<td>1750</td>
<td>4.9 L</td>
<td>3.88 L</td>
<td>3.6 L</td>
<td>3.48 L</td>
<td>3.24 L</td>
<td></td>
</tr>
</tbody>
</table>

## Crops and Uses:

1. Annual weed control prior to crop emergence or in fallow.
2. Quackgrass control prior to seeding or after harvest.
3. Dandelion control (other than Preharvest).
4. Canada thistle control in fallow, shelterbelts and post-harvest.
5. Alfalfa control (other than Preharvest).
6. Other perennial weeds control in fallow, shelterbelts and post-harvest.
7. Patch treatments of perennial weeds in cereals, corn, soybean and forages.
8. Preharvest perennial weed control.
10. Tank Mixes.
1. Annual weed control prior to crop emergence or in fallow:
Weeds listed may not occur on all product labels. Check individual product labels for a specific list of weeds controlled.

<table>
<thead>
<tr>
<th>RATE (g ae per acre)</th>
<th>SURFACTANT*</th>
<th>WEEDS CONTROLLED</th>
<th>WEED STAGE</th>
</tr>
</thead>
</table>
| 110                  | 0.14 L/acre | **Grasses:** Green foxtail, volunteer cereals, wild oat (light infestations)  
**Broadleaves:** lady’s-thumb, stinkweed, volunteer canola (NOT including glyphosate tolerant varieties), wild mustard. | Less than 3 inches (8 cm) high. Apply at the 1 to 3 leaf stage of wild oat. |
| 145                  | 0.14 L/acre | **Above weeds plus:**  
**Grasses:** heavy infestations of wild oat.  
**Broadleaves:** suppression of flixweed, kochia. | 1 to 3 leaves for wild oat  
Weeds 3 to 6 inches (8 to 15 cm). |
| 180 to 275           | Not required | **Above weeds plus:**  
**Grasses:** downy brome, Persian darnel.  
**Broadleaves:** Canada fleabane, cleavers, common ragweed, flixweed, hemp-nettle, lamb’s-quarters, narrow-leaved hawk’s-beard, redroot pigweed, Russian thistle, volunteer flax, wild buckwheat. | Canada fleabane, common ragweed, less than 3 inches (8 cm) high. Other weeds less than 6 inches (15 cm). Use high rate for narrow-leaved hawk’s-beard 3 to 6 inches (8-15 cm) or wild buckwheat at the 3-4 leaf stage. |
| 325                  | Not required | **Above weeds plus:**  
**Grasses:** annual blue grass, crabgrass.  
**Broadleaves:** annual sow-thistle, kochia, prickly lettuce, shepherd’s-purse, narrow-leaved vetch**. | Less than 6 inches (15 cm) high |
| 510                  | Not required | **Above weeds.** | Greater than 6 inches (15 cm) high |

* Unless otherwise specified on the product label, use one of the following surfactants: Agral 90, Agsurf II, Companion or LI700.

** Note: Narrow-leaved vetch is an annual species. Establish perennial vetches such as American vetch, may not be controlled at this rate.

2. Quackgrass control prior to seeding or after harvest:

<table>
<thead>
<tr>
<th>RATE (g ae per acre)</th>
<th>QUACK GRASS STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>360</td>
<td>Season long control of light to moderate infestations. Apply when quack grass is 8 inches (20 cm) tall and has 3 to 4 actively growing leaves. Apply spring or fall.</td>
</tr>
<tr>
<td>360 to 1020</td>
<td>Apply when quack grass has 3 to 4 new leaves for long term control of heavy infestations. Use high rate for sod-bound quack grass (left undisturbed for at least 2 years).</td>
</tr>
</tbody>
</table>

DO NOT apply fall treatments if a hard frost has occurred (-5°C) or if plants are drought stressed. Spread straw to allow regrowth and good spray coverage.

Cultivation prior to application will result in reduced control. DO NOT cultivate between harvest and treatment when using fall applications. If using spring applications on fields which have been fall-tilled, delay application until the quack grass has reached the 4 to 5 leaf stage. (This will occur 1 to 4 weeks later on fall-tilled fields than in undisturbed fields).

Cultivation after application usually will improve control of quack grass. Wait a minimum of 3 days after application before cultivating. If growing conditions are poor (cold or dry), particularly in the fall, waiting longer than 5 days may improve control.
3. Dandelion control (other than Preharvest):
Apply up to and including dandelion bloom for best results.

<table>
<thead>
<tr>
<th>RATE (g ae per acre)</th>
<th>DANDELION GROWTH STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>360</td>
<td>Less than 6 inches (15 cm) diameter. Allow 3 or more days after treatment before tillage.</td>
</tr>
<tr>
<td>540 to 720</td>
<td>Greater than 6 inches (15 cm) diameter. Use higher rate when infestations are heavy.</td>
</tr>
</tbody>
</table>

4. Canada thistle control in fallow, shelterbelts and post-harvest:

<table>
<thead>
<tr>
<th>RATE (g ae per acre)</th>
<th>WEED STAGING</th>
</tr>
</thead>
<tbody>
<tr>
<td>360</td>
<td>Rosettes at least 6 inches (15 cm) in diameter, treated in late summer, following tillage in spring and early summer (up to August 1). Allow thistles to regrow for 5 weeks following last tillage. Wait a minimum of 10 days after application before tillage. Treatment after a mild frost is possible if leaves are green and pliable and plants are actively growing.</td>
</tr>
<tr>
<td>690 to 1020</td>
<td>Bud stage or beyond. Allow at least 5 days after application before tillage. -or- Post-harvest treatment. Allow 8 to 10 inches (20 to 25cm) of new growth before application. Must be sprayed at least 2 weeks prior to killing frost. Straw should be removed or evenly spread to allow for proper regrowth and spray coverage.</td>
</tr>
</tbody>
</table>

5. Alfalfa Control (other than Preharvest):

<table>
<thead>
<tr>
<th>RATE (g ae per acre)</th>
<th>WEED STAGING</th>
</tr>
</thead>
<tbody>
<tr>
<td>540 to 720</td>
<td>Fall control of alfalfa in early bud to full bloom stage. Use high rate when alfalfa populations are high or when perennial grasses are present. Allow at least 5 days before tillage. See tank mix section for minimum tillage or spring applications. Apply with 23 to 135 L per acre water.</td>
</tr>
<tr>
<td>Touchdown Total and Traxion only: 325 to 650</td>
<td>Prior to seeding or after harvest. Use higher rate for weeds beyond 3 inches (8 cm) in height or for heavy weed infestations. Wait 7 days after application for tillage. Apply in 23 to 135 L per acre water.</td>
</tr>
</tbody>
</table>

6. Other perennial weed control in fallow, shelterbelts and post-harvest:
(Refer to individual product labels for detailed application information.)

**Foordail Barley:** Suppression with Touchdown and Traxion only at 0.28 L per acre.
Control from seedling to heading (all products) at 360 to 720 g ae per acre. Late fall applications may provide better control of established foxtail barley plants than spring applications.

**Yellow toadflax:** 360 g ae per acre.

**Other Perennial weeds**: 1020 to 1750 g ae per acre

* Perennial weeds such as absinthe, blue grass spp., smooth brome grass, cattail, curled dock, field bindweed (bloom stage or beyond), hemp dogbane, hoary cress, poison ivy, purple loosestrife, perennial sow-thistle, and yellow nut-sedge applied at the early heading to early bud stage.
7. Patch treatments of perennial weeds in wheat, oat, barley, corn, soybean, forage legumes and forage grasses:
(Refer to individual product labels for detailed application instructions)

<table>
<thead>
<tr>
<th>RATE (g ae per acre)</th>
<th>WEED</th>
</tr>
</thead>
<tbody>
<tr>
<td>360 to 1020</td>
<td>Quack grass 8 in (20 cm) tall</td>
</tr>
<tr>
<td>690 to 1020</td>
<td>Canada thistle Bud or beyond</td>
</tr>
<tr>
<td>1750</td>
<td>Milkweed Bud to bloom</td>
</tr>
<tr>
<td>1020 to 1750</td>
<td>Other perennial weeds*</td>
</tr>
</tbody>
</table>
| 36.5 to 73           | Spot treatment rates for hand held equipment (per 10 L water**)

* Perennial weeds such as absinthe, blue grass spp., smooth brome grass, cattail, curled dock, field bindweed (bloom stage or beyond), hemp dogbane, hoary cress, poison ivy, purple loosestrife, perennial sow-thistle, and yellow nutsedge applied at the early heading to early bud stage.

** Use the low rate for quack grass and the high rate for all other perennials.

8. Preharvest perennial weed control:
DO NOT apply to any crops grown for seed.
Not all glyphosate products are registered for Preharvest applications on all crop species listed below. Refer to specific glyphosate labels for a list of registered uses and crop species.

RATES:
Prior to the harvest of annual grains (see staging chart below for specific crops): 360 g ae per acre.
Prior to the final cut of forages to be removed from production: 360 to 720 g ae per acre.

Weeds Controlled with Preharvest applications:

<table>
<thead>
<tr>
<th>Quack grass 4-5 green leaves</th>
<th>Canada thistle and perennial sow-thistle at bud stage or beyond</th>
<th>Common milkweed at bud to bloom stage</th>
<th>Toadflax at bud to full bloom stage</th>
<th>Dandelion from rosette to full bloom stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>


Crop Staging for Preharvest applications:
Apply to crops (except forage) when grain moisture is less than 30%. The following chart lists visual symptoms that can be used as guidelines to when 30% grain moisture has been reached.

<table>
<thead>
<tr>
<th>CROP*</th>
<th>VISUAL SYMPTOMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat, Barley*, Oat*</td>
<td>Hard dough stage – a thumbnail impression remains on seed.</td>
</tr>
<tr>
<td>Canola, Mustard***†</td>
<td>Pods are green to yellow and most seeds are yellow to brown.</td>
</tr>
<tr>
<td>Flax (and Solin - low linolenic acid flax)</td>
<td>Majority (75 to 80% of bolls) are brown.</td>
</tr>
<tr>
<td>Lentil</td>
<td>Lowermost pods (bottom 15%) are brown and rattle when shaken.</td>
</tr>
<tr>
<td>Pea</td>
<td>Majority (75 to 80%) of pods are brown.</td>
</tr>
<tr>
<td>Chickpea**†</td>
<td>Stems are green to brown in colour: pods are mature (yellow to brown in colour); 80%-90% leaf drop (original leaves).</td>
</tr>
<tr>
<td>Lupin**</td>
<td>Stems are green to brown in colour: pods are mature (yellow to brown in colour); 80%-90% leaf drop (original leaves).</td>
</tr>
<tr>
<td>Faba bean**†</td>
<td>Stems are green to brown in colour: pods are mature (yellow to brown in colour); 80%-90% leaf drop (original leaves).</td>
</tr>
<tr>
<td>Soybean</td>
<td>Stems are green to brown in colour and pod tissue is brown and dry in appearance (80 to 90% leaf drop).</td>
</tr>
<tr>
<td>Dry Bean</td>
<td>Stems are green to brown in colour and pods are mature (yellow to brown) and 80 to 90% of the original leaves have dropped.</td>
</tr>
<tr>
<td>Forage</td>
<td>3 to 7 days prior to the last cut before rotation or forage renovation. DO NOT apply to forage stands that are to be maintained.</td>
</tr>
</tbody>
</table>

* Registered for application to barley grown for malt and tame oat grown for milling. Contact malt barley or milling oat buyers prior to application to confirm acceptance of glyphosate-treated grain.

** Preharvest applications on these crops are registered with Roundup Transorb HC, Roundup WeatherMax, R/T 540, StartUp and Roundup Ultra 2 only.

*** (yellow/white, brown, oriental), RoundUp Weather Max only.

† NOTE: Since these uses are registered under the User Requested Minor Use Label Expansion (URMULE) program, the manufacturer assumes no responsibility for herbicide performance. Those who apply glyphosate to chickpea, lupin, fababean, or mustard do so at their own risk.

9. For use in glyphosate tolerant canola:
Weeds, Staging and Rates:
All applications must be made within the cotyledon to 6 leaf stage of glyphosate tolerant canola. Temporary yellowing may occur if applied at the 4 to 6 leaf stage of the crop.
Not all glyphosate products are registered for use on glyphosate tolerant canola at all rates listed. Refer to individual product labels for specific uses and rates.

Single applications of 120 g ae per acre:
**Weeds controlled at all stages unless indicated otherwise:**
Annual grasses: barnyard grass, green foxtail, volunteer cereals, wild oat.
Annual broadleaves: annual smartweed spp.**, chickweed, corn spurry, cow cockle*, hemp-nettle, kochia, lamb’s-quarters, night-flowering catchfly*, redroot pigweed, Russian thistle, shepherd’s-purse*, stinkweed, volunteer canola (except glyphosate tolerant varieties), wild mustard, wild tomato.

Single applications of 180 g ae per acre:
All stages of the weeds listed above plus:
Annual broadleaves: cleavers, flixweed, wild buckwheat, stork’s-bill, narrow-leaved hawk’s-beard.
Perennial weeds suppressed: Canada thistle, dandelion, perennial sow-thistle, and season long quack grass control.
Double application of 180 g ae per acre plus 180 g ae per acre:
Additional flushes of the weeds Listed above plus:
Annual broadleaves: round-leaved mallow
Season long control of following perennials: Canada thistle, foxtail barley, and perennial sow-thistle.

Single application of 270 g ae per acre:
All weeds in single applications above plus:
Season long control of following perennials: Canada thistle and perennial sow-thistle.

* Low rates can be used only up to the 3 leaf stage of the crop otherwise use the high rate.
** Low rates can be used only when annual smartweed is in the 4 to 6 leaf stage.
NOTE: A maximum of 360 g ae per acre per season is allowed in glyphosate tolerant Canola

10. For use in glyphosate tolerant corn and soybean:
Weeds, Staging and Rates:
All applications must be made within the following crop growth stages.
Corn - up to and including 8 leaf stage
Soybean - first trifoliate leaf through flowering.
Not all glyphosate products are registered for use on glyphosate tolerant corn and soybeans at all rates listed. Refer to individual product labels for specific uses and rates.

Single application of 360 g ae per acre controls the following weeds:
Grasses:
Barnyard grass  Quack grass
Crabgrass spp.  Volunteer barley and wheat
Foxtail (green, yellow, giant) Wild oats
Proso millet
Broadleaves:
Biennial wormwood*  Night-shade, eastern-black
Canada thistle  Perennial sow-thistle
Chickweed  Pigweed (smooth, redroot)
Cleavers  Round-leaved mallow
Corn spurry  Russian thistle
Cocklebur  Shepherd’s-purse
Cow cockle  Smartweed spp.
Common milkweed (suppression only)  Stinkweed (suppression only)
Common ragweed  Stork’s-bill
Flixweed  Velvetleaf
Hemp-nettle  Volunteer canola (except glyphosate tolerant varieties)
Kochia  Wild mustard
Lamb’s-quarters  Wild buckwheat
Narrow-leaved hawk’s-beard  Wild tomato
Night-flowering catchfly  
* Registered for control in glyphosate tolerant soybean only with Roundup products and R/T 540 only.

Second applications of 360 g ae per acre controls the following weeds:
Late flushes of heavy infestations of the above weeds plus control of:
Common milkweed  Round-leaved mallow
Field bindweed  Yellow nutsedge

Single application of 720 g ae per acre in glyphosate tolerant soybean from the first trifoliate to flowering stage and corn up to and including 6 leaf stage:
Heavy infestations of the annual weeds listed above plus control of:
Field bindweed  Perennial sow-thistle
Common milkweed  Yellow nutsedge
Canada thistle  
** The single application rate in glyphosate tolerant corn and soybean is not labeled for all glyphosate products. Refer to individual glyphosate labels for the registration status of this rate usage in glyphosate tolerant soybean and corn.
11. Tank Mixes:
Not all glyphosate products are registered for all tank mix options below. Refer to individual glyphosate labels for registered tank mixes, glyphosate rates and registered crop species.

<table>
<thead>
<tr>
<th>RATE PER ACRE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preseeding canola††</td>
</tr>
<tr>
<td>Bromoxynil-Pardner (0.51 L), Koril (0.48), Brotex (0.6 L)</td>
</tr>
<tr>
<td>Preseeding cereals***:</td>
</tr>
<tr>
<td>2,4-D° (108 to 273 g ae)*</td>
</tr>
<tr>
<td>Banvel II (0.12 L)*</td>
</tr>
<tr>
<td>Bromoxynil - Pardner (0.51 L), Koril (0.48), Brotex (0.6 L)</td>
</tr>
<tr>
<td>MCPA° (0.2 to 0.4 L)*</td>
</tr>
<tr>
<td>Bromoxynil / MCPA*</td>
</tr>
<tr>
<td>- Buctril M (0.2 to 0.4 L), Logic M (0.25 to 0.5 L)</td>
</tr>
<tr>
<td>Preseeding corn (field and sweet) &amp; flax:</td>
</tr>
<tr>
<td>MCPA™ (0.2 to 0.4 L)*</td>
</tr>
<tr>
<td>Bromoxynil / MCPA*</td>
</tr>
<tr>
<td>- Buctril M (0.2 to 0.4 L), Logic M (0.25 to 0.5 L)</td>
</tr>
<tr>
<td>Preseeding corn (field only)</td>
</tr>
<tr>
<td>Banvel II (0.12 L)*</td>
</tr>
<tr>
<td>Preseeding field pea, lentil† &amp; chickpea‡:</td>
</tr>
<tr>
<td>MCPA Amine™ (0.2 to 0.28 L)**</td>
</tr>
<tr>
<td>Preseeding canaryseed &amp; seedling forage grasses♦♦♦:</td>
</tr>
<tr>
<td>Bromoxynil / MCPA* - Buctril M (0.2 to 0.4 L), Logic M (0.25 to 0.5 L)</td>
</tr>
<tr>
<td>Chem fallow:</td>
</tr>
<tr>
<td>2,4-D° (235 g ae)*</td>
</tr>
<tr>
<td>Dicamba (0.12 L)*</td>
</tr>
<tr>
<td>Bromoxynil - Pardner (0.51 L), Koril (0.48), Brotex(0.6)</td>
</tr>
<tr>
<td>Canada thistle control following harvest or in fallow:</td>
</tr>
<tr>
<td>Dicamba (0.51 L)**</td>
</tr>
<tr>
<td>Alfalfa control in spring / fall:</td>
</tr>
<tr>
<td>2,4-D° (235 to 470 g ae)*</td>
</tr>
</tbody>
</table>

* Volunteer glyphosate tolerant canola control: Tank mixes of 2,4-D at 108 to 160 g ae per acre, MCPA and Bromoxynil / MCPA will control volunteer glyphosate tolerant canola up to the 4 leaf stage and 2,4-D at 212 to 320 g ae per acre will give control up to the 6 leaf stage. Earlier application will result in more consistent control. Dicamba at 0.12 L per acre will not control glyphosate tolerant canola.

** See re-cropping restrictions for Dicamba with fall applications.

*** 2,4-D tank-mixes in cereals are registered for winter wheat, wheat, barley, and rye; Bromoxynil tank-mixes in cereals are registered on wheat, oats and barley; bromoxynil / MCPA and MCPA tank-mixes registered on cereals include wheat, barley oat and rye; Banvel II tank-mixes in wheat, barley, rye oats.

† Under drought conditions, deep seeding and / or brief rain showers after seeding may cause injury to emerging seedlings in sprayer overlaps. NOT for use with Cheminova Glyphosate, Credit 45, Glyphos, Latj Plus, MPower Glyphosate, SharpShooter, SharpShooter Plus, Smoke, or Wise Up.

†† Roundup WeatherMax and Credit 45 only.

♦ Rates based on 500 g / L formulations. All formulation concentrations are registered unless indicated otherwise.

♦♦ Use only amine formulations of MCPA prior to corn, lentil, chickpea and field peas.

♦♦♦ Forage grasses include brome grass, crested wheatgrass, intermediate wheat grass, slender wheatgrass, tall wheatgrass, Russian wildrye, timothy, orchard grass, creeping red fescue, meadow fescue, meadow foxtail, tall fescue, meadow bromegrass, streambank wheatgrass and reed canarygrass.
Tank mixes in glyphosate tolerant crops:
Tank mixes or rates listed may not occur on all product labels. Refer to individual product labels for registered tank-mixes.

Canola:
Lontrel 360 (112 mL/acre)

Soybean:
Assure II (101 to 154 mL/acre)
Pursuit (65 to 85 mL/acre)

Corn:
Aatrex (0.63 to 0.84 L/acre)
2,4-D single application (108 to 212 g ae/acre)*
2,4-D split application (108 g ae/acre followed by 80 to 108 g ae/acre)*
DyVel DSp (0.44 L/acre).

*2,4-D applications to corn may result in serious injury to some corn hybrids. Consult corn seed provider for varietal tolerance to 2,4-D applications. Apply prior to 4 leaf stage of corn.

Note: The above mixes are those listed on the glyphosate labels only.

Monsanto also supports the following mixes that are not on the Roundup brand labels to manage glyphosate resistant kochia and other labelled weeds at the pressed burnoff timing prior to planting soybean. Apply mixes according to the most restrictive use limitations for either product:

Herbicides: Heat (also glyphosate tolerant canola volunteers), Valtera, Authority, Authority Charge.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. See the general guidelines for mixing pesticides for more information.

Application Information:

Water Volume:

Ground: Use 20 to 40 L per acre in most situations; use of the lower volume may improve control when hard water (Ca or Mg) or iron (Fe) ions are present (See Effects of Growing Conditions below). For certain crop situations, perennial weeds and tank mixes may require up to 120 L per acre of clean low ion water.

Aerial: Use 8.1 to 20 L per acre for registered preharvest uses only (see Aerial Application below). Minimum 20 L per acre for preseed, fallow, glyphosate tolerant crops and post-harvest treatments with Roundup WeatherMax only.

Refer to specific weed control situations or labels for more information on water volumes and adjuvants.

Nozzles and Pressure: Use 30 to 40 psi (200 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use nozzles and pressure designed to deliver thorough, even coverage with ASABE medium droplets for ground applications and ASABE coarse droplets for aerial applications.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Best results are achieved under relatively warm sunny conditions when weeds are actively growing. Frost which kills more than 40% of the above ground tissue will reduce control. Control will also be reduced if foliage is heavily covered with dust. “Hard water” or water containing Calcium (Ca), magnesium (Mg) or iron (Fe) ions will reduce the activity of glyphosate products proportional to the level hardness. Reducing application water volume and / or adding ammonium sulphate at 1.2 kg/acre (99% dry) or 2.4 L/acre (49% solution) will reduce the negative effects of low levels of hard water ions. If water is extremely hard (greater than 700 ppm or 40 grains), another water source should be found. Dirty water or water with suspended soil or organic matter will reduce control.

Restrictions:

Rainfall: DO NOT apply if rainfall is forecast for the time of application, as weed control may be reduced. Consult manufacturer for more information.

Grazing Interval: All portions of forage and crops treated with glyphosate products may be fed to livestock.

Re-cropping Interval: No restrictions.

Aerial application: DO NOT apply Cheminova Glyphosate, Credit 45, Crush’R Plus, Lajj Plus, Maverick III, Matrix, Sharpshooter, Vector or WiseUp brands of glyphosate to cropland by air.

All other glyphosate products listed in the “Product names, Company, Formulation and Packaging” chart are registered for aerial application for certain pre-harvest treatments. Not all crop species listed in the pre-harvest section are registered for aerial glyphosate application. Consult manufacturer for current aerial pre-harvest registration status.

ONLY Roundup WeatherMax may be applied by air when fields are too wet to access by ground sprayer (flooded) for preseed burndown, fallow treatment, or application to glyphosate tolerant crops (canola, corn, soybean). Aerial applicators of Roundup WeatherMax for use prior to seeding, in glyphosate tolerant crops and to fallow must have successfully completed a Roundup herbicide aerial application training course provided by Monsanto Canada.

Storage: May be stored below 0°C.

Equipment: DO NOT mix, store or apply this product in galvanized steel or unlined steel (except stainless steel) containers or spray tanks.
### Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Uses</th>
<th>Buffer Zones (metres††) Required for the Protection of:</th>
<th>Aquatic habitats</th>
<th>Terrestrial habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground *</td>
<td>All uses</td>
<td>15</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Aerial</td>
<td>Preharvest only**</td>
<td>25</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Preharvest only***</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Glyphosate tolerant canola only†</td>
<td>5</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Preseed, fallow, glyphosate tolerant crops (corn, soybeans)†</td>
<td>30</td>
<td>70</td>
<td></td>
</tr>
</tbody>
</table>

† Roundup WeatherMax only when conditions are too wet for access by ground sprayer.
†† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Glyphosate is very toxic to non-target plants.

### Sprayer Cleaning:
Refer to page 15 to 16.

### Hazard Rating:

**Roundup Transorb HC, Roundup Ultra 2, Roundup WeatherMax, R/T 540:**

- Caution – Poison

**ClearOut 41 Plus, Cheminova Glyphosate, Glyphos, Roundup Transorb HC, Roundup Ultra 2, Roundup WeatherMax, R/T 540, SharpsShooter Plus:**

- Warning – Eye and Skin Irritant

**All other products:**

- Caution – Skin and Eye Irritant. Potential Skin Sensitizer

For an explanation of the symbols used here see page 11.

---

### Glykamba*

#### Company:
Nufarm Agriculture (PCP#30870)

#### Formulation:
194 g ae/L glyphosate and 46 g/L dicamba present as isopropylamine (IPA) salts formulated as a solution. Container sizes - 10 L, 115 L, 450 L, 750 L.

* Nufarm will manufacture on a pre-order basis.

### Crops and Staging:
Fallow.

Pre-seeding on fields to be sown to wheat, barley, oats and rye.

May also be applied prior to sowing field corn in fields with more than 2.5% organic matter (DO NOT use on sandy or sandy loam soils).

Glykamba SHOULD NOT be applied prior to broadleaf crops such as lentils, peas, canola and flax due to the risk of injury.

### Weeds, Rates and Staging:

Application should be made to emerged, actively growing weeds. Application at early growth stages generally provides the best results.

---

### Herbicide Group

4 - dicamba
9 - glyphosate

(Refer to page 45)
Annual grasses - Apply 1 L per acre between emergence and heading.

- Downy brome
- Green foxtail
- Persian darnel

Annual broadleaves - Apply 1 L per acre up to 6 inches (15 cm) height unless otherwise indicated.

- Cow cockle
- Flixweed
- Kochia
- Lamb’s-quarters
- Redroot pigweed
- Russian thistle
- Smartweed (including lady’s-thumb)
- Stinkweed
- Volunteer canola*
- Wild buckwheat (1 to 4 leaf)
- Wild mustard

* NOT including glyphosate tolerant varieties.

Foxtail barley suppression - Apply 1.26 L per acre before initiation of the seedhead or bottom leaves beginning to brown off.

Application Information:

Water Volume: 20 to 40 L per acre water. Avoid the use of extremely hard water (greater than 700 ppm calcium and/or magnesium or high levels of iron). Use of the lower water volume may improve control in situations where hard water is the only source available.

Nozzles and Pressure: Use 30 to 40 psi (200 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE medium to coarse droplets.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Reduced effectiveness may result if application is made to weeds that are drought-stressed, damaged by disease or insects. Poor control under cool, cloudy weather can occur. Dust on foliage can also cause reduction in control.

Tank Mixes:

Herbicides:
Prior to seeding wheat, winter wheat, barley and rye only:

- 2,4-D Ester or Amine (112 to 168 g ae/acre)* or (224 to 280 g ae/acre)**
- to control volunteer glyphosate tolerant canola up to 4 leaf stage
- to control volunteer glyphosate tolerant canola up to 6 leaf stage.

Restrictions:

Rainfall: Within 6 hours may reduce weed control. Heavy rainfall within 2 hours of application may require a repeat treatment.

Re-entry: DO NOT enter treated fields for 12 hours.

Grazing: DO NOT allow lactating dairy animals to graze within 7 days of treatment or cut for feed or hay within 30 days. Remove meat animals from treated areas at least 3 days prior to slaughter.

Re-cropping: No restrictions in the season following treatment. DO NOT apply in fall or spring prior to broadleaf crops such as lentils, peas, canola and flax due to the risk of injury.

Aerial Application: DO NOT apply by air.

Storage: Store above 5°C.

Equipment: DO NOT mix, store or apply this product or spray solutions of this product in galvanized steel or unlined steel (except stainless steel) containers or spray tanks.

Buffer Zones:

<table>
<thead>
<tr>
<th>Product</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Medium droplets</td>
<td>1</td>
</tr>
<tr>
<td>Coarse droplets</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:
Refer to page 15.

Hazard Rating:

- Caution – Poison
- Danger – Corrosive to eyes.
- Warning – Skin Irritant
- Potential Skin Sensitizer

For an explanation of the symbols used here see page 11.
Company:
Farmers of North America (PCP#30761)

Formulation:
150 g/L glufosinate ammonium formulated as a solution. Container sizes: 13.5 L, 108 L, 432 L.

Crops, Rates and Staging:

<table>
<thead>
<tr>
<th>CROP</th>
<th>RATE (L/acre)</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfalfa (seed production only)</td>
<td>0.81 to 1.09**</td>
<td>50 to 75% pod turn (brown)</td>
</tr>
<tr>
<td>Lentil*</td>
<td>1.09</td>
<td>40 to 60% pod turn (yellow to brown)</td>
</tr>
<tr>
<td>Potato*</td>
<td>1.21</td>
<td>14 to 21 days prior to harvest</td>
</tr>
</tbody>
</table>

* Not for crops grown for seed.
** use the higher rate when crop canopies or weed densities are heavy.

Effects of Growing Conditions:

Good Harvest activity is influenced by environmental conditions. Cool temperatures (less than 10°C), drought, and low humidity conditions slow weed growth. Applications made under these stressed conditions may result in reduced weed effectiveness.

Tank Mixes:
None registered.

Restrictions:

Rainfall: Within 4 hours may reduce activity.
Re-Entry: DO NOT re-enter treated areas for 24 hours after application, without protective clothing as for spraying.
Grazing: DO NOT graze the treated crop or cut for feed.
Preharvest Interval: Leave 9 days between application and harvest of lentil and potato.
Re-cropping: No restrictions.
Aerial Application: May be applied by air.
Storage: DO NOT freeze.
Buffer Zones:

Ground: DO NOT apply within 15 metres of sensitive plants or water or wetland areas.
Aerial: DO NOT apply within 30 metres of sensitive plants, or water or wetland areas.
DO NOT apply when dead calm or when winds exceed 16 km/hr when using unprotected booms or applying by air, or exceeding 25 km/hr when using shrouded booms.

Sprayer Cleaning:
Refer to ‘Method B’ in the general sprayer cleaning section on page 15 to 16.

Hazard Rating:

- Warning – Poison
- Caution – Skin Irritant
- Warning – Eye Irritant

For an explanation of the symbols used here see page 11.
Gramoxone

Company:
Syngenta Canada  (PCP#8661)

Formulation:
200 g/L paraquat formulated as a solution.
Container size - 4 x 5 L

Crops and Staging:
Stale seedbed: Non-selective weed control applied 3 days prior to crop emergence in beans, corn, potatoes, peas, soybeans.
Non-selective inter-row weed control: Apply as a directed spray between rows in row crops. Avoid contact with crop foliage.
Control of weed seedlings in established alfalfa and bird’s-foot trefoil for hay: Apply 5 days after first cut.
Control of weed seedlings in bird’s-foot trefoil for seed: Apply in spring when bird’s-foot trefoil shoots are 3 to 6 inches (7.5 to 15 cm) long.
Non-selective weed control – shelterbelts: Apply as a directed spray in and around shelterbelt trees or woodlot plantings. Avoid contact with foliage.
Pre or Post seeding burndown: Apply prior to crop emergence in barley, canary seed, canola, corn (field, sweet and pop), dry beans, field peas, flax, solin (low linolenic acid flax), lentils, mustard, oats, potato, rye, soybean, sunflower, triticale, wheat.

Weeds and Staging:
Annual weed burn-off. Best control when weeds are less than 2 inches (5 cm) in height or diameter.

Rates:
Pre or post seeding burndown: 0.8 to 1.6 L per acre
All other applications: If weeds are less than 2 inches (5 cm) in height, apply 1.1 L per acre (5 L treats 4.5 acres). If weeds are taller than 2 inches (5 cm), increase the rate of Gramoxone to 2.2 L per acre (5 L treats 2.2 acres).

Application Information:
Water Volumes:
Pre or post seeding burndown: Minimum 40 liters per acre.
All other applications: 135 to 500 L per acre. Use the higher water volumes within the range if weed growth is dense. Good coverage is critical for good control.
Nozzles and Pressure: 30 to 40 psi (200 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE medium droplets.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Best results on cloudy days or just prior to darkness.

Tank Mixes:
Corn: AAtrex, Dual II Magnum, Frontier Max and Primextra II Magnum*
Soybean: Dual II Magnum, Frontier Max, Linuron, Sencor*
* Refer to product labels for time of application and restrictions.

Restrictions:
Rainfall: Within 1 hour will reduce weed control.
Re-entry Period: DO NOT re-enter treated fields for 24 hours following application. If necessary, workers may re-enter field after 4 hours if wearing protective clothing. See label for details.
Grazing: DO NOT graze or harvest treated foliage. Regrowth from treated alfalfa or bird’s-foot trefoil may be fed to livestock.
Re-cropping Interval: No restrictions.
Aerial Application: DO NOT apply by air.
Storage: DO NOT freeze.
Buffer Zones:

<table>
<thead>
<tr>
<th>Crop</th>
<th>Buffer Zones (metres)</th>
<th>Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
<td>Terrestrial habitat</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
<td>1 m to 3 m</td>
</tr>
<tr>
<td>Conservation tillage soybean</td>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>All other crops</td>
<td>50</td>
<td>40</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance is measured from the downwind edge of the boom to sensitive areas.
DO NOT spray when conditions are dead clam or when wind is gusty or blowing faster than 16 km/hr.
Sprayer Cleaning:
Refer to page 15.

Hazard Rating:
- Danger - Poison (may be fatal if swallowed)
- Danger - Corrosive to eyes

For an explanation of the symbols used here see page 11.

Company:
Dow AgroSciences

Formulation:
Grazon (PCP#27634): 65 g/L picloram and 240 g/L 2,4-D formulated as a solution.
Grazon XC (PCP#31642): 97.5 g/L picloram and 360 g/L 2,4-D formulated as a solution.
Container size - 2 x 10 L and 110 L.
Note: Available only through selected retail outlets.

Crops and Staging:
Permanent grass pasture and rangeland. Apply in spring or early summer.

Weeds, Rates and Staging:
Broadleaf weeds:
Apply Grazon at 1.5 L per acre or Grazon XC at 1.0 L per acre for season long control ONLY:
- Canada thistle
- Common yarrow

Apply Grazon at 2.8 L per acre or Grazon XC at 1.9 L per acre: for control of the above weeds and the following weeds:
- Burdock
- Clovers (red, sweet)
- Dock
- Fleabane
- Goldenrod
- Plantain
- Ragweed (common)
- Prickly lettuce
- Vetch
- Wild carrot

Apply Grazon at 3.8 L per acre or Grazon XC at 2.5 L per acre for control of the following woody species:
- Aspen
- Balsam poplar*
- Birch
- Burdock
- Clovers (red, sweet)
- Dock
- Fleabane
- Goldenrod
- Plantain
- Ragweed (common)
- Prickly lettuce
- Vetch
- Wild carrot

Application Information:
Water volume*:
Ground application: 40 to 80 L per acre.
Aerial application: 8 to 20 L per acre.
* Use higher water volumes for when foliage is dense.

Nozzles and Pressure: Use nozzles that will deliver coarse droplets in a uniform pattern. Maximum 30 psi (207kPa) by ground or air when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use nozzles and pressure designed to deliver thorough, even coverage with ASABE coarse droplets.

Drift of even small amounts of Grazon or Grazon XC into sensitive plants or areas where sensitive crops may be grown can cause injury. DO NOT apply under conditions prone to drift (i.e. high winds, dead calm and temperature inversions).

How it Works:
Refer to Table 2 on page 47.

IMPORTANT: Picloram is a very persistent and water-soluble herbicide. Treated soil should not be moved from the treated area. DO NOT apply to soils that are permeable, have sinkholes, or lie over limestone bedrock. DO NOT apply to soils whose surfaces are
composed of fractured rock or unconsolidated gravel. Application to these sites may allow the movement of herbicide to underlying water sources or aquifers. When applying Grazon or Grazon XC over sandy soils ensure that aquifers are not within 1.8 m of the soil surface. If shallow aquifers are present, DO NOT apply Grazon or Grazon XC. Grazon and Grazon XC must not be applied on range and pasture acres that are irrigated. DO NOT compost or mulch clippings or manure from grass treated with Grazon or Grazon XC unless being reapplied to the treated area.

**Effects of Growing Conditions:**
Nothing listed on the Grazon or Grazon XC label. Avoid application when pasture and target weeds are under stress from drought, flooding, extreme heat or cold, as injury to grass or unacceptable control may result. Avoid application when temperatures exceed 28°C.

**Tank Mixes:**
None registered.

**Restrictions:**

_Rainfall:_ DO NOT apply if rainfall is forecast. No specific time frame is indicated on the label. Contact manufacturer for more information.

_Re-entry:_ DO NOT re-enter pastures within 3 days of application.

_Grazing:_ DO NOT allow lactating dairy animals to graze treated areas within 7 days of application. Withdraw meat animals from treated fields at least 3 days before slaughter. DO NOT harvest forage or cut hay within 30 days of application. Feed livestock untreated forage for 7 days prior to moving onto land that produce broadleaf crops - otherwise urine or manure may contain picloram. See restrictions in “How it Works” section above.

_Re-cropping:_ Legumes may not be established in a pasture for several years after treatment. If legumes are essential in a pasture, DO NOT use Grazon or Grazon XC. DO NOT break up treated pasture and plant to sensitive broadleaf crops for at least 5 years after application.

_Aerial Application:_ May be applied by air.

_Storage:_ Store product in original containers in a secure, dry, cool area. DO NOT freeze.

_Buffer Zones:_
See page 36 for an explanation of the different habitats.

---

### Field Sprayer (Rangeland Uses)

<table>
<thead>
<tr>
<th>Product - Use Rate (L/acre)</th>
<th>Buffer Zones (metres*) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Grazon - 1.5</td>
<td>1</td>
</tr>
<tr>
<td>Grazon - 2.8</td>
<td>2</td>
</tr>
<tr>
<td>Grazon XC - 2.5</td>
<td>2</td>
</tr>
</tbody>
</table>

* These distances can be reduced by 30% using cones on individual nozzles and by 70% using a full shield (shroud, curtain) that extends to the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Refer to the label for buffer zone requirements for aerial application.

Heavy rains can move this product from its application site down slope toward sensitive areas. DO NOT load or mix near wells, dugouts or other water bodies.

**Sprayer Cleaning:**
There are no sprayer cleaning recommendations on the product label. A combination of Method A and B found on the general page on sprayer cleaning on page 15 to 16, or the use of a commercial tank cleaner, completed immediately after application is finished may be the best cleanout option.

**Hazard Rating:**

![Caution – Poison](symbol.png)

May cause skin and eye irritation

For an explanation of the symbols used here see page 11.
Harmony K

*Harmony K is equivalent to a tank mix of thifensulfuron/tribenuron (page 301), clodinafop (page 130) plus dicamba (page 135). For other detailed information on the component products see the product pages listed above.

Company:
E. I. duPont Canada

Formulation:
The Harmony K package contains the following components:

**Harmony Broadleaf (PCP#30027):** 53.8% dicamba sodium salt, 7.7% thifensulfuron methyl, and 3.9% tribenuron methyl formulated as a water dispersable granule.

Container size - 2.104 kg

**Harmony Grass (PCP#29202):** 128 g/L clodinafop-propar-gyl formulated as an emulsifiable concentrate with built in adjuvant.

Container size - 1 x 7.1 L

Crops and Staging:
Spring wheat (including durum) from the 2 to 5 leaf stage.

Weeds and Staging:
*Harmony K controls the same weeds as Harmony SG with the addition of Group 2 resistant kochia and dandelion (spring or fall rosettes less than 15 cm in diameter).

Rates:
**Harmony Grass:** 177 mL per acre
- plus -
**Harmony Broadleaf:** 52 g per acre
One package treats 40 acres (16 ha)

Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

See thifensulfuron/tribenuron, clodinafop and dicamba, pages on restrictions, application details and handling. Use the most limiting restrictions across all components for the mix.

Note: Harmony K may be applied by air.

Harmony SG*

*This product is a prepackaged tank mix of thifensulfuron/tribenuron (page 301) and clodinafop (page 130). Information listed is restricted to Crop, Weeds, Rates and Tank mixes. For other detailed restrictions and other general information on the component products see the product pages listed above.

Company:
E. I. duPont Canada

Formulation:
The Harmony SG* package contains the following components:

**Refine SG (PCP#28285):** 33.35% thifensulfuron methyl + 16.65% tribenuron methyl; formulated as a water soluble granule.

Container size - 486 g bottle.

*NOTE: This product is no longer manufactured but product still remains in the distribution system. This product may be removed from future editions.

Herbicide Group

1 - clodinafop
2 - thifensulfuron & tribenuron
4 - dicamba
(Refer to page 45)
Crops and Staging:
Spring wheat (including durum) up to the emergence of the 4th tiller.

Weeds and Staging:
Broadleaf weeds controlled or suppressed by Refine SG plus:
Wild oat - 1 to 6 leaves up to the emergence of the 4th tiller.
Green foxtail - 1 to 5 leaves up to the emergence of the 3rd tiller.
For optimum control apply before the annual grasses tiller.

Rates:
Refine SG: 12 g per acre
Harmony Grass: 177 mL per acre
One case treats 40 acres (16 ha)
Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

Tank Mixes:
Herbicides:
MCP A Ester (0.34 to 0.45 L/acre of 500 g/L formulation).
Banvel II (44.5 or 59 mL/acre).
See component products for more information on restrictions application details and handling. Use the most limiting restrictions across all components for the mix.

Hat Trick
Company:
Loveland Canada (PCP#31727)

Formulation:
61 g/L fluroxypyr, 61 g/L clopyralid and 224 g/L MPCA ester formulated as emulsifiable concentrate liquid.
Container size: 2 x 8.5 L, 204 L.

Crops and Staging:
Barley, Wheat (spring, durum):
Apply from the 3 leaf to flag leaf stage (prior to head emergence).
Maximum one application per year of Hat Trick or other products containing clopyralid, MCPA or fluroxypyr.

Weeds, Rates and Staging:
Unless otherwise stated, apply when weeds are in the 2 to 4 leaf stage.
Hat Trick at 0.65 L per acre (one case treats 26 acres and 204 L treats 314 acres) controls:

Canada thistle*
Chickweed
Cleavers
Dandelion*
Hemp-nettle
Kochia
Lamb’s-quarters
Perennial sow-thistle*
Redroot pigweed*
Shepherd’s-purse
Wild buckwheat

Hat Trick at 0.85 L per acre (one case treats 20 acres and 204 L treats 240 acres) controls the above weeds plus:
Canada thistle
Dandelion
Perennial sow-thistle
Redroot pigweed

* Lower infestation only.

Application Information:
Water Volumes: Minimum 40 liters per acre.
Nozzles and Pressure: Use 29 to 40 psi (200 to 275 kPa) if applying without drift reduction nozzles. Drift reduction nozzles may require higher pressures for proper performance. Select the nozzle and pressure combination that produces of ASABE coarse droplets while maintaining good coverage of foliage. Keep booms lower than 60 cm from crop canopy.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Extreme growing conditions such as drought or near freezing temperatures prior to, at and following time of application may reduce weed control and increase the risk of crop injury at all stages of growth. Wet foliage at the time of application may result in reduced weed control.
Tank Mixes:

Herbicides:
- **In barley and wheat (spring and durum) only:** Achieve (label rate) plus adjuvant**
- **In wheat (spring and durum) only:** Simplicity (0.2 L/acre) plus surfactant*
  * Low rate of Hat Trick only.
  ** High rate of Hat Trick only.

Insecticides: None registered.

Fungicides: None registered.

Fertilizers: None registered.

Note: The above mixes are those listed on the Hat Trick label only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:

Rainfall: No specific recommendation. May be up to 8 hours. Contact the manufacturer for more information.

Re-entry Interval: DO NOT enter treated fields for 12 hours.

Grazing: DO NOT graze or feed treated crop to livestock within 7 days of application. Withdraw meat animals from treated fields 3 days prior to slaughter.

Pre-harvest Interval: Leave 60 days between application and harvest.

Re-cropping Interval: Canola, flax, oats, rye and registered crops may be seeded the season after application.

Aerial Application: Apply by ground equipment only.

Storage: Store in original containers in a secure, dry heated storage. If product is frozen, bring to room temperature and agitate before use.

Buffer Zones:

<table>
<thead>
<tr>
<th>Crop</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground only</td>
<td>1</td>
</tr>
</tbody>
</table>

See the key to product pages on page 27 for an explanation of the different habitats.

* Buffer zones may be reduced when using drift reduction measures. See the Buffer Zone Calculator on the Pest Management Regulatory Agency web site.

† Distance is measured from the downwind edge of the boom to sensitive areas.

Spray when winds are under 8 km/hr, but not dead calm.

Tank Cleaning:

Refer to 'Method C' in the general section on sprayer cleaning on page 15 to 16. The addition of detergent may improve the effectiveness of tank cleanout.

Hazard Rating:

⚠️ Warning – Eye and Skin Irritant

For an explanation of the symbols used here see page 11.
**Heat Control**

**Company:**
BASF Canada

**Formulation:**
Heat WG (PCP#29368): 70 % saflufenacil formulated as a water soluble granule.
Container size - 8 x 844 g containers per case.
Heat LQ (PCP#31468): 342 g/L saflufenacil formulated as a suspension concentrate.
Container size - 1 x 1.73 L Heat LQ; 2 x 8.1 L Merge adjuvant.

**Crops, Rates and Staging:**
Prior to the seeding of; or following seeding and prior to the emergence of the following crops; fallow or post-harvest:
Must be applied as part of a tank mix with glyphosate from 180 to 360 g ae per acre (see glyphosate page for specific product rates):

<table>
<thead>
<tr>
<th>CROP</th>
<th>RATE (per acre)</th>
<th>PRE-HARVEST INTERVAL</th>
<th>APPLICATION STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Heat WG (g)</td>
<td>Heat LQ (mL)</td>
<td></td>
</tr>
<tr>
<td>Barley, canaryseed, chickpea, corn (field and sweet*), field pea, oat, wheat (spring, winter and durum)</td>
<td>10.4 to 28.4</td>
<td>21.4 to 59</td>
<td>3</td>
</tr>
<tr>
<td>Bromegrass, seedling, grown for seed**</td>
<td>10.4 to 28.4</td>
<td>NR***</td>
<td>3</td>
</tr>
<tr>
<td>Lentil†, soybean†*</td>
<td>10.4</td>
<td>21.4</td>
<td>3</td>
</tr>
<tr>
<td>Fallow and post-harvest</td>
<td>10.4 to 28.4</td>
<td>21.4 to 59</td>
<td>3</td>
</tr>
</tbody>
</table>

* Some varieties may be more sensitive to Heat and injury may occur
† DO NOT use rates higher than 10.4 g per acre of Heat WG or 21.4 mL per acre of Heat LQ or injury could result.
** NOTE: Since this use registered under the User Requested Minor Use Label Expansion (URMULE) program, the manufacturer assumes no responsibility of herbicide performance. Application to this crop is at the risk of the user.
*** NR, not registered.

Add either Merge or Amigo adjuvant or MSO Concentrate (Heat WG only) at 0.2 to 0.4 L per acre
(One 844 g container of Heat WG or one 1.73 L container of Heat LQ treats 80 to 30 acres)

**Herbicide Group 14 - saflufenacil** (Refer to page 45)

**Harvest Aid/Desiccation:**
Apply 14.4 to 28.4 grams per acre of Heat WG or 29.5 to 59 mL per acre of Heat LQ to speed the rate of dry-down of the following crops and green weedy material.
Merge adjuvant or MSO Concentrate (Heat WG only) must be added spray solutions of both formulations at 0.2 to 0.4 L per acre. The required delay before harvest of each crop is indicated below.

<table>
<thead>
<tr>
<th>CROP</th>
<th>PRE-HARVEST INTERVAL</th>
<th>APPLICATION STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canola</td>
<td>3</td>
<td>Apply when 60 – 75% of seeds have changed colour.</td>
</tr>
<tr>
<td>Field Pea</td>
<td>3</td>
<td>A majority of the pods are brown (70 – 80%)</td>
</tr>
<tr>
<td>Red lentil varieties only</td>
<td>3</td>
<td>Lower most pods (15%) are brown and rattle when shaken</td>
</tr>
<tr>
<td>Dry bean</td>
<td>2</td>
<td>Stems are green to brown, pods are mature (yellow to brown), and 80 – 90% of leaves have dropped</td>
</tr>
<tr>
<td>Soybean</td>
<td>3</td>
<td>The backs of flower heads and bracts are turning yellow, and seed moisture is 20 – 30%.</td>
</tr>
<tr>
<td>Sunflower</td>
<td>7</td>
<td>The backs of flower heads and bracts are turning yellow, and seed moisture is 20 – 30%.</td>
</tr>
</tbody>
</table>

†† Heat LQ only

Apply Heat WG at 28.4 g/acre or Heat LQ at 59 mL/acre with 0.4 L/acre Merge Adjuvant when the product is not used as part of a tank mix.

Heat may be tank mixed with glyphosate on field pea, lentil, dry beans and soybeans for additional pre-harvest weed control. When tank mixing with glyphosate, it is recommended to apply Heat WG at 20.4 g/acre or Heat LQ at 42.8 mL/acre. DO NOT tank mix with glyphosate when the harvested grain is to be used for seed.

Note: Tolerances for Heat residue may not be established in all countries importing wheat. Check with your grain supplier.
buyer prior to application to wheat to determine if they will accept these crops treated with Heat.

Weeds, Rates and Staging:
Apply up to the 8 leaf stage unless otherwise indicated to control the weeds controlled by glyphosate plus rapid burndown of:

- Canada fleabane
- Cleavers (4 whorl-stage)
- Dandelion
- Kochia (up to 15 cm)
- Lamb’s-quarters
- Flixweed
- Narrow-leaved hawk’s-beard (up to 8 cm)

- Pigweed (redroot)**
- Ragweed (common)***
- Round-leaved mallow
- Stinkweed**
- Volunteer canola**
- Wild buckwheat **
- Wild mustard**

* All varieties
** Applications at the 28.4 g per acre rate of Heat WG or 59 mL per acre rate of Heat LQ will also provide suppression of the emergence of these weeds following application.
*** Pre-harvest application of Heat LQ provides burndown of common ragweed in barley, triticale and wheat.

Application Information:
Water volume:
Preseed, pre-emergent, fallow or post-harvest by ground only: 20 to 40 L per acre.
Harvest aid/Desiccation:
Ground: 81 L per acre
Aerial: 20 L per acre.
Higher volumes are required for dense weed stands. Weed control improves with the amount of coverage.

Nozzles and Pressure: Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE medium classification droplets. Low drift nozzles may require higher pressures for proper performance. Higher pressures may be required to penetrate dense weed stands.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Rainfall shortly after application can result in slight injury to the crop. See the ‘Restrictions’ section below for more details. Warm, moist growing conditions promote active weed growth. Weeds hardened off by environmental stress such as cold weather, drought or excessive heat may not be adequately controlled.

Tank Mixes:
Herbicides:
Preseed, pre-emergent, fallow or post-harvest: Glyphosate (180 g to 360 g ae per acre)*
* must be mixed with glyphosate.
Harvest Aid/Desiccation:
Glyphosate (360 g ae per acre)†
† NOT for use on crops to be used for seed.

(see glyphosate page for product concentrations and equivalent application rates)

Fungicides: None registered
Insecticides: None registered
Fertilizers: None registered

Note: The above mixes are those listed on the Heat label only.
Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Rainfall shortly after application can result in slight injury to the crop. Lentils are more sensitive to injury on coarse textured (sandy or gravely) and low organic matter soils. Injury will appear as slight leaf edge burning, which will be grown out of and yield will not be affected.
Re-entry: DO NOT enter treated fields for at least 12 hours.
Preharvest Interval:
Preseed and pre-emergent: Leave 60 days between application and harvest.
Harvest Aid/Desiccant: Refer to table in ‘Crops, Rates and Staging’ section.
Grazing Interval:
Preseed and pre-emergent: DO NOT graze or cut cereal crops for feed within 30 days of application or chickpea, corn, field pea, lentil and soybean within 60 days.
Harvest aid/Desiccant: DO NOT graze or feed dry bean, lentil or soybean. Treated barley, field pea, triticale and wheat may be grazed or used as feed.
**Re-cropping:**

<table>
<thead>
<tr>
<th>CROP</th>
<th>APPLICATION RATE (per acre) AND TIMING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spring Application</td>
</tr>
<tr>
<td>Heat WG rate</td>
<td>10.4 g up to 28.4g</td>
</tr>
<tr>
<td>Heat LQ rate</td>
<td>21.4 mL up to 59 mL</td>
</tr>
<tr>
<td>Barley</td>
<td>PB</td>
</tr>
<tr>
<td>Canary seed</td>
<td>PB</td>
</tr>
<tr>
<td>Canola</td>
<td>1</td>
</tr>
<tr>
<td>Chickpea</td>
<td>PB</td>
</tr>
<tr>
<td>Corn</td>
<td>PB</td>
</tr>
<tr>
<td>Dry Bean</td>
<td>1</td>
</tr>
<tr>
<td>Flax</td>
<td>1</td>
</tr>
<tr>
<td>Lentil</td>
<td>PB</td>
</tr>
<tr>
<td>Mustard</td>
<td>1</td>
</tr>
<tr>
<td>Oat</td>
<td>PB</td>
</tr>
<tr>
<td>Field Pea</td>
<td>PB</td>
</tr>
<tr>
<td>Soybean</td>
<td>PB</td>
</tr>
<tr>
<td>Spring Wheat (including durum)</td>
<td>PB</td>
</tr>
<tr>
<td>Winter wheat</td>
<td>PB</td>
</tr>
</tbody>
</table>

PB  May be planted back in the same season
1  May only be planted the season following application
2  May only be planted the second season following application

**Aerial Application:** May be applied by aircraft for desiccation use only. DO NOT apply by air for any other use.

**Storage:** Store in dry, cool storage. May be frozen.

**Buffer Zones:**

<table>
<thead>
<tr>
<th>Application method</th>
<th>Crop</th>
<th>Buffer Zones (metres†) Required for the Protection of Terrestrial Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground only*</td>
<td>Lentil, Soybean</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>All other crops</td>
<td>10</td>
</tr>
<tr>
<td>Fixed wing airplane</td>
<td>All desiccation uses</td>
<td>175</td>
</tr>
<tr>
<td>Helicopter</td>
<td>All desiccation uses</td>
<td>150</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as meters from the downwind edge of the spray boom to sensitive habitat.

DO NOT apply in areas where surface water from the treated area can run off to adjacent cropland, streams.

**Sprayer Cleaning:**

*Heat can cause injury to sensitive crops at very low concentrations. Sprayers used to apply this product should be flushed out immediately after each day of use.*

Refer to 'Method B' in the general section on sprayer cleaning on page 15 to 16.

**Hazard Rating:**

⚠️ Caution – Possible Skin Irritant

For an explanation of the symbols used here see page 11.
Imazamethabenz

Company:
Nufarm Agriculture (Assert 300SC - PCP#21032)
Loveland Products Canada (Avert - PCP#29618)

Formulation:
300 g/L imazamethabenz formulated as a suspension concentrate.
Container size - 2 x 10.8 L.
PH adjuster: 94.5% sodium bisulfate formulated as a soluble granule.
Container size - 2 x 2.5 kg bags (1 bag per 10.8 L jug of imazamethabenz).

Crops, Rates and Staging:
PH adjuster: 1 packet per jug of Assert to be used.
Imazamethabenz up to 0.67 L per acre (16.1 acres per jug): Barley, spring wheat (including durum) - 1 to 6 leaf stage. Annual ryegrass (seed production only) - 4 to 6 leaf stage.
Imazamethabenz at 0.34 L per acre (32 acres per jug): Sunflower – plants (not under drought stress) that are in the 2 to 8 leaf stage. Crop must be less than 15 inches (38 cm) tall except for semi-dwarf varieties, which must be less than 12 inches (30 cm), and dwarf varieties, which must be less than 4 inches (10 cm). Stunting and head deformation can occur from applications made beyond recommended stages.
DO NOT apply imazamethabenz to the same field more than once in two years.

When tank mixing, always check the tank mix partner recommendations for additional staging restrictions. Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

Weeds, Rates and Staging:

<table>
<thead>
<tr>
<th>WEEDS</th>
<th>STAGE</th>
<th>RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(L per</td>
</tr>
<tr>
<td></td>
<td></td>
<td>acre)</td>
</tr>
<tr>
<td>Stinkweed</td>
<td>Up to 6 leaves</td>
<td>0.34</td>
</tr>
<tr>
<td>Wild mustard</td>
<td></td>
<td>0.54</td>
</tr>
<tr>
<td>*Weeds above plus:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buckwheat (wild and tartary)</td>
<td>Up to 4 leaves</td>
<td></td>
</tr>
<tr>
<td>(suppression)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volunteer canola (except</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clearfield varieties)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wild oats</td>
<td>1 to 3 leaves</td>
<td>0.67</td>
</tr>
<tr>
<td>Wild oats</td>
<td>1 to 4 leaves</td>
<td></td>
</tr>
</tbody>
</table>

* Main stem leaves.

Application Information:
Good coverage of foliage is important to maintain good control
Water volume: In cereals only, imazamethabenz may be applied in 20 to 40 L of water per acre when applied alone or when tank mixed with dichlorprop/2,4-D, 2,4-D ester, or MCPA ester. For all other applications, apply in 40 L per acre.
Nozzles and Pressure: 40 psi (275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE medium droplets or larger.

Screens: Use 50 mesh screens for nozzles and in-line filters.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
DO NOT apply imazamethabenz 24 hours before or after a frost. It works best at warm temperatures. Performs relatively consistently under dry conditions. If cold, wet soil conditions persist in the days after application, retillering of wild oats may occur. DO NOT apply to drought stressed sunflowers.
**Tank Mixes:**

**Herbicides:**

*Imazamethabenz* may be applied at either 0.53 L or 0.67 L per acre in tank mixes in the brown and dark brown soils, but must be applied at 0.67 L per acre when tank mixing in the black and grey wooded soils for adequate wild oat control.

In spring wheat (including durum) and barley:

- **2,4-D Ester** (up to 212 g ae/acre)
- **Curtail M** (0.80 L/acre)
- **Dichlorprop/2,4-D ester** (0.7 L/acre)**†
- **Fenoxaprop** (0.118 L/acre)
- **Fenoxaprop** + **MCP A Ester** (0.28 L/acre)
- **Frontline XL** (0.65 L/acre)
- **Infinity** (0.33 L/acre)
- **MCP A Ester** (up to 0.38 L/acre) (600 g/L formulations)
- **Refine SG** (12 g/acre)
- **Spectrum** (20 acres per case)
- **Trophy** (20 acres per case)

† Mix with *Turboprop* is NOT for use in barley. *Dichlorprop-D* registered with *Assert* only.

* Apply in 20 to 40 L of water per acre. For all other tank mixes use 40 L/acre.

** Use the 0.54 L/acre rate of *imazamethabenz* when tank mixing with *fenoxaprop* (see product labels for specific products). *Fenoxaprop* rate provides green foxtail control only.

*** When tank mixing dry broadleaf products, add products to the tank in the following order: dry broadleaf products, acidifier, *imazamethabenz*, and other liquid herbicides if required. For repeat tanks, dry broadleaf products need to be mixed with water to form a slurry prior to adding to the remaining spray solution in the tank.

Refer to *imazamethabenz* labels for specific mixing order and application details when tank-mixing.

Refer to tank mix partner for additional crop staging restrictions.

**Fertilizers:** None registered.

**Insecticides:** None registered.

**Fungicides:** None registered.

Note: The above mixes are those listed on the *imazamethabenz* labels only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

**Restrictions:**

**Rainfall:** Within 6 hours will reduce control.

**Re-entry:** Wait at least 12 hours before entering treated fields.

**Grazing:** DO NOT graze treated fields or cut treated forage for silage or hay. Mature barley and wheat grain or straw from fields treated with *imazamethabenz* can be fed to livestock. DO NOT feed or graze treated annual ryegrass.

**Preharvest Interval:** DO NOT apply beyond the recommended crop stage.

**Re-cropping:**

DO NOT apply *imazamethabenz* to the same field more than once in two years.

**Fertilizers:** None registered.

**Insecticides:** None registered.

**Fungicides:** None registered.

Note: The above mixes are those listed on the *imazamethabenz* labels only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

**Restrictions:**

**Rainfall:** Within 6 hours will reduce control.

**Re-entry:** Wait at least 12 hours before entering treated fields.

**Grazing:** DO NOT graze treated fields or cut treated forage for silage or hay. Mature barley and wheat grain or straw from fields treated with *imazamethabenz* can be fed to livestock. DO NOT feed or graze treated annual ryegrass.

**Preharvest Interval:** DO NOT apply beyond the recommended crop stage.

**Re-cropping:**

DO NOT apply *imazamethabenz* to the same field more than once in two years.

**Fertilizers:** None registered.

**Insecticides:** None registered.

**Fungicides:** None registered.

Note: The above mixes are those listed on the *imazamethabenz* labels only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

## Table: Year After Application

<table>
<thead>
<tr>
<th>Year After Application</th>
<th>Black and Grey Wooded Soils</th>
<th>Brown and Dark Brown Soils</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring wheat (including durum), barley, canola, field peas, flax, sunflowers</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Year 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring wheat (including durum), barley, canaryseed, canola, field peas, flax, oats, sunflowers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conduct a field bioassay (a test strip grown to maturity) the year before growing any crop not listed in the table. Lentils are known to be particularly sensitive to *imazamethabenz* residues in the soil. The additive effect of soil residues from the use of *imazamethabenz* and sequential applications of *imazethapyr*, *metsulfuron*, or *Odyssey* herbicides on the same land area has not been determined. Crop rotation guidelines are not known and injury to rotational crops other than wheat (excluding durum) may occur. Plant only wheat (excluding durum) on fields where these herbicides have been used until a field bioassay demonstrates other crops can be grown successfully.

**Aerial Application:** DO NOT apply by air.

**Storage:** DO NOT freeze. Shake well before using.

**Buffer Zones:**

<table>
<thead>
<tr>
<th>CROP</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m Greater than 1 m Terrestrial habitat</td>
</tr>
<tr>
<td>Sunflower</td>
<td>0 0 1</td>
</tr>
<tr>
<td>Annual ryegrass, Cereals</td>
<td>1 0 1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Handheld or backpack sprayers do not require a buffer zone.
**Imazethapyr**

**Company:**
BASF Canada (Pursuit - PCP#23844)
Farmers of North America (MPower Kamikaze - PCP#30127)
ADAMA Canada (Phantom - PCP#30017)
Univar Canada (Gladiator - PCP#28923)
Loveland Products Canada (MultiStar - PCP#29259)

**Formulation:**
240 g/L imazethapyr formulated as a solution.
Container size - 2 x 3.3 L jugs per case.

**Crops and Staging:**

**All products:** DO NOT use in the brown or dark brown soil zones (except for use in dry bean and alfalfa under irrigated brown soils); rotational crops may be severely injured due to carry over in these soils.

**Weeds and Staging:**

* In field peas. **Apply up to the 4 leaf stage, unless otherwise indicated:**

- Chickweed
- Cleavers
- Green foxtail
- Hemp-nettle
- Redroot pigweed
- Shepherd’s-purse
- Smartweed

* In seedling and established alfalfa:

- Common groundsel†
- Green foxtail†
- Green smartweed *
- Redroot pigweed
- Shepherd’s-purse†

* In dry bean:

- Hairy nightshade (up to 6 leaf stage)

† Seedling alfalfa only.
†† Suppression

---

**Sprayer Cleaning:**
Refer to page 15.

**Hazard Rating:**

- Caution – Poison
- Warning – Eye Irritant

For an explanation of the symbols used here see page 11.

**Herbicide Group 2 - imazethapyr**
(Refer to page 45)

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Established alfalfa (seed production only)**</td>
<td>Apply before alfalfa reaches 12 inches (30 cm) in height.</td>
</tr>
<tr>
<td>Chickling vetch grown for seed</td>
<td>Apply at the 5 to 7 leaf stage.</td>
</tr>
</tbody>
</table>

* Apply only to seedling alfalfa that will remain in production for at least 3 years following application. Apply only once during the life of the alfalfa stand.
** DO NOT apply in the last year of established alfalfa stands.

---

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field pea</td>
<td>May be applied up to the sixth above-ground node stage (6 true leaves).</td>
</tr>
</tbody>
</table>

**Pursuit, Gladiator, MultiStar and Phantom only:**

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry bean (pinto, pink and red varieties only)</td>
<td>Up to and including the second trifoliate leaf stage</td>
</tr>
<tr>
<td>Soybean (Manitoba only)</td>
<td>Up to and including the third trifoliate leaf stage</td>
</tr>
<tr>
<td>Seedling alfalfa (forage or seed production)*</td>
<td>Apply after the first trifoliate leaf stage.</td>
</tr>
</tbody>
</table>
Rates:
85 mL per acre (40 acres per jug).
A non-ionic surfactant with at least 80% active ingredient (Agral 90, Agsurf II, Surf 92) should be added at a rate of 0.25 L per 100 L of spray solution. DO NOT over apply imazethapyr, as crop injury may result.
DO NOT apply imazethapyr more than once per season or follow imazethapyr with other products containing imazethapyr in the same year.
Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

Application Information:
Water Volume: 40 to 160 L per acre.
Nozzles and Pressure: Maximum 40 psi (275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use nozzles and pressure designed to deliver proper coverage with ASABE medium droplets or larger.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
DO NOT spray if temperatures of +5°C are forecast within 3 days of application. Treat crops during warm weather when weeds are actively growing and soil moisture is adequate for rapid growth. Under cool or dry conditions, control of some weeds may be severely reduced.

Tank Mixes:
None registered.

Restrictions:
Rainfall: No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information.
Re-Entry: DO NOT enter treated fields for 12 hours.
Grazing: DO NOT graze or harvest seedling alfalfa within 14 days of treatment. DO NOT graze or harvest field peas for feed within 30 days. DO NOT graze other treated crops or cut for feed prior to crop maturity.
Preharvest Interval: DO NOT apply within 60 days of harvesting field peas or chickling vetch, within 75 days of harvesting dry beans, or within 85 days of harvesting soybeans.
Re-cropping: Rotate to barley, spring wheat (not durum), lentils, alfalfa, field pea or CLEARFIELD canola the year following application. The manufacturer recommends that a field bioassay (a test strip grown to maturity) be conducted the year before growing any crop other than those listed above. However, yield losses within the test strips may not be noticed unless the yield can be compared to an untreated area seeded adjacent to the imazethapyr-treated strip. In case of crop failure, only field peas or CLEARFIELD canola may be replanted in the year of application.
NOTE: Breakdown of imazethapyr may be slowed or delayed by environmental conditions such as drought, excessive cold and/or acid soils (pH less than 6.5) resulting in an increased risk of injury to rotational crops. The most tolerant crops are CLEARFIELD canola and legume crops, then cereals. Contact manufacturer for additional information on re-cropping intervals (1-877-3712273).

Aerial application: DO NOT apply by air.
Storage: DO NOT freeze. If the product is exposed to temperatures below 0°C, thaw the product completely and shake the container vigorously prior to use.

Buffer Zones:
Pursuit, MultiStar, Gladiator:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats</td>
</tr>
<tr>
<td>Ground only*</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured is metres from the downwind edge of the spray boom to sensitive habitat.

Other Products: DO NOT apply within 15 m of shelterbelts, water bodies, wetlands, and woodlots.

Sprayer Cleaning:
There are no specific sprayer cleaning directions on the product label. The use of ‘Method C’ in the general section on sprayer cleaning on pages 15 to 16 is recommended for other products with similar chemistry. Contact the manufacturer for more information.

Hazard Rating:

Caution – May cause skin irritation
Caution – May cause eye damage

For an explanation of the symbols used here see page 11.
**Impact**  (this referring text to be removed in the 2018 edition)

See topramezone on page 306.

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**Inferno Duo**

**Company:**
Arysta LifeScience Canada (PCP#30663)

**Formulation:**
45% flucarbazone and 25% tribenuron formulated as a water dispersible granules.
Container size - 4 x 254.5 gram pouches.

**Crops and Staging:**
Spring wheat (NOT including durum):
Apply to the soil surface from one week before seeding until crop emergence.

**Weeds, Rates and Staging:**
Apply 12.75 g per acre of **Inferno Duo** (one 254.5 g pouch treats 20 acres) plus 180 g ae per acre of glyphosate IPA or K+ salts (see glyphosate page) to control:
* Weeds controlled by glyphosate at 180 g ae/acre (see glyphosate page) plus:
  - Cow cockle
  - Dandelion†
  - Foxtail barley (up to 10 cm)*
  - Narrow-leaved hawk’s-beard
  - Shepherd’s-purse
  - Volunteer canola***
  - Wild oats†

* Mix with glyphosate at 360 g ae per acre to control:
  - Foxtail barley (greater than 10 cm, heavy infestations or stressed plants)‡

† Apply prior to seed head emergence and the loss of older leaves.
‡ Suppression only.

NOTE: The entire 254.5 g pouch must be added to the spray tank. DO NOT use part pouches. DO NOT apply more than 6.1 g active flucarbazone per acre per growing season (equivalent of 13.5 g /acre of **Inferno Duo** or 15.4 mL /acre of flucarbazone 2.0 formulations).

**Application Information:**
* Water Volume: 40 L per acre.
* Nozzles and Pressure: Use 30 to 50 psi (200 to 345 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage and a minimum of fine droplets that are prone to drift.

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**
Crop tolerance and weed control may be reduced if applications are made to plants growing under stress. Stress includes saturated or water-logged soil, drought, extreme temperatures, low fertility or visible disease symptoms at application. Adopting practices to increase crop vigor will improve crop tolerance.

**Tank Mixes:**
**Herbicides:**
Glyphosate IPA or K+ salts only.

**Fertilizers:** None.

**Insecticides:** None

**Note:** The above mixes are those listed on the **Inferno Duo** label only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.
**Restrictions:**

**Rainfall:** DO NOT apply if rainfall is expected within 1 hour of application.

**Re-entry:** Wait at least 12 hours before re-entering treated fields.

**Grazing:** DO NOT graze treated fields. Mature grain or straw may be fed to livestock.

**Preharvest:** Leave at least 80 days from application to harvest.

**Re-cropping Interval:** The following crops may be planted 11 months after application.

<table>
<thead>
<tr>
<th>Soil Zones and Rotational Crops</th>
<th>Grey-Wooded</th>
<th>Black</th>
<th>Dark Brown</th>
<th>Brown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring Wheat</td>
<td>Wheat</td>
<td>Wheat</td>
<td>Wheat</td>
<td>Spring Wheat</td>
</tr>
<tr>
<td>Barley</td>
<td>(Spring &amp; durum)</td>
<td>(Spring &amp; durum)</td>
<td>(Spring &amp; durum)</td>
<td>Barley</td>
</tr>
<tr>
<td>Canola (all varieties)</td>
<td>Barley</td>
<td>Barley</td>
<td>Canola (all varieties)</td>
<td>Field Pea*</td>
</tr>
<tr>
<td>Field Pea*</td>
<td>Field Pea*</td>
<td>Field Pea*</td>
<td>Field Pea*</td>
<td>Flax</td>
</tr>
<tr>
<td>Field Bean</td>
<td>Flax</td>
<td>Flax</td>
<td>Flax</td>
<td></td>
</tr>
</tbody>
</table>

* Field peas may be grown the year following application in fields where precipitation has been equal to or above the 10 year average during the growing season, and where organic matter content is above 4%, and pH is below 7.5. The company suggests a minimum of 100 mm (4 inches) of rain is needed in the 60 days following application for adequate breakdown to take place.

**NOTE:** Other rotational crops may also be affected if rainfall is less than the 10 year average for the area. Soils in the grey wooded, black and dark brown soil zones with a combination of low organic matter (less than 2%), light textured soils or high pH (greater than 7.5) (i.e. eroded knolls, sandy soils) may result in delayed growth and development in rotational crops. Do not plant crops other than those listed above in the year following application.

**Aerial Application:** DO NOT apply by air.

**Storage:** May be frozen.

**Buffer Zones:** Leave at least 20 m from the downwind edge of the spray swath to sensitive upland plants like shelterbelts and woodlots and at least 35 m to water sources or wetland habitats. Avoid drift onto sensitive crops like canola and tame oat. DO NOT mix or load within 10 m of water sources or wetland habitats.

**Sprayer Cleaning:**

*Inferno Duo* residues in the spray tank can cause severe injury to sensitive crops at very low concentrations. Sprayers should be cleaned out immediately before using another product.

Refer to 'Method A' in the general section on sprayer cleaning on pages 15 to 16.

When mixing with other pesticides, combine the method above with the method required for the tank mix partner if it is different from above.

**Hazard Rating:**

- **Warning:** Contains the allergen milk and sulphites.
- **Caution – Skin irritant.**

For an explanation of the symbols used here see page 11.

---

**Company:**

Bayer CropScience (PCP#28738)

**Formulation:**

37.5 g/L pyrasulfotole and 210 g/L bromoxynil formulated as an emulsifiable concentrate.

Container size - 2 x 6.7 L jugs per case.

**Herbicide Group**

6 - bromoxynil
27 - pyrasulfotole

*(Refer to page 45)*
Crops and Staging:
The following crops may be treated when at the 1 leaf stage of growth until the flag leaf is just visible but still rolled:

- Barley
- Perennial ryegrass (seedling & established, grown for seed or forage)
- Red fescue and bromegrass (established, grown for seed or forage)
- Timothy (seed production only)
- Triticale
- Wheat (spring, durum, winter)

* NOTE: Since the uses on forage grasses were registered under the User Requested Minor Use Label Expansion (URMULE) program, the manufacturer assumes no responsibility for herbicide performance. Those who apply this use do so at their own risk.

Weeds, Rates and Staging:
At 0.33 L per acre (one case treats 40 acres) the following weeds are controlled at the 1 to 6 leaf stage unless otherwise noted:

- Annual sow-thistle
- Chickweed
- Canada fleabane (seedlings up to 10 cm)
- Canada Thistle† (up to 30 cm)
- Cleavers (1 to 3 whorls)
- Cleavers (4 to 6 whorls)*
- Dandelion† (up to 25 cm across††)
- Flixweed (up to 10 cm)
- Hemp-nettle
- Kochia (up to 10 cm)
- Lamb’s-quarters
- Narrow-leaved hawk’s-beard (up to 10 cm before bolting)
- Pale smartweed
- Ragweed (common, giant*)
- Perennial sow-thistle*
- Redroot pigweed
- Round-leaved mallow†
- Russian thistle (up to 10 cm)
- Shepherd’s-purse
- Spreading atriplex (up to 10 leaf)*
- Stinkweed
- Stork’s-bill (up to 8 leaf)***
- Volunteer canola**
- Wild buckwheat
- Wild mustard

† Suppression only.
†† Spring seedlings and overwintered rosettes.
* Add 200 g of active ammonium sulphate per acre (202 g/acre of 99% dry; 0.5 L/acre of 40% liquid; or 0.4 L/acre of 49% solution).
** All herbicide tolerant varieties.
*** Only when mixed with 2,4-D + ammonium sulphate.
DO NOT apply Infinity or other products containing pyrasulfotole or bromoxynil more than once in the same year.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
For best results, apply to emerged, young, actively growing weeds according to the weed stages listed. Under stressed conditions and/or heavy crop canopy, early application will result in improved weed control. Weeds growing under adverse environmental conditions such as drought will be less susceptible herbicide effects.

Tank Mixes:
Herbicides:
- Wheat (spring, winter, and durum), barley and triticale:
  Liquid Achieve (0.2 L/acre) plus Turbocharge adjuvant
- Wheat (spring and durum) and barley only:
  Puma Advance (206 to 412 mL per acre)
  2,4-D Ester (113 g ae/acre) + Ammonium sulphate (see Rates:)
Insecticides: None registered.
Fungicides: None registered.
Fertilizers: DO NOT mix with fertilizers other than those indicated above.

Note: The above mixes are those listed on the Infinity label only.

Bayer also supports the following mixes that are not on the Infinity label. Apply mixes according to the most restrictive use limitations for either product:

Herbicides: 2,4-D Ester (56-112 g ae/acre), Axial+Tilt, Horizon NG, Lontrel, MCPA 600 Ester (94.5 to 189 mL/acre), Puma Advance + Tilt, Traxos, Varro, Traxos+Tilt.
Fungicides: Tilt.
Insecticides: Decis, Sevin XLR.

Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Within 1 hour of application may reduce control.
Re-entry: DO NOT re-enter treated area within 12 hours.
Grazing: DO NOT graze treated crops or cut for hay within 25 days of application.
Preharvest Interval: Leave at least 50 days for wheat and triticale and 45 days for barley from application to harvest of grain or straw.

Re-cropping: Alfalfa, barley, canaryseed, canola, field corn (Manitoba only), flax, potatoes, soybeans (Manitoba only), sunflowers, tame oat, and wheat (durum, spring) may be seeded the year following application. Field peas may be grown the season following application in black, grey-wooded and dark brown soil zones. DO NOT plant field peas the season following Infinity use in the brown soil zone where organic matter content is below 2.5% and where soil pH is above 7.5. Lentils may be seeded the second season after application.

Aerial Application: May be applied by air.

Storage: Store product in original containers in a secure, dry area, away from other pesticides, food or feed above –20ºC. If stored over winter, shake or mix well before using.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†)</th>
<th>Aquatic Habitats of Depths</th>
<th>Terrestrial habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less than 1 m</td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td>Ground *</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Fixed wing airplane</td>
<td>10</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Helicopter</td>
<td>10</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:
The manufacturer recommends a cleanout process similar to “Method A” on page 15 using a combination of water and ammonia solution rinses. For additional information, Refer to page 15.

Hazard Rating:

⚠️ Warning – Warning Poison
⚠️ Warning – Eye and Skin Irritant.
⚠️ Warning – Contains the allergen soy.

For an explanation of the symbols used here see page 11.

Kerb

Herbicide Group
15 - propyzamide
(Refer to page 45)

Company:
Dow AgroSciences

Formulation:
Kerb 50WP (PCP#25595): 50% propyzamide formulated as a wettable powder. Container size - 1.36 kg (3 x 454 g water soluble pouches).
Kerb SC (PCP#30264): 400 g/L propyzamide formulated as a suspension concentrate. Container size - 2 x 10 L.

Crops and Staging:
Apply to the following established crops between October 1 and freeze-up or very early spring*. Temperatures should be above freezing at time of application but should not exceed 12ºC after application or a reduction in control may be observed. Applications are more effective if followed by a rain. Contact manufacture for specific staging and application guidelines prior to application.

Established alfalfa, bird’s-foot trefoil, and established pastures**.
* Early spring application for seed alfalfa only.
** Severe stand thinning may occur to pastures consisting primarily of crested wheatgrass, meadow fescue and timothy. Some thinning (10 to 15%) may occur with tall fescue and creeping red fescue.
Weeds, Rates and Staging:
Apply in late fall or very early spring (seed alfalfa only) prior to the emergence of weeds.

Established grass or grass/legume pastures for control of foxtail barley:
Brown, dark brown or gray wooded soils:
Kerb 50WP: 0.36 kg per acre.
Kerb SC: 0.45 L per acre.

Black soils:
Kerb 50WP: 0.45 kg per acre.
Kerb SC: 0.56 L per acre.

Established Alfalfa† and bird’s foot trefoil†:

<table>
<thead>
<tr>
<th>WEED</th>
<th>RATE (kg/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Kerb WP</td>
</tr>
<tr>
<td>Annual grasses, volunteer cereals, wild oat</td>
<td>0.71 kg†</td>
</tr>
<tr>
<td>Quackgrass, orchardgrass, timothy, chickweed</td>
<td>0.91 to 1.32† kg</td>
</tr>
<tr>
<td>Dodder (fall application only)</td>
<td>1.3 kg</td>
</tr>
</tbody>
</table>

Note that complete control may not be achieved.
* Maximum 0.91 kg per acre† Including fall application on spring seeded crops. with spring application. Low temperatures and adequate moisture following application are needed for efficacy.
† Including fall application on spring seeded crops.
Caution: DO NOT use on soils with more than 6% organic matter. DO NOT apply to soils prone to flooding. DO NOT apply to pastures that contain high proportions of timothy, crested wheat grass or meadow fescue. Consult the manufacturer for other forage grass species sensitivities to Kerb.

Application Information:
Water Volume: 120 to 200 L per acre.
Nozzles and Pressures: Maximum 30 to 40 psi (200 to 275 kPa) with conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use nozzles and pressure designed to deliver thorough, even coverage with ASABE medium droplets.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Dry soil conditions at time of weed emergence may result in reduced control. Approximately 3 inches of total precipitation is required for adequate activation. Best results when soil temperatures are low but above freezing.

Tank Mixes:
None Registered

Restrictions:
Rainfall: Surface applications are most effective if followed by 0.5 to 1 inch (1.25 to 2.5 cm) of rain within 2 days of application. Avoid application when heavy rain is forecast.
Re-entry: DO NOT re-enter treated areas for 24 hours.
Grazing: DO NOT graze or harvest for livestock feed within 90 days of the 1.32 kg/acre rate of Kerb 50WSP or the 1.62 L/acre rate of Kerb SC, and 60 days of application for lower rates.
Re-cropping: May be replanted to leafy vegetable crops after 30 days of treatment and root or tuber vegetables within 90 days of treatment. DO NOT re-plant to any other crops within 1 year of treatment.
Aerial Application: DO NOT apply by air.
Storage: Store in a cool, dry place. Do not freeze.
Buffer Zones: DO NOT contaminate domestic or natural water sources or wetlands.

<table>
<thead>
<tr>
<th>Crop</th>
<th>Buffer zone* (meters†) for terrestrial habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Established grass pastures, established grass /legume pastures, alfalfa or trefoil grown for seed</td>
<td>5</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
† Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:
Refer to page 15.

Hazard Rating:
Kerb WSP:

⚠️ Caution – Poison
For an explanation of the symbols used here see page 11.
Ko-Act

This product is a prepackaged tank mix of Spike (Tribenuron, page 317) and 2,4-D (page 79). Information listed is restricted to Crop, Weeds, Rates and Tank mixes. For other detailed restrictions and other general information on the component products see the product pages listed above.

Company:
Nufarm Agriculture

Formulation:
The Ko-Act package contains the following components:

**Spike** (PCP#30376): 75% Tribenuron methyl, formulated as water dispersible granule.
Container size - 2 x 160 g

**2,4-D 700 ester** (PCP#27820): 2,4-D 660 g/L as emulsifiable concentrate.
Container size - 2 x 8.69 L.

Crops and Staging:
Pre-seed burn-off prior to seeding the following crops:

Barley  
Wheat
May also be applied to chem-fallow.

Weeds, Rates and Staging:

*Spike* at 4 g per acre plus 2,4-D 700 ester at 212 mL per acre.
Weeds controlled up to 10 cm or 3 leaf rosette or less, unless specified, include:

- Chickweed
- Dandelion
- Flixweed
- Hemp-nettle
- Kochia*
- Mustard
- Narrow-leaved hawk’s-beard
- Shepherd’s-purse
- Volunteer canola*

* All biotypes

One case treats 80 acres.
Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

Tank Mixes:

**Herbicides:**

- Glyphosate (360 g ae per acre*)
  * see glyphosate page for rate conversion

See component products for more information on restrictions application details and handling. Use the most limiting restrictions across all components for the mix.
Company:
Dow AgroSciences

Formulation:
The Korrex package contains two components:
Korrex A (PCP#31405): 25% florasulam formulated as water dispersible granules.
Container size: 2 x 809.37 g + measuring cup
Korrex B (PCP#31205): 480 g/L dicamba dimethylamine salt formulated as a solution.
Container size: 2 x 9.7 L jugs

Crops and Staging:
Barley, Durum, Oats, Spring Wheat, Winter Wheat:
Prior to seeding. No later than 48 hours after seeding and prior to crop emergence.

Weeds, Rates and Staging:
Korrex A at 8.1 g per acre plus Korrex B at 97 mL per acre (one case treats 200 acres) must be mixed with glyphosate at 180 g ae per acre (see glyphosate page for product rates) to control:
Weeds controlled by glyphosate at the rate above plus enhanced control of the following weeds:
Broadleaf weeds controlled at the 2 – 4 leaf stage:
Annual sow thistle†
Scentless chamomile
Shepherd’s-purse
Smartweed (including lady’s-thumb)
Stinkweed
Volunteer canola*
Wild buckwheat
Wild mustard
† Suppression only.
* Including all herbicide-tolerant canola varieties.
Korrex may also be mixed with glyphosate at rates up to 1000 g ae per acre to control weeds controlled by glyphosate at these rates (see glyphosate page).

Effects of Growing Conditions:
Korrex A: Warm, moist growing conditions promote active weed growth and enhance activity. Weeds hardened off by cold weather or drought stress may not be adequately controlled or suppressed and re-growth may occur.
Korrex B: Crop damage (stunting, reduced seed set) can occur if the chemical is applied at any time other than the recommended stage. DO NOT apply to crop under stress from adverse environmental conditions, such as excess moisture, drought and disease. Apply when air temperature is between 10 and 25°C.

Tank Mixes:
Herbicides:
Prior to crop emergence:
Korrex must be mixed with Glyphosate* (180 to 1000 g ae per acre – see glyphosate page for conversion to product rates).
*All salt types.
Insecticides: None registered.
Fungicides: None registered.
Fertilizers: None registered.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Application Information:
Water Volume: Use a minimum of 20 to 40 L per acre
Nozzles and Pressure: Maximum 22 psi (150 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE coarse droplets.

How it Works:
Refer to Table 2 on page 47.

Herbicide Group
2 – florasulam
4 – dicamba
(Refer to page 45)
Restrictions:
Rainfall: Heavy rainfall immediately after application may wash the chemical off the foliage and a repeat treatment may be required. DO NOT apply if rainfall is forecast for the time of application. Consult manufacturer for more detail on the time period they support.
Re-entry: No specific re-entry period is indicated on the label. Other products with similar component indicated a minimum re-entry period of 12 hours.
Pre-harvest Interval: DO NOT harvest crops for 60 days from application.
Grazing: Livestock may graze the treated area 7 days after application.
Re-cropping: Registered crops may be seeded any time after treatment. Barley, canola, chickpeas, corn, dry beans, flax, lentils, mustard (brown, oriental, yellow, and oilseed quality B. juncea types), oats, peas, potato (except seed potato) soybeans, sunflower and wheat may be seeded the following season.
Aerial Application: DO NOT apply by air.
Storage: Store in a cool, dry place in original container.
Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquaic Habitats of Depths</td>
<td>Terrestrial habitat</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td>Ground</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

See the key to product pages on page 24 to 26 for an explanation of the different habitats.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:
**Korrex A:** Refer ‘Method A’ in the general section on sprayer cleaning on page 15 to 16.
**Korrex B:** Refer to ‘Method B’ in the general section on sprayer cleaning on page 15 to 16.
A combination of ‘Method A’ and ‘Method B’ is the best option. The use of All-Clear or Clean-Out sprayer cleaners are also recommended as an alternative to the combination of methods above.

Hazard Rating:
**Korrex A:**
⚠️ Warning – Eye Irritant.

**Korrex B:**
⚠️ Caution – Poison
⚠️ Warning – Eye Irritant.

For an explanation of the symbols used here see page 11.

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**Liberty 150SN**

Company:
Bayer CropScience (PCP#28837)

Formulation:
150 g/L glufosinate ammonium formulated as a solution. Container sizes - 13.5 L, 108 L, 432 L.

Crops and Staging:
Liberty Link Canola - cotyledon to early bolting stage. Temporary crop discolouration (bronzing) may be observed after application.
Note: A valid Liberty and Trait Agreement is required to purchase Liberty 150SN.
When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

---

Herbicide Group
10 - glufosinate
(Refer to page 45)
Weeds, Rates and Staging:

<table>
<thead>
<tr>
<th>WEED</th>
<th>WEED STAGE (from emergence to stage)</th>
<th>RATE (L/ACRE)</th>
<th>ACRES PER 13.5 L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cow cockle</td>
<td>4 leaf</td>
<td>0.54</td>
<td>25</td>
</tr>
<tr>
<td>Green foxtail</td>
<td>6 leaf (max. 3 tillers)</td>
<td>0.81</td>
<td>16.6</td>
</tr>
<tr>
<td>Barnyard grass</td>
<td>4 leaf</td>
<td>0.54</td>
<td>25</td>
</tr>
<tr>
<td>Wild mustard</td>
<td>5 leaf</td>
<td>0.81</td>
<td>16.6</td>
</tr>
<tr>
<td>Lamb’s-quarters, smartweed (lady’s-thumb)</td>
<td>6 leaf</td>
<td>0.81</td>
<td>16.6</td>
</tr>
<tr>
<td>Stinkweed</td>
<td>8 leaf</td>
<td>0.81</td>
<td>16.6</td>
</tr>
<tr>
<td>Volunteer flax</td>
<td>2.5 inches (6 cm)</td>
<td>1.08</td>
<td>12.4</td>
</tr>
<tr>
<td>Russian thistle</td>
<td>3 inches (8 cm)</td>
<td>1.08</td>
<td>12.4</td>
</tr>
<tr>
<td>Wild buckwheat</td>
<td>3 leaf</td>
<td>1.08</td>
<td>12.4</td>
</tr>
<tr>
<td>Redroot pigweed, round-leaved mallow, quackgrass*</td>
<td>4 leaf</td>
<td>1.35</td>
<td>10</td>
</tr>
<tr>
<td>Light to moderate infestations† of volunteer wheat, volunteer barley*</td>
<td>4 leaf (max. 2 tillers)</td>
<td>1.35</td>
<td>10</td>
</tr>
<tr>
<td>Hemp-nettle (1 to 3 leaf pairs), shepherd’s-purse</td>
<td>6 leaf</td>
<td>1.35</td>
<td>10</td>
</tr>
<tr>
<td>Common chickweed (max. 4 leaf pairs), sow-thistle</td>
<td>8 leaf</td>
<td>1.35</td>
<td>10</td>
</tr>
<tr>
<td>Kochia</td>
<td>3 inches (8 cm)</td>
<td>1.35</td>
<td>10</td>
</tr>
<tr>
<td>Canada thistle*, scentless chamomile</td>
<td>4 inches (10 cm)</td>
<td>1.35</td>
<td>10</td>
</tr>
<tr>
<td>Cleavers</td>
<td>2 whorls (nodes)</td>
<td>1.35</td>
<td>10</td>
</tr>
<tr>
<td>Stork’s-bill and heavy populations of wild buckwheat</td>
<td>3 leaf</td>
<td>1.35</td>
<td>10</td>
</tr>
<tr>
<td>Quackgrass (light to moderate** or heavy infestations*)†, volunteer wheat, volunteer barley*, wild oat</td>
<td>4 leaf (max. 2 tillers except quackgrass)</td>
<td>1.35</td>
<td>10</td>
</tr>
<tr>
<td>Hemp-nettle</td>
<td>8 leaf (1 to 4 leaf pairs)</td>
<td>1.35</td>
<td>10</td>
</tr>
<tr>
<td>Dandelion rosettes</td>
<td>6 in. (15 cm) across</td>
<td>1.35</td>
<td>10</td>
</tr>
<tr>
<td>Flixweed, Canada thistle*</td>
<td>4 inches (10 cm)</td>
<td>1.35</td>
<td>10</td>
</tr>
<tr>
<td>Quackgrass***</td>
<td>4 leaf</td>
<td>1.6</td>
<td>8.3</td>
</tr>
<tr>
<td>Canada thistle**</td>
<td>4 inches (10 cm)</td>
<td>1.6</td>
<td>8.3</td>
</tr>
</tbody>
</table>

* Temporary top growth control. Plants may return from surviving growing points.
** Extended top growth control.
*** Season long control.
† The company does not provide guidelines for weed densities. When in doubt as to the infestation level, use the high rate or contact the manufacturer.

Second Application:
A second application of up to 1.35 L per acre may be made to fields that were treated initially with Liberty to a maximum total combined rate of 2.97 L per acre (1.62 L + 1.35 L). DO NOT apply more than 2.97 L per acre of Liberty in one season.
Application Information:

Water Volume:
Ground applications: 45 L per acre.
Aerial applications: 22 L per acre.

Nozzles and Pressure:
Ground Application: Use 40 psi (275 kPa) when using conventional 80° or 110° flat fan nozzles; 45 psi (310 kPa) when using check valves. Angle nozzles forward at 45° to improve coverage of vertical leaf surfaces. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE medium or larger droplets.

Aerial applications: DO NOT use raindrop nozzles. Use a combination of nozzles and pressure to provide ASABE coarse or larger droplet size distribution.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Liberty 150SN activity is influenced by environmental conditions. Cool temperatures (less than 10°C), drought, and low humidity conditions slow weed growth. Applications made under these stressed conditions may result in reduced weed control.

Tank Mixes:
Herbicides:
Clethodim (Centurion or Select only) 25.5 to 77 mL/acre plus Amigo.
Consult Liberty 150SN label for exact weeds controlled. For Centurion or Select tank mix add Amigo to the tank first followed by Liberty and then Centurion or Select. Consult label for specific mixing instructions

Insecticides: None registered.
Fungicides: None registered.
Fertilizers: None registered.
Note: The above mixes are those listed on the Liberty 150SN label only.

Bayer CropScience also supports the following mixes that are not on the Liberty label. Apply mixes according to the most restrictive use limitations for either product:

Insecticides: Decis, Sevin XLR.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Within 4 hours may reduce control.
Re-Entry: DO NOT re-enter treated areas for 24 hours after application, without protective clothing as for spraying.

Grazing: DO NOT graze the treated crop or cut for feed.

Re-cropping: No restrictions.

Aerial Application: May be applied by air.

Storage: DO NOT freeze.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td>Ground *</td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Fixed wing airplane or Helicopter</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

DO NOT apply when dead calm or when winds exceed 16 km/hr when using unprotected booms or applying by air, or exceeding 25 km/hr when using shrouded booms.

Sprayer Cleaning:
Refer to ‘Method B’ in the general section on sprayer cleaning on page 15 to 16.

Hazard Rating:

⚠️ Warning – Poison
⚠️ Caution – Skin Irritant
⚠️ Warning – Eye Irritant

For an explanation of the symbols used here see page 11.
Company:
Bayer CropScience (PCP#25337)

Formulation:
200 g/L of glufosinate ammonium formulated as a solution.
Container sizes - 10 L

Crops and Staging:
Liberty 200 SN tolerant Corn only: 1 to 8 leaf stage. Refer to product label for appropriate method of determining crop leaf stage.
Liberty tolerant soybean varieties only: up to the start of flowering and prior to canopy closure.

Weeds Rates and Staging:

Weeds controlled with 0.61 L per acre rate

<table>
<thead>
<tr>
<th>WEED</th>
<th>WEED STAGE (from emergence to stage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cocklebur</td>
<td>4 leaf</td>
</tr>
<tr>
<td>Green foxtail, Proso millet,</td>
<td>5 leaf</td>
</tr>
<tr>
<td>Ragweed</td>
<td></td>
</tr>
<tr>
<td>Redroot pigweed, Shepherd’s-</td>
<td>6 leaf</td>
</tr>
<tr>
<td>purse</td>
<td></td>
</tr>
<tr>
<td>Chickweed</td>
<td>8 leaf</td>
</tr>
</tbody>
</table>

Weeds controlled with 0.81 L per acre rate

<table>
<thead>
<tr>
<th>WEED</th>
<th>WEED STAGE (from emergence to stage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perennial sow-thistle, wild buckwheat, wild mustard, wild</td>
<td>4 leaf</td>
</tr>
<tr>
<td>mustard, wild oat, Yellow foxtail</td>
<td></td>
</tr>
<tr>
<td>Barnyard grass, eastern black nightshade</td>
<td>5 leaf</td>
</tr>
<tr>
<td>Canada thistle*, field bindweed*, lady’s-thumb, lamb’s-</td>
<td>6 leaf</td>
</tr>
<tr>
<td>quarters, wormseed mustard</td>
<td></td>
</tr>
</tbody>
</table>

* season long suppression.

Weeds controlled with 1.0 L per acre rate

<table>
<thead>
<tr>
<th>WEED</th>
<th>WEED STAGE (from emergence to stage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quackgrass**</td>
<td>4 leaf</td>
</tr>
</tbody>
</table>

** season long suppression, apply with ammonium sulphate, 2.4 L per acre (49% solution) or 1.2 kg per acre (99%).

Second Application:
A second application may be made to fields treated initially with up to 1 L per acre, if weeds and crop are at the correct leaf staging. DO NOT apply more than 2 L per acre Liberty 200SN to a crop in a single season.

Split Application Program:
For season long control of the weeds above a split application of Liberty 200SN may be employed. The first application must be a minimum of 0.81 L per acre made at the correct weed staging. For the second application of a 0.51 L per acre rate may be used. The second application timing must be made as soon as the second flush of weeds occurs and before the maximum leaf stage for the crop.

Application Information:
Water Volume: A minimum of 45 L per acre.
Nozzles and Pressure: Use 25 to 40 psi (175 to 275 kPa) when using conventional 80° or 110° flat fan nozzles. Angle nozzles forward at 45° to improve coverage of vertical leaf surfaces. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE medium droplets.

How it Works:
Refer to Table 2 on page 47.
Effects of Growing Conditions:

*Liberty 200SN* activity is influenced by environmental conditions. Cool temperatures (less than 10°C), drought and low humidity conditions slow weed growth. Applications made under these stress conditions may result in reduced weed control.

Weed control may also be reduced when heavy dew, fog, or mist are present at the time of application.

Tank Mixes:
None registered.

Restrictions:

Rainfall: Within 4 hours of application may reduce control.

Re-Entry: DO NOT re-enter treated areas for 24 hours after application, without protective clothing as for spraying.

Grazing: DO NOT graze treated fields within 20 days of application.

Preharvest Interval: Leave 86 days between application and corn harvest, and 70 days for soybean.

Re-cropping: No re-cropping restrictions the year after treatment.

Aerial Application: DO NOT apply by air.

Storage: DO NOT freeze.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres)⁺</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required for the Protection of:</td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground *</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy. Hand-held or backpack sprayers, inter-row hooded sprayers and spot treatments are exempt from buffer zone requirements.

⁺ Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Handheld or backpack applications do not require a buffer.

Sprayer Cleaning:

Refer to 'Method C' in the general section on sprayer cleaning on page 15 to 16.

Hazard Rating:

✗ Caution – Poison

△ Caution – Skin Irritant

⚠️ Warning – Eye Irritant

For an explanation of the symbols used here see page 11.

Linuron*

Company:
Tessenderlo Kerley Inc. (*Lorox L*)
Loveland Products Canada (*Linuron 400*)

The following recommendations are a blend of recommendations of all linuron products. Consult the individual product labels for specific recommendations.

* NOTE: The Pest Management Regulatory Agency has re-evaluated linuron products and have proposed to phase out the use of all linuron products. As a result of this phase out, this page may not appear in future editions of this publication.

Formulations:

*Linuron 400* (PCP#15544): 400 g/L linuron formulated as a suspension concentrate.

Container size - 10 L.

*Lorox L* (PCP#16279): 480 g/L linuron formulated as a suspension concentrate.

Container size - 10 L.
## Crops, Rates and Stages:

Post-emergent applications only:

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
<th>LINURON 400 (L/acre)</th>
<th>LOROX L (L/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring wheat (including durum), oats and barley*</td>
<td>2 to 4 leaf stage</td>
<td>0.20 to 0.26</td>
<td>0.17 to 0.22</td>
</tr>
<tr>
<td>Field corn (post-emergent** directed spray, do not spray over top of corn)</td>
<td>Apply when corn is at least 15 inches (38 cm) high (highest leaf on free standing plant)</td>
<td>1.16 to 2.18</td>
<td>0.97 to 1.82</td>
</tr>
<tr>
<td>Caraway, coriander</td>
<td>Apply when in the 2 to 4 leaf stage</td>
<td>—</td>
<td>0.50 to 0.67</td>
</tr>
<tr>
<td>Dill†</td>
<td>Apply when dill has at least 2 full leaves developed</td>
<td>—</td>
<td>0.77 to 1.9</td>
</tr>
<tr>
<td>Shelterbelts (caragana, green ash, Siberian and American elm, Manitoba maple, poplar, willow, white spruce, Colorado spruce, Scots pine)</td>
<td>Apply as an overall spray to dormant stock or as a directed spray if buds have broken.</td>
<td>2.18</td>
<td>1.82</td>
</tr>
<tr>
<td>Short Rotation Intensive Poplar</td>
<td>Apply as a directed spray under plants that have been established for 1 year or more</td>
<td>—</td>
<td>1.82</td>
</tr>
</tbody>
</table>

* Only when tank mixed with MCPA amine at 0.28 to 0.38 L per acre (600 formulation) or 0.4 to 0.57 L per acre MCPA K (400 formulation).

** Use lower rate when weeds do not exceed 2 inches (5 cm) and higher rate for weeds up to 8 inches (20 cm) in height, preferably before they are 5 inches (13 cm) high. Requires the addition of a mineral oil surfactant blend at 1 to 2 L per 100 L or spray solution or spray oil at 1 to 2 L per 10 L of spray solution. See oil labels for directions. DO NOT apply if **linuron** has been applied pre-emergent.

† A split pre-emergent/post emergent application of **linuron** may be made in dill. See below for more information.

### Pre-emergent surface (not incorporated) applications for use on loam to clay soils only:

<table>
<thead>
<tr>
<th>Soil organic matter</th>
<th>LINURON 400 (L/acre)</th>
<th>LOROX L (L/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>less than 2%</td>
<td>from 2 to 5%</td>
</tr>
<tr>
<td>Field corn</td>
<td>1.09*</td>
<td>1.58</td>
</tr>
<tr>
<td>Soybeans</td>
<td>1.09 to 1.58</td>
<td>1.58 to 2.18</td>
</tr>
<tr>
<td>Sweet white lupins</td>
<td>1.01</td>
<td>1.50</td>
</tr>
<tr>
<td>Potatoes</td>
<td>1.11 to 1.72</td>
<td>1.72 to 2.22</td>
</tr>
<tr>
<td>Dill†</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

* Must be tank mixed. Refer to specific labels for registered tankmix partners.

† A split pre-emergent/post emergent application of **linuron** may be made in dill. See below for more information.

If used on sandy soils, severe crop injury may result.

Seed the crop at least 2 inches (5 cm) deep. Make only one application per year to field crops.

When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

### Split applications:

This product may also be applied to dill as a split pre/post-emergent application. A pre-emergent surface application of up to 0.77 L per acre, followed by a second post-emergent application, no sooner than two weeks after the first, of up to 1.0 L per acre. Minimum staging for post-emergent applications given above still applies.

### Banded Applications:

This product may also be applied in a narrow band directly over the row in wide rowed crops if another method is to be used for weed control in between the rows. For band treatment, use proportionately less; for example, for 10 inch band on 30 inch row, use 1/3 of the broadcast rate.
Weeds and Staging:

**Post-Emergence**

*When tank mixed with MCPA amine in cereals, the following weeds are controlled:*

- Chickweed
- Corn spurry
- Cow cockle
- Flixweed
- Green foxtail (suppression possible)
- Green smartweed
- Hemp-nettle
- Lady’s-thumb
- Lamb’s-quarters
- Ragweed (common, giant)
- Redroot pigweed
- Shepherd’s-purse
- Stinkweed
- Stork’s-bill
- Tartary buckwheat
- Wild buckwheat
- Wild foxtail (suppression possible)
- Wild radish
- Witchgrass
- Wormseed mustard
- Barnyard grass*
- Common chickweed
- Common groundsel*
- Corn spurry*
- Crabgrass*
- Dandelion (seedlings only)*
- Foxtail (green and yellow)*
- Goosefoot
- Knotweed
- Kochia*
- Pigweed (prostrate*, redroot)
- Plantain (seedlings only)*
- Purslane
- Ragweed (common)
- Shepherd’s-purse
- Smartweed (annual, perennial*, seedlings only)
- Sow-thistle (annual, perennial*, seedlings only)
- Stinkweed*
- Wild buckwheat
- Wild radish*
- Witchgrass
- Wild foxtail (suppression possible)

*partial control

■ Not registered with Lorox L.

o Not registered with Linuron 400.

### How it Works:

Refer to Table 2 on page 47.

### Effects of Growing Conditions:

In post-emergent applications the best weed control occurs when temperatures are moderate, when relative humidity is high and when soil moisture is adequate. Injury to cereals (crop lightening) will occur when the crop is under stress because of drought or disease. This injury is worse when the product is applied at advanced leaf stages. In pre-emergent surface treatments, rainfall or irrigation (1 to 2 inches or 3 to 5 cm) is required to move linuron into the root zone of germinating seeds. Insufficient moisture will result in poor weed control. Drought conditions after application will result in little to no weed control. If rainfall does not occur within 7 to 10 days of application and prior to crop emergence, a shallow rotary hoeing (0.75 to 1.5 inches/2 to 4 cm) should be made to mix the top layer of soil to help activation. Avoid covering treated ground with un-treated soil. If unusually heavy rain follows application, severe crop injury may result from herbicide in the root zone of the crop. DO NOT use on sandy soils or severe crop injury will result.

### Tank Mixes:

**Herbicides:**

*In Cereals:* For post-emergent applications in cereals, linuron must be tank mixed with MCPA amine or MCPA K. DO NOT tank mix with other herbicides.

*In Corn:* Atrazine, Dual II Magnum and Primextra II Magnum. Not all linuron products have the same tank mix options, refer to specific labels.

**Fertilizers:** None registered.

**Insecticides:** None registered.

Note: The above mixes are those listed on the linuron labels only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

### Restrictions:

**Rainfall:** No rainfast period is specified on the label for post-emergent applications; required interval may be up to 8 hours. Pre-emergent applications require rainfall for activation. Contact manufacturer for more information.

**Grazing:** DO NOT graze treated crops or cut for feed prior to crop maturity.

**Preharvest Interval:**
**Sweet Corn:** DO NOT harvest within 50 days of treatment.

**Field Corn:** DO NOT harvest within 60 days of treatment or until after tassel emergence.

**Caraway, Coriander **& **Dill:** DO NOT harvest within 60 days of treatment.

**Re-cropping:** If the intended crop fails, fields treated with pre-emergent surface applications of linuron, may be seeded back to corn, soybeans, sweet white lupins, or potatoes. Till the soil thoroughly before reseeding. No restrictions 1 year after treatment.

**Aerial Application:** DO NOT apply by air.

**Storage:** DO NOT store liquid Linuron formulations at temperatures below 5°C. Lorox L may be frozen.

**Sprayer Cleaning:** Refer to page 15.

---

### Lontrel 360

**Company:**
Dow AgroSciences (PCP#23545)

**Formulation:**
360 g/L clopyralid formulated as a solution.
Container size - 3.4 L, 4.45 L, 110 L, 115 L, 208 L, 454 L, Bulk

### Crops Rates and Staging:

**Applications of 0.17 to 0.23 L per acre:**
Barley, spring wheat (NOT including durum), oat - 3 leaf to flag leaf emergence stage.

**Applications of 0.23 to 0.34 L per acre:**
Flax and Solin (low linolenic acid flax) - 2 to 4 inches (5 to 10 cm) in height.

**Applications of 0.17 to 0.34 L per acre:**
Canola - 2 to 6 leaf stage. Apply Lontrel 360 to canola (Argentine – B. napus and Polish – B. rapa) varieties only; application to any other canola type oilseeds may result in injury to the crop.
Seedling forage grasses* - 2 to 4 leaf stage.
Established grasses* - at the shot blade stage, or in the fall after harvest or in early spring.

**Seedling and established grasses** *for forage and seed production include:

- Bromegrass (smooth)
- Fescue (creeping red, meadow, tall)
- Kentucky bluegrass
- Meadow foxtail
- Orchardgrass
- Reed canarygrass
- Timothy
- Wheatgrass (crested, intermediate, slender, streambank, tall**)
- Wildrye (Altai, Russian)

**Applications of 0.34 L per acre:**
Fallow – Stage according to weeds.
Shelterbelts* containing villosa lilac, acute willow, Colorado spruce, white spruce, buffaloberry and chokecherry.*
Plantation poplar (including hybrid poplar)*

**NOTE:** Since these uses are registered under the User Requested Minor Use Label Expansion program, the manufacturer assumes no responsibility for herbicide performance.

**Users of this product for these uses do so at their own risk.**

**** for forage use only

When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

### Weeds, Rates and Staging:

The following weeds will be controlled at 0.17 L per acre when young and actively growing:

- Alsike clover
- Vetch (Vicia sp.)

The following weeds will be controlled from 0.23 to 0.34 L per acre when young and actively growing:

- Common groundsel
- Scentless chamomile
- Common ragweed
- Wild buckwheat
- Perennial sow-thistle (top growth only)
- Volunteer alfalfa -2 to 20 inches (5 to 50 cm) tall

**Canada thistle** - after all thistles have emerged and when the majority are in the rosette to pre-bud stage;

- 0.17 L per acre Provides top growth control of Canada thistle for 6 to 8 weeks.
0.23 L per acre  Provides season long control of Canada thistle. Not all root stalks will be killed and some regrowth may occur by the end of the growing season.

0.34 L per acre  Provides season long control of Canada thistle with suppression into the following year.

Spotted and diffuse knapweed is controlled up to flower emergence at 0.28 L per acre.

Sheep sorel and oxeye daisy is controlled at 0.34 L per acre.

Application Information:
Water Volume: 40 to 89 L per acre.
Nozzles and Pressure: Maximum 30 to 40 psi (200 to 275 kPa) with conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use nozzles and pressures designed to deliver thorough, even coverage with *ASABE coarse* droplets.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Poor control may occur under dry conditions. Injury to flax may occur when tank mixing with MCPA. To reduce the risk of crop injury, DO NOT apply tank mixes if temperature exceeds 27°C.

Tank Mixes:
Herbicides:
* Lontrel* applications following applications of products containing bromoxylin (Approve, Badge, Bromotril, Buctril M, Enforcer, Koril, Logic M, Mextrol, Pardner, Thumper) should be delayed by 14 days to allow the Canada thistle to recover from leaf burn.

Recommended rates of *Lontrel* may be used for each crop unless otherwise indicated.

In Canola:
Poast Ultra plus Merge adjuvant.
Select plus Amigo Adjuvant (*Lontrel* at 0.17 to 0.34 L/acre).

In Canola (ROUNDUP READY varieties only):
Roundup Transorb* (*Lontrel* at 0.112 L/acre).

In Canola (CLEARFIELD varieties only):
Odyssey** (*Lontrel* at 0.17 to 0.23 L/acre).

* Roundup Ready varieties only

In Flax:
Lontrel at 0.17 L/acre for the following mix:
MCPA amine or ester (0.28 to 0.38 L/acre - 600 g ae/L formulation)
Poast Ultra plus Merge adjuvant.
Poast Ultra + MCPA Ester (rates as above)
Select plus Amigo adjuvant.

In Spring wheat (NOT including durum) and barley:
Lontrel at 0.11 to 0.17 L/acre for the following mix:
2,4-D or MCPA (amine or ester) at label rates.

In Oat:
MCPA amine or ester (*Lontrel* at 0.11 to 0.17 L/acre).

Fertilizers: None registered.

Insecticides: None registered.

Fungicides: None registered.

Note: The above mixes are those listed on the *Lontrel* label only.

Dow AgroSciences also supports the following mixes that are not on the *Lontrel* label. Apply mixes according to the most restrictive use limitations for either product:

Herbicides: Assure II, Muster, Master-Any of Assure II, Clethodim, Poast Ultra, Pursuit, or Solo.

Adding ingredients in the correct order is critical for optimum performance.

Check labels of products to be mixed for directions.

General guidelines can be found on page 14.

Restrictions:

Rainfall: No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information.

Re-Entry: DO NOT enter treated fields for 12 hours.

Grazing: Crops or areas treated with this product may be grazed immediately following treatment.

Re-cropping: *Lontrel* residues in the soil may affect succeeding crops. The year after application, replant to wheat, barley, oats, rye, flax, forage grasses, mustard or canola.

DO NOT use manure from animals fed or bedded with *Lontrel*-treated straw, except on fields that are to be sown to *Lontrel*-tolerant crops.

Aerial Application: DO NOT apply by air.

Storage: Store in heated storage. If product is frozen, bring to room temperature and agitate before use.

Buffer Zones: Avoid contamination of or drift toward non-target land, water or irrigation ditches.

Sprayer Cleaning:
No cleaning procedures are indicated on the label. Based on products with similar chemistry, ‘Method B’ found in the general sprayer cleaning section on page 15 to 16 or a commercial spray sprayer cleaning product, may provide adequate cleaning. Contact the manufacturer for more information.

Hazard Rating:

Caution – Poison

Danger – Eye Irritant

For an explanation of the symbols used here see page 11.
Manipulator 620

Company:
Taminco US Inc. (PCP#31462)
Distributed by Engage Agro

Formulations:
620 g/L chlormequat chloride formulated as a solution.
Container size – 2 x 10 L.

Crops, Rates and Stages:
Note: Import tolerances (Maximum Residue Limits) for Manipulator 620 residues in cereal crops have yet to be established by the US-EPA. Cereal crops intended for export to the USA that are treated with Manipulator 620 may experience difficulty with export approvals to the USA. Producers should check with their commodity buyer before application.
Apply Manipulator 620 when risk of lodging is high.

<table>
<thead>
<tr>
<th>CROP*</th>
<th>APPLICATION</th>
<th>RATE (L/ACRE)</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring wheat</td>
<td>Single Application</td>
<td>0.7</td>
<td>1 to 2 node stage</td>
</tr>
<tr>
<td></td>
<td>Split Application</td>
<td>0.3 – First application</td>
<td>2 leaf stage to beginning of stem elongation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.4 – Second application</td>
<td>1 to 2 node stage</td>
</tr>
<tr>
<td>Winter wheat</td>
<td>Single Application</td>
<td>0.7</td>
<td>1 node stage to just before flag leaf emergence</td>
</tr>
<tr>
<td></td>
<td>Split Application</td>
<td>0.4 – First Application</td>
<td>2 leaf stage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.3 – Second Application</td>
<td>1 node stage to just before flag leaf emergence</td>
</tr>
</tbody>
</table>

*  May be applied to crops under-seeded to clover or grasses.
DO NOT apply later than just before flag leaf emergence.
DO NOT exceed 0.7 L of Manipulator 620 per acre in a single year.

Application Information:
Water Volume: Minimum 40 L per acre
Nozzles and Pressure: Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE medium droplets. Boom height must be 60 cm or less above the crop.

How it Works:
Manipulator 620 affects the production of plant hormones responsible for cell elongation resulting in plants with shorter, thicker stems.

Effects of Growing Conditions:
DO NOT apply Manipulator 620 to crops under stress from drought, excess moisture or nutrient deficiency. Best results from early morning or evening application.
Applications of Manipulator 620 may be made under normal seasonal temperatures down to 1°C Celsius. DO NOT apply during frost.

Tank Mixes:
None registered.
DO NOT use in a tank mixture with liquid nitrogen.
Restrictions:
Rainfall: Within 2 hours may reduce effectiveness.
Re-entry: Leave 12 hours before entering treated fields.
Grazing: DO NOT graze treated crops or cut for hay.
Preharvest Interval: DO NOT apply later than just before flag leaf emergence.
Re-cropping: No restrictions the year after application.
Aerial Application: DO NOT apply by air.
Storage: DO NOT freeze.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Crops</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground</td>
<td>All crops</td>
<td>Terrestrial habitat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:
Refer to page 15.

Hazard Rating:

Danger – Poison

For an explanation of the symbols used here see page 11.

Herbicide Group
4 - MCPA
(Refer to page 45)

Company and Formulation

<table>
<thead>
<tr>
<th></th>
<th>PCP# (Product Name)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Na 300*</td>
</tr>
<tr>
<td>Agri Star</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>IPCO</td>
<td>20306</td>
</tr>
<tr>
<td>Nufarm</td>
<td>14718</td>
</tr>
<tr>
<td>Loveland</td>
<td>9858</td>
</tr>
<tr>
<td>Farmers of North America / AgriCity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30461</td>
</tr>
</tbody>
</table>

* Formulated as a solution
** Formulated as an emulsifiable concentrate
Crops, Rates and Staging:
The maximum safe rates for various crops are given below. Higher rates used for harder to control weeds (see “Weeds, Rates and Staging”) may cause crop injury. Application rates for individual products may vary from those listed. Refer to the label for product specific use rates. Rates greater than these for harder to control weeds may cause crop injury. When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
<th>MAXIMUM RATE (L/ACRE)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>AMINE 500</td>
<td>AMINE or ESTER 600</td>
<td>K SALT</td>
<td>Na SALT</td>
<td></td>
</tr>
<tr>
<td>Wheat (spring and durum), barley</td>
<td>4 leaf to just before flag leaf emergence.</td>
<td>0.45</td>
<td>0.42 (E)</td>
<td>0.53</td>
<td>0.81</td>
<td></td>
</tr>
<tr>
<td>Oats</td>
<td>3 leaf to just before flag leaf emergence.</td>
<td>0.45</td>
<td>0.36</td>
<td>0.53</td>
<td>0.81</td>
<td></td>
</tr>
<tr>
<td>Spring rye</td>
<td>4 leaf to just before flag leaf emergence.</td>
<td>0.45</td>
<td>0.42</td>
<td>0.53</td>
<td>0.81</td>
<td></td>
</tr>
<tr>
<td>Flax (NOT Solin - low linolenic acid flax)</td>
<td>2 inches (5 cm) in height to prebud stage.</td>
<td>0.4</td>
<td>0.28 (E) or 0.34 (A)</td>
<td>0.65</td>
<td>0.71</td>
<td></td>
</tr>
<tr>
<td>Winter wheat (WW), fall rye (FR)</td>
<td>In spring, apply from the time growth commences until the early flag leaf stage.</td>
<td>0.45</td>
<td>0.42</td>
<td>0.61 (WW) 0.40 (FR)</td>
<td>0.81</td>
<td></td>
</tr>
<tr>
<td>Corn</td>
<td>As a broadcast spray up to 6 to 7 in. (15 to 18 cm) tall or 6 leaf stage. Up to 3 weeks before tassling as a directed spray using drop nozzles.</td>
<td>0.45</td>
<td>0.37 (Amine only)</td>
<td>0.51</td>
<td>0.61</td>
<td></td>
</tr>
<tr>
<td>Peas</td>
<td>Vines 4 to 7 inches (10 to 18 cm) long. For short-statured, determinate flowering peas, apply at the early stages within this range.</td>
<td>0.22*</td>
<td>0.17 (Amine only)</td>
<td>NR</td>
<td>0.36*</td>
<td></td>
</tr>
<tr>
<td>Cereals underseeded to alfalfa (not Flemish varieties)</td>
<td>Apply when the majority of seedling legumes are in the 1 to 3 trifoliate leaf stage.</td>
<td>0.22</td>
<td>0.19 (Amine only)</td>
<td>NR</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>Underseeded alsike, ladino and red clover</td>
<td>Apply when the majority of seedling legumes are in the 1 to 3 trifoliate leaf stage.</td>
<td>0.28</td>
<td>NR</td>
<td>NR</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>Red clover Seedling (seed and forage) Established (seed only)</td>
<td>Seedlings: 1 to 3 trifoliate stage. DO NOT feed to livestock in the first year. Established: Apply at the breaking of dormancy in the spring up to 7.5 cm.</td>
<td>0.23</td>
<td>0.19 (Amine only)</td>
<td>NR</td>
<td>NR</td>
<td></td>
</tr>
<tr>
<td>Grass pastures</td>
<td>Spring or fall.</td>
<td>1.42</td>
<td>1.13 (E) or 1.42 (A)</td>
<td>NR</td>
<td>0.71</td>
<td></td>
</tr>
<tr>
<td>Seedling forage** grasses (not for seed)</td>
<td>Apply from the 3 leaf stage to the shot blade stage.</td>
<td>0.45**</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td></td>
</tr>
<tr>
<td>Established forage** grasses (not for seed)</td>
<td>Apply in the spring up to the shot blade stage or in the fall after harvest.</td>
<td>0.45**</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td></td>
</tr>
</tbody>
</table>

(E) or (A) indicates Ester or Amine formulations.

NR = Not Registered

* The rates given are lower than the registered rates for peas. Less than the maximum label rates are recommended because of crop injury concerns.

** MCPA is NOT registered for use on forage grasses grown for forage seed.

† Nufarm Agriculture MCPA Amine only.

†† Use the lowest rate of MCPA Amine 600 on oats between the 3 and 6 leaf stage.
Crops, Rates and Staging continued

Formulation Characteristics:

<table>
<thead>
<tr>
<th>Formulation</th>
<th>Risk of Vapour Drift</th>
<th>Activity on Weeds</th>
<th>Risk of Crop Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>LV Ester</td>
<td>Medium</td>
<td>Fast</td>
<td>Medium</td>
</tr>
<tr>
<td>Amine</td>
<td>Very Low</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Salts</td>
<td>Very Low</td>
<td>Slow</td>
<td>Very Low</td>
</tr>
</tbody>
</table>

Weeds, Rates and Staging:

Apply at lower rates when weeds are small (2 to 4 leaf stage) and actively growing. Higher rates are needed when weeds are larger, in heavy populations, or growing under stressful conditions (excessively cold, hot, dry or wet).

**NOTE:** The following rates are a general range for all products. Rate ranges for individual products may differ slightly. Consult the product label for specific rates for each application.

+ Not controlled by MCPA K salt formulation
++ Not controlled by MCPA K or Na salt formulations

**Susceptible weeds:**

- Amine 500 formulations – 0.28 to 0.45 L per acre
- Amine and Ester 600 formulations – 0.24 to 0.36 L per acre
- K formulations – 0.61 to 0.71 L per acre.
- Na formulations – 0.5 to 0.81 L per acre.

- Burdock
- Cocklebur
- Flixweed (late fall applications or small seedlings)*
- Kochia
- Lamb’s-quarters
- Mustards (except dog and tansy)

* Winter annual weeds

**Harder to control weeds:**

- Amine 500 formulations – 0.45 to 0.71 L per acre.
- Ester 600 formulations – 0.42 to 0.61 L per acre.
- K formulations – 0.71 to 0.81 L per acre.
- Na formulations – 0.81 to 1.1 L per acre.

- Annual sow-thistle+
- Biennial wormwood+
- Bluebur+
- Common peppergrass+
- Curled dock+
- Flixweed (overwintered rosettes prior to bolting)+
- Goat’s-beard+
- Goosefoot+
- Hemplettle (suppression only)
- Mustard (dog and tansy)+
- Plantain+
- Purslane+
- Redroot pigweed+
- Smartweed (annual)+
- Tumble pigweed+

**Top growth control only (rates as for harder to control weeds):**

- Blue lettuce+
- Canada thistle
- Corn spurry++
- Dandelion++
- Gumweed+
- Field bindweed+
- Field horsetail++
- Hedge bindweed+
- Hoary cress+
- Leafy spurge+
- Perennial sow-thistle+
- Russian thistle++

Application Information:

**Water Volumes:**

- Cereals, flax, pastures, forage grasses: 40 to 81 L per acre.
- Peas: Minimum 61 L per acre.
- Cereals Underseeded to Forage Legumes: 61 to 81 L per acre.

**Nozzles and Pressure:** Maximum 40 psi (275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use nozzles and pressure designed to deliver thorough, even coverage with ASABE coarse droplets.

**Tank Mixes:**

**Herbicides:**

- In Wheat and barley:
  - Banvel II (amine and K salt only).
  - Pardner (IPCO K salt only).
  - Linuron and Sencor (500 amine only).

- In Oats:
  - Pardner (K salt only).
  - Linuron (500 amine only).

Not all brands are labelled for tank mixing. Check the product label prior to use for registered mixes and rates. Follow all precautions and restrictions on both labels.

**Insecticides:** None registered.

**Fungicides:** None registered.

**Fertilizers:** Liquid nitrogen (28-0-0) may be used in place of water as a carrier with certain amine formulations for application in spring to winter wheat or fall rye.

**Note:** The above mixes are those listed on the MCPA labels only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.
Restrictions:
Rainfall: Within 6 hours of MCPA Na salt or MCPA K salt, 4 hours of MCPA amine, or 2 hours of MCPA ester application will reduce control.
Re-Entry: DO NOT enter treated fields for at least 12 hours.
Grazing: DO NOT graze within 7 days of application.
Re-cropping: No restrictions the year after application.
Aerial Application: Some products may be applied by air to specific crops. Check the label for detailed instructions.
Storage: MCPA ester may be frozen. DO NOT freeze MCPA amine, MCPA sodium salt and MCPA K.
Buffer Zones:

<table>
<thead>
<tr>
<th>Crop</th>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Aquatic Habitats of Depths</td>
<td>Less than 1 m</td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td>Cereals, Flax</td>
<td>Ground*</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Fixed wing aircraft</td>
<td>1</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Helicopter</td>
<td>1</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>Legume forages</td>
<td>Ground*</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Fixed wing aircraft</td>
<td>1</td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Helicopter</td>
<td>1</td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td>Pastures</td>
<td>Ground*</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Fixed wing aircraft</td>
<td>15</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Helicopter</td>
<td>15</td>
<td>0</td>
<td>50</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy. Hand-held or backpack sprayers, inter-row hooded sprayers and spot treatments are exempt from buffer zone requirements.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.
Handheld or backpack applications do not require a buffer.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Best weed control occurs when temperatures are above 21°C (daytime) or 10°C (night time) and humidity is above 70 percent. DO NOT apply if temperature exceeds 27°C. If applying to flax, injury and a delay in maturity may result from application under hot or humid conditions. Extremely hard water may reduce performance or cause problems in spraying the product.

Sprayer Cleaning:
No specific cleaning procedures are indicated on the label. Based on products with similar chemistry, 'Method B' found in the general sprayer cleaning section on page 15 to 16 or a commercial spray sprayer cleaning product, may provide adequate cleaning. Contact the manufacturer for more information.

Hazard Rating:
⚠️ Warning – Poison
For an explanation of the symbols used here see page 11.
**MCPB / MCPA**

**Company:**
IPCO (Clovitox Plus - PCP#24336)  
Nufarm Agriculture (Tropotox Plus - PCP#8211)  
Loveland Products Canada (Topside - PCP#22003)

**Formulation:**
375 g/L MCPB present as a sodium (Na) salt and, 25 g/L MCPA present as potassium (K) salt and formulated as a solution.  
Container size - 10 L.

**Crops, Rates and Staging:**

**Registered for all products:**
Apply 1.11 to 1.72 L per acre. Apply only that needed to control the target weeds.  
DO NOT make more than one application of this or other product containing the same ingredients per year.

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pea (alsike, ladino, red, white Dutch, wild white)</td>
<td>3 to 6 expanded leaves.</td>
</tr>
<tr>
<td>Oats, wheat, rye or barley (alone or as a companion crop)</td>
<td>2 leaf to flag leaf stage.</td>
</tr>
<tr>
<td>Field corn</td>
<td>45 cm high to the start of tassling – use drop nozzles.</td>
</tr>
<tr>
<td>Established pasture</td>
<td>After grazing or cutting when weeds have regrown to a susceptible stage.</td>
</tr>
</tbody>
</table>

**Weeds, Rates and Staging:**

**Seedling Forage Grasses:**
Apply at 1.11 to 1.42 L per acre from the 2 to 4 leaf stage:

- Brome grass (smooth, meadow)
- Fescue (altai, red, meadow, tall)
- Green needle grass
- Reed canary grass
- Timothy
- Wheatgrass (crested, creeping intermediate, northern, pubescent, slender, streambank, tall, western)
- Wild rye (altai, Russian)

**Registered for Tropotox Plus, and Clovitox Plus only:**
Seedling alfalfa for seed production* at the 3 to 6 trifoliate stage.

*Since this use is registered under the User Requested Minor Use Label Expansion program, the manufacturers assume no responsibility for herbicide performance. Users of this treatment on seedling alfalfa do so at their own risk.*

**Weeds, Rates and Staging:**

<table>
<thead>
<tr>
<th>WEEDS</th>
<th>STAGE</th>
<th>RATE (L/ACRE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ball mustard, Lamb’s-quarters, Stinkweed, Wild mustard, Wormseed mustard</td>
<td>Seedlings</td>
<td>1.11</td>
</tr>
<tr>
<td>Annual sow-thistle*, Hemp-nettle*, Redroot pigweed, Ragweed, Shepherd’s-purse, Volunteer rapeseed (including canola), Wild radish*</td>
<td>Seedlings</td>
<td>1.72</td>
</tr>
<tr>
<td>Curled dock, Perennial sow-thistle**, Plantain</td>
<td>Rosette</td>
<td>1.72</td>
</tr>
</tbody>
</table>
**WEEDS** | **STAGE** | **RATE (L/ACRE)**
--- | --- | ---
Bull thistle | Rosette to early bud | 1.72
Buttercup (Creeping, Tall), Field bindweed | In spring during rapid growth | 1.72
Canada thistle | 6 inches (15 cm) to early bud | 1.72
Horsetail* | 6 inches (15 cm) | 1.72

* Suppression only
** Top growth control only

**Application Information:**

**Water Volume:**
*Clovitox Plus*: 71 to 91 L per acre.
*Tropotox Plus, Topside*: 61 to 81 L per acre.

**Nozzles and Pressure:** Maximum 40 psi (275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE coarse droplets.

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**

Damage to peas or seedling forage legumes may occur if the crop is sprayed when under drought or disease stress. Under extremely hot or humid conditions, crop injury may be severe. DO NOT apply when temperatures are over 27ºC. Best activity on weeds occurs in warm weather.

**Tank Mixes:**
None registered.

**Restrictions:**

**Rainfall:** No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information.

**Re-Entry:** DO NOT enter treated fields for at least 12 hours.

**Grazing:** DO NOT graze crop treated with *Topside* or cut for hay. DO NOT graze or cut seedling forage grasses in the year of treatment. Cereals treated with *Tropotox* or *Clovitox* may be used for grazing or cut for greenfeed or hay 30 days after application. Forage legumes and peas treated with *Clovitox* may be used for animal feed 30 days after application. Withdraw meat animals from fields treated with *Tropotox* or *Clovitox* at least 3 days before slaughter.

**Re-cropping:** No restrictions listed. Phenoxy herbicides can persist in soils for weeks, particularly if dry or cool weather persists. DO NOT seed sensitive crops immediately after spraying.

**Aerial Application:** *Clovitox* may be applied by air to established pasture and cereal crops (not underseeded to clover).

**Storage:** DO NOT freeze.

**Buffer Zones:**

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground only*</td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Hand-held or backpack sprayers, inter-row hooded sprayers and spot treatments are exempt from buffer zone requirements.

**Sprayer Cleaning:**

No specific cleaning procedures are indicated on the label. Based on products with similar chemistry, 'Method B’ found in the general sprayer cleaning section on page 15 to 16 or a commercial spray sprayer cleaning product, may provide adequate cleaning. Contact the manufacturer for more information.

**Hazard Rating:**

*Clovitox Plus:*

![Danger – Poison](image)

![Danger - Corrosive to eyes](image)

*Tropotox Plus & Topside:*

![Caution – Poison](image)

*Tropotox Plus:*

![Warning – Contains the allergen caseinate (milk)](image)

For an explanation of the symbols used here see page 11.
Weed Control

Company:
Loveland Products Canada (Mecoprop-P - PCP#27891)

Formulation:
150 g/L mecoprop-p present as potassium salt. Container size - 10 L.

Crops and Staging:
Spring wheat (including durum), barley and oats - 3 leaf to flag leaf stage.

Weeds and Staging:
Apply to weeds from the 2 to 4 leaf stage.

- Black medic
- Canada thistle (top growth control only)
- Chickweed
- Cleavers
- Clover (volunteer)
- Corn spurry
- Lamb’s-quarters
- Plantain
- Wild mustard

Rates:
2.2 to 2.8 L per acre.
Use the high rate for weeds in an advanced stage of growth.

Application Information:

Water Volume: 81 to 121 L per acre.

Nozzles and Pressure: Maximum 40 psi (275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE coarse droplets.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Apply in warm weather under good growing conditions. Avoid spraying in very hot weather or in drought conditions.

Tank Mixes:
None registered.

Restrictions:

Rainfall: No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information.

Grazing: DO NOT graze or feed treated crop to livestock prior to crop maturity.

Re-cropping: No restrictions the year after application.

Aerial application: DO NOT apply by air.

Storage: DO NOT freeze.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td>Ground only*</td>
<td>Less than 1 m</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.
Hand-held or backpack sprayers, inter-row hooded sprayers and spot treatments are exempt from buffer zone requirements.

Sprayer Cleaning:
No specific cleaning procedures are indicated on the label. Based on products with similar chemistry, 'Method B' found in the general sprayer cleaning section on page 15 to 16 or a commercial spray sprayer cleaning product, may provide adequate cleaning. Contact the manufacturer for more information.

Hazard Rating:

Caution – Poison

For an explanation of the symbols used here see page 11.
Metribuzin

Company:
Bayer CropScience (Sencor Solupak 75 DF, Sencor 75 DF)
United Phosphorus Inc. (TriCor 75 DF)

Formulations:
Sencor Solupak 75 DF (PCP#20968): 75% metribuzin formulated as a dispersible granule. Container size - 2.5 kg (5 water soluble bags, 500 g each).
Sencor 75 DF (PCP#17242): 75% metribuzin formulated as a dispersible granule. Container size - 2.5 and 5 kg.
TriCor 75 DF (PCP#30661): 75% metribuzin formulated as a dispersible granule. Container size 2.5 kg.

Herbicide Group
5 - metribuzin
(Refer to page 45)

Crops, Rates and Staging:

<table>
<thead>
<tr>
<th>CROP</th>
<th>APPLICATION TIMING</th>
<th>RATES (g/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley</td>
<td>2 to 5 leaf stage.</td>
<td>80 to 152</td>
</tr>
<tr>
<td>Spring wheat (including durum)</td>
<td>2 to 5 leaf stage.</td>
<td>80 to 111</td>
</tr>
<tr>
<td>Pea (field and processing)*</td>
<td>Preplant incorporated (when tank mixed with Rival or Treflan EC).</td>
<td>Spring: 152 to 192&lt;br&gt;Fall: 190 to 223</td>
</tr>
<tr>
<td>Pea (field only)*</td>
<td>Post-emergence - up to 6 inches (15 cm) of vine length. For short-statured, deter-</td>
<td>111 to 152</td>
</tr>
<tr>
<td></td>
<td>minate flowering peas, apply at the early stages within this range.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Split post-emergent applications**.</td>
<td></td>
</tr>
<tr>
<td>Lentil*</td>
<td>Single or split applications**:&lt;br&gt;Plants up to 6 inches (15 cm) of vine length.</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td>For maximum crop tolerance, apply at the 1 to 4 above ground node stage.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>First split application: 60 to 80&lt;br&gt;Second split application: 7 to 10 days later</td>
<td></td>
</tr>
<tr>
<td></td>
<td>with rates within these ranges.</td>
<td></td>
</tr>
<tr>
<td>Chickpea*</td>
<td>Up to 2.5 inches (6 cm) in height, when vines have 1 to 3 above ground nodes.</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td>Note: application past recommended growth stage may result in severe crop injury.</td>
<td></td>
</tr>
<tr>
<td>Potato (except Belleisle or Tobique)**</td>
<td>Preplant incorporated (with Eptam).</td>
<td>152 to 223</td>
</tr>
<tr>
<td></td>
<td>Pre-emergence in sprinkler irrigation systems (apply only in a tank mix with Eptam</td>
<td>152 to 223</td>
</tr>
<tr>
<td></td>
<td>8-E).</td>
<td></td>
</tr>
</tbody>
</table>

Crops, Rates and Staging continued on next page.
Crops, Rates and Staging  continued

<table>
<thead>
<tr>
<th>CROP</th>
<th>APPLICATION TIMING</th>
<th>RATES (g/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potato (except Atlantic, Belleisle, Eramosa, Tobique and red-skinned or early maturing varieties)***</td>
<td>Early post-emergence (up to 4 inches or 10 cm in height).</td>
<td>151</td>
</tr>
<tr>
<td>Soybean***</td>
<td>Preplant incorporated (tank mixed with Treflan EC).</td>
<td>111 to 223</td>
</tr>
</tbody>
</table>
| Fababean | Preplant incorporated (tank mixed with Treflan EC). | Spring: 111 to 223  
Fall: 190 to 223 |

* DO NOT use on lentils, peas or chickpeas seeded less than 2 inches (5 cm) deep or in soils with less than 4 percent organic matter.

** Under certain field or weather conditions a split application may provide better weed control and crop tolerance than single applications. The first application should be made at the cotyledon to 2 leaf stage of the weeds. The second application should be made when a second flush of weeds have emerged or if weeds which were more advanced at the time of the first application have started to show regrowth. The split applications are normally 7 to 10 days apart.

*** Consult manufacturer or seed supplier for varietal tolerances to metribuzin applications in soybean and potato.

Note: When metribuzin is tank mixed with Trifluralin in peas, fababeans, and soybeans, refer to product label for maximum rates that can be applied on light textured soils.

When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

Weeds, Rates and Staging:

Post-emergence applications should be made when weeds are small – 2 inches (5 cm) in height or diameter.

Split applications (postemergence on lentils and peas) – 1st application at cotyledon to 2 leaf stage of weeds. 2nd application (if necessary) 7 to 10 days after the first.

Post-emergence at 81 g per acre:

Weeds controlled in spring wheat, barley, field pea and suppressed in lentil and chickpea:

Chickweed  
Green smartweed  
Hemp-nettle*  
Lamb’s-quarters

Additional weeds controlled in spring wheat and barley only:

Lady’s-thumb  
Redroot pigweed

Post-emergence at 111 g per acre:

Weeds controlled in spring wheat, barley, potato, field pea, and suppressed in lentil and chickpea:

Weeds above plus:

Ball mustard  
Corn spurry

Additional weeds controlled in spring wheat and barley only:

Common groundsel  
Night-flowering catchfly

Post-emergence at 152 g per acre in spring wheat and barley only:

Weeds above plus:

Henbit  
Russian thistle

Post-emergence at 152 g per acre in potatoes only:

Weeds listed for peas above plus:

Lady’s-thumb  
Shepherd’s-purse  
Redroot pigweed

Preplant Incorporated in fababeans, lentils, field pea and soybean:

Must be applied in tank mix with Treflan EC or Rival):

Chickweed  
Lamb’s-quarters  
Corn spurry  
Stinkweed  
Green smartweed  
Volunteer canola  
Hemp-nettle  
Wild mustard  
Plus weeds controlled by either Rival or Treflan EC.

* Use the high rate for best control.

** Suppressed only in lentils and chickpeas.
Application Information:

Water Volume:
Preplant incorporated: 40 L per acre.
Post-emergence applications:
Cereals - 40 L per acre.
Lentils, peas, chickpeas - 70 L per acre.

Nozzles and Pressure: Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE medium droplets. If using conventional flat fan nozzles use a maximum of 30 to 40 psi (200 to 275 kPa) with opening no smaller than 8002 or TK2 with 50 mesh screens. For lentils, peas and chickpeas use nozzles no smaller than 8003 or TK3. Angle nozzles 45° forward to achieve better coverage of vertical weed targets.

Incorporation: All plant growth and stubble should be thoroughly worked into the soil before treatment. Apply directly to the soil surface. Two incorporations are required at right angles for thorough mixing. The first incorporation must be made within 24 hours of spraying. For fall applications, it is preferred that both incorporations be done in the fall. The second incorporation may be delayed until spring to conserve crop residue; however, both incorporations must be done the recommended depth.

Incorporate with a tandem disc, discer or field cultivator (Vibrashank type). Set equipment to work at a depth of 3 to 4 inches (8 to 10 cm). Operate disc implements at 4 to 6 mph (7 to 10 km/hr), cultivators at 6 to 8 mph (10 to 13 km/hr).

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions
Crop height reductions or yellowing may occur if high temperatures occur within 48 hours of application. Cold, cloudy weather or frost within 3 days of application will also aggravate injury. If frost occurs, allow 4 to 5 days for crop to recover prior to applying metribuzin. Heavy rainfall soon after application to peas, lentils and chickpeas can result in stand reduction on soils with less than 4 percent organic matter.

Tank Mixes:
Herbicides:
In spring wheat or barley:

Dicamba, Target, MCPA amine or 2,4-D amine.

In potatoes (post emergent) Sencor 75 DF and TriCor only:

Prison*

In potatoes (preplant incorporated):

Eptam 8-E (Required).

In fababeans (preplant incorporated):

Treflan EC (Required).

In soybeans (preplant incorporated):

Treflan EC (Required).

In peas:

Treflan (PPI)

Rival (PPI).

Sencor 75 DF or TriCor at 77 g/acre plus 0.19 L/acre MCPA sodium salt (300 g/L).

* Consult manufacturer or seed supplier for varietal tolerances to metribuzin and Prism tank-mix applications in potato.

Fertilizers: None registered.

Insecticides: None registered.

Fungicides: None registered.

Note: The above mixes are those listed on the Sencor or TriCor label only.

Allow 5 days between application of metribuzin and application of other pesticides.

Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Within 6 hours may reduce control.
Re-Entry: DO NOT re-enter treated areas for 12 hours after application.
Grazing: DO NOT graze treated cereal crops within 30 days of application, or peas, chickpeas or lentils within 70 days of application.

Preharvest Interval: DO NOT harvest barley, wheat or potatoes within 60 days of application. DO NOT harvest lentils, chickpeas, or field peas within 70 days of application.

Re-cropping: Preplant incorporated treatments may leave a residue in the soil that will affect succeeding crops when using higher rates of product. DO NOT seed canola, sunflowers, onions, celery, peppers, cole crops, lettuce, spinach, red beets, turnips, pumpkin, squash, cucumbers or melons the year after treatment. Fall seeded crops may be injured when seeded the same year as preplant or post-emergence applications of these products.

Aerial Application: No restrictions on label. While aerial application is not specifically prohibited, it is not recommended by the manufacturer

Storage: May be frozen.
Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres(^\d)) Required for the Protection of:</th>
<th>Aquatic Habitats of Depths</th>
<th>Terrestrial habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less than 1 m</td>
<td>1 to 3 m</td>
</tr>
<tr>
<td>Ground only*</td>
<td></td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured is metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:
Use 'Method B' in the general section on sprayer cleaning on page 15 to 16.

Hazard Rating:
Keep out of reach of children.

Metsulfuron

Company:
E. I. duPont Canada (Ally - PCP#24388)
FMC of Canada (Accurate - PCP#29242)

Formulation:
60% metsulfuron methyl formulated as a water dispersible granule.
Container size -
Ally: 122 g package (4 x 30.5 g water soluble bags).
Accurate: 120 g container.

Crops, Rates and Staging:
The following are maximum rates by crop. See the Weeds, Rates and Staging section for weeds controlled by rates less than the maximum.

Cereals – up to 3 g per acre, plus surfactant:
Wheat (spring and durum), barley: 2 leaf up to emergence of the flag leaf.
Established forage grasses for forage or seed production* - up to 3 g per acre, plus surfactant:
Apply from the 2 leaf to flag leaf stage and before canopy is dense enough to prevent thorough leaf coverage.

Weeds, Rates and Staging:
Cereals and forage grasses:
Unless otherwise indicated, apply to weeds at the 2 to 4 leaf stage.
Alone or in tank mix with a grass control herbicide use 3 g per acre (One 122 g package treats 40 acres). A rate of 2 to 3 g per acre may be used when mixing with certain other herbicides (See Tank Mixes). Add a non-ionic surfactant such as Agral 90, Ag-Surf II, Companion, Super Spreader or Citowett Plus at 0.2 L per 100 L spray volume.

Herbicide Group 2 - metsulfuron
(Refer to page 45)

Crested wheatgrass*
Intermediate wheatgrass*
Orchardgrass*
Creeping red fescue*
Timothy*†
† Fall application with Ally only.
* NOTE - Since applications to forage grasses have been registered under the User Requested Minor Use program, the manufacturer assumes no responsibility for herbicide performance. Application to forage grasses is at the risk of the user.
When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.
Weeds Controlled:

Ball mustard
Bluebur
Chickweed
Common groundsel
Corn spurry
Cow cockle
Flixweed
Hemp-nettle
Prostrate pigweed
Redroot pigweed
Scentless chamomile
Shepherd’s-purse
Smartweed (green, lady’s-thumb)
Stinkweed
Stork’s-bill
Tartary buckwheat
Volunteer canola
Wild mustard

* CLEARFIELD varieties will be controlled only with the addition of 2,4-D or MCPA.

Weeds Suppressed:

Canada thistle
Lamb’s-quarters
Russian thistle
Sow-thistle (annual and perennial)**
Toadflax
Wild buckwheat***

** Apply when thistles are less than 6 inches (15 cm) tall.
*** Apply to wild buckwheat up to the 3 leaf stage.
◊ Apply when weeds are less than 3 inches (8 cm) tall.

Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

Application Information:

Water Volume: Minimum 40 L per acre.
Nozzles and Pressure: No application pressures are recommended by the manufacturer. Typical application pressures for standard flat fan nozzles are from 35 to 40 psi (240 to 275 kPa). Low drift nozzles may require higher pressures for proper performance. Use nozzles and pressures designed to deliver proper coverage with ASABE medium when applying to annual crops and ASABE coarse droplets when applying to range and pasture. Use a 50 mesh and filter system.

How it Works:

Refer to Table 2 on page 47.

Effects of Growing Conditions:

Metsulfuron may injure crops stressed by heavy rainfall, prolonged cool weather, frost conditions, wide fluctuations in day/night temperatures, drought, or water-saturated soils, either before or after application. Weed control will be reduced under dry, cold conditions.

Tank Mixes:

DO NOT mix the soluble bags with any substance containing boron or which releases chlorine.

Herbicides:

In wheat and barley:
2,4-D Amine or Ester (up to maximum rate for susceptible weeds on 2,4-D page), plus surfactant*.
MCPA Amine or Ester (0.23 to 0.38 L/acre - 600 g/L formulation), plus surfactant.

In creeping red fescue:
Assure II (0.2 to 0.3 L/acre) plus Sure-Mix adjuvant*.
Consult tank mix partner labels for additional crop staging and variety restrictions.

* Use with the 3 g per acre rate of metsulfuron only.

Insecticides: None registered.
Fungicides: None registered.
Fertilizer: None registered. DO NOT mix the soluble bags with fertilizers.

Note: The above mixes are those listed on the Metsulfuron labels only.

E.I. duPont Canada also supports the following mixes that are not on the Ally label. Apply mixes according to the most restrictive use limitations for either product:

Herbicides: Puma Advance, Horizon NG
Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:

Rainfall: Rain within 4 hours of application of tank mixes with 2,4-D amine, 2 hours of application of tank mixes with 2,4-D ester, will reduce weed control.

Re-entry: DO NOT enter treated fields for 12 hours.

Grazing: No restrictions.

Re-cropping: Refer to table on the opposite page. The following re-cropping intervals, based on soil pH, should be considered as guidelines only. Metsulfuron residues may affect crops for a longer period of time than outlined in the following table. Add 12 months to recommendations if less than 5 inches (130 mm) of rainfall in brown and dark brown soils or less than 10 inches (250 mm) rainfall in black or grey wooded soils in any year following application.

Aerial Application: DO NOT apply by air.

Storage: Store in a cool, dry place. May be frozen.
Weed Control

Caution:

Metsulfuron residues can persist for long periods, potentially limiting re-cropping options. Degradation of metsulfuron is dependent on the pH, moisture, and temperature of the soil. Refer to the label for details on rotation and minimum re-cropping intervals.

MINIMUM RE-CROPPING INTERVAL (MONTHS)

<table>
<thead>
<tr>
<th>SOIL PH</th>
<th>BARLEY, WHEAT</th>
<th>OAT*</th>
<th>CANOLA*</th>
<th>FLAX*</th>
<th>LENTILS</th>
<th>CANARY-SEED</th>
<th>YELLOW MUSTARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 7.0</td>
<td>10</td>
<td>10</td>
<td>10 (22)</td>
<td>10 (22)</td>
<td>34</td>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td>7.0 -7.9</td>
<td>10</td>
<td>10 (22)</td>
<td>22 (34)</td>
<td>34</td>
<td>48</td>
<td>48</td>
<td>48</td>
</tr>
</tbody>
</table>

* Figures in brackets refer to re-cropping intervals in brown and dark brown soil zones. ALL OTHER DATA refer to re-cropping intervals in all soil zones. On black and grey wooded soils with pH of 7.5 or less, fescue may be planted 10 months after application and alfalfa, red clover, peas and flax may be planted 22 months after application. DO NOT use on soils with pH greater than 7.9.

Effects of metsulfuron residues on crops other than those listed in the table have not been fully evaluated. Because of the length of re-cropping restrictions and the lack of information on many rotational crops, metsulfuron is not recommended for use on farms where special crops are grown (such as fababeans, beans, sunflowers, buckwheat, corn, potatoes, sugar beets, etc.).

Sprayer Cleaning:

Metsulfuron can cause severe injury to sensitive crops at very low concentrations. Sprayers used to apply metsulfuron should be flushed out immediately after metsulfuron is used. Refer to ‘Method B’ found in the general sprayer cleaning section on page 15 to 16. All nozzles, screens and filters should be removed and cleaned after applying this product.

Hazard Rating:

🛠 Caution – Poison
🛠 Caution – Eye Irritant

For an explanation of the symbols used here see page 11.
Company:
Loveland Products Canada (PCP#30456)

Formulation:
90 g/L clopyralid and 90 g/L fluroxypyr formulated as an emulsifiable concentrate.
Container size: 8.99 L.

Crops and Staging:
Apply at the 3 leaf to just before the flag leaf stage of barley, wheat (spring, durum).
When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

Weeds and Staging:
The following weeds are controlled at the 1 to 4 leaf/whorl stage unless specified:

- Canada thistle**
- Cleavers
- Kochia (2 to 8 leaf)
- Stork’s-bill (1 to 8 Leaf)*
- Volunteer flax (1 to 12 cm)
- Wild buckwheat
- Suppression only.
- Season long control, some regrowth may occur in the fall. Apply from the 4 inch (10 cm) to pre-bud stage.

Rates:
0.45 L per acre
Apply a maximum of one application of this product or other products containing either clopyralid or fluroxypyr.

Application Information:
Water Volume: 40 L per acre.
Nozzles and Pressure: Use 30 to 40 psi (200 to 275 kPa) if applying without drift reduction nozzles. Drift reduction nozzles may require higher pressures for proper performance. Select the nozzle and pressure combination that produces of ASABE coarse droplets while maintaining good coverage of foliage.

How it Works:
Refer to Table 2 on page 47.

Herbicide Group
4 - clopyralid & fluroxypyr
(Refer to page 45)

Effects of Growing Conditions:
When weeds are stressed because of drought, flooding, hot or cool (less than 8°C) temperatures, weeds are not actively growing and control may be reduced. DO NOT apply to weeds stressed longer than 20 days from lack of moisture as poor control can result.

Tank Mixes:
Herbicides:
MCPE Ester 500 (0.34 to 0.45 L/acre)
MCPE Ester 600 (0.28 to 0.38 L/acre)
Momentum alone or tank mixed with MCPA ester rates above may be mixed with the following:
In spring wheat (including durum) and barley:
Tralkoxydim (0.20 L/acre) plus registered adjuvant
Imazamethabenz (0.52 to 0.64 L/acre) plus water pH adjuster
Fenoxaprop 120 EC (0.16 to 0.31 L/acre).
In spring wheat (including durum):
Clodinafop (label rates)
Simplicity (0.2 L/acre)
Traxos (label rate)
† Note: The manufacturer may not support all brand of these products. See the label or contact Loveland Products Canada for more information.
Check the labels of mix partners for additional crop staging restrictions.
Insecticides: None registered.
Fungicides: None registered.
Fertilizers: None registered.
Note: The above mixes are those listed on the Momentum label only.
Loveland Products Canada also supports the following mixes that are not on the Momentum label. Apply mixes according to the most restrictive use limitations for either product:
Herbicides: Everest 2.0, Puma Advance, Varro, Avert, Refine SG and 2,4-D Ester

Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.
Restrictions:

Rainfall: No rainfast period is specified on the label; required interval between application and rain without loss of control may be up to 8 hours. Contact manufacturer for more information.

Re-entry: DO NOT enter treated fields for at least 12 hours.

Grazing: DO NOT graze treated fields or cut for hay within 3 days of application.

Preharvest Interval: Leave 60 days between application and harvest.

Re-cropping: Wheat, barley, oats, rye, flax, canola, mustard and peas may be planted the year after application or the field may be fallowed. DO NOT under-seed crops to forage legumes the year after treatment. DO NOT sow any other crops until the second year after application. Apply manure bedded with straw from treated crops only to the crops listed above.

DO NOT seed to field peas for at least 10 months following treatment. Very dry soil conditions following application can result in a risk of injury to field peas grown in rotation. If severe drought conditions are experienced during the months of June to August inclusive in the year of application delay seeding field peas an additional 12 months (22 months following application). Contact your local Loveland Products Canada representative or retailer for more information before seeding field peas following drought conditions in the previous year.

Aerial Application: DO NOT apply by air.

Storage: Store in a cool (above 5°C), dry area. If product is frozen, bring to room temperature and agitate before use.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground only*</td>
<td>15</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy. Hand-held or backpack sprayers, inter-row hooded sprayers and spot treatments are exempt from buffer zone requirements.

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:

No specific cleaning recommendations are provided on the Momentum label. As a petroleum based emulsifiable concentrate, ‘Method B’ in the general section on sprayer cleaning on page 15 to 16 may be the most effective. Check with the manufacturer for more information.

Hazard Rating:

⚠️ Warning – Eye Irritant

For an explanation of the symbols used here see page 11.
Muster Toss-N-Go

Company:
E. I. duPont Canada (PCP#23569)

Formulation:
75% ethametsulfuron-methyl formulated as a water dispersible granule.
Container size - 320 g (4 x 80 g water soluble bags).

Crops , Rates and Staging:
NOTE: NOT for use on Yellow mustard (Brassica alba).

<table>
<thead>
<tr>
<th>CROP</th>
<th>RATE (g/acre)</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canola</td>
<td>8 to 12</td>
<td>Minimum 2 leaf stage (main stem) to the start of bolting.*</td>
</tr>
<tr>
<td>Mustards: Brown &amp; Oriental condiment as well as oilseed quality (Brassica juncea)</td>
<td>8</td>
<td>4 leaf stage but prior to bolting.</td>
</tr>
<tr>
<td>Ethiopian Mustard (Brassica carinata)</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Sunflower</td>
<td>8 to 12</td>
<td>2 to 8 leaf stage (15 to 45 cm)</td>
</tr>
</tbody>
</table>

* NOTE: DO NOT apply prior to this stage as severe crop injury can occur.

Muster applied alone requires the addition of Agral 90, Agsurf II, or Citowett at 0.2 L per 100 L of spray solution.
When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.
Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

Weeds, Rates and Staging:
Apply from the 2 to 6 leaf stage. Stinkweed must be sprayed in the 1 to 4 leaf stage
At the 8 g per acre rate (one 320 g package treats 40 acres):
Flixweed * Stinkweed **
Green smartweed Wild mustard
Hemp-nettle
The 12 g per acre rate (one 320 g package treats 26.7 acres) controls above weeds plus:
Redroot pigweed ** Stinkweed
* Spring seedlings only.
** Suppression with Muster alone but control with Assure II plus Sure-Mix or a Poast Ultra plus Merge tank mix where permitted.
Muster applied alone requires the addition of Agral 90, Agsurf II, or Citowett at 0.2 L per 100 L of spray solution. Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

Application Information:
Water Volume: 40 L per acre.

Equipment, Nozzles and Pressure: 30 to 40 psi (200 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE medium droplets. Use a 50 mesh or coarser screen and filter system. Sprayer must be equipped with continuous agitation. Maintain the spray boom at 24 inches or less above the crop canopy.

How it Works:
Refer to Table 2 on page 47.

Herbicide Group
2 - ethametsulfuron
(Refer to page 45)
Effects of Growing Conditions:
DO NOT use on crops that are stressed because of drought or flooding. Less than acceptable control will occur in fields where high weed populations exist and where stressful environmental conditions prevail (drought, cold weather). Heavy rainfall soon after application may result in visual crop injury or possible yield reduction. Thin crop stands or application prior to the 2 leaf stage, sandy soils or soils with low organic matter may increase the severity of the injury.

Tank Mixes:
DO NOT mix with substances that contain boron or that release chlorine.

Herbicides:
*Canola, Brown and Oriental Mustards (Brassica juncea only)*: Assure II. The adjuvant used with Assure II is all that is required for this tank mix.

*Canola only:* Poast Ultra. The adjuvant used with this product is all that is required for this tank mix.

NOTE: No tank mixes are registered for Brassica carinata.

Insecticides: None registered.

Fungicides: None registered.

Fertilizers: None registered. DO NOT mix soluble bags with liquid fertilizers.

Note: The above mixes are those listed on the Muster label only.

E.I. duPont also supports the following mixes that are not on the Muster label. Mixes must be applied according to the most restrictive use limitations for either product:

**Herbicides:** Assure II plus Lontrel, Lontrel, Lontrel plus Poast.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Within 4 to 6 hours may reduce control.

Re-entry: DO NOT enter treated fields for at least 12 hours.

Grazing: DO NOT graze or feed crop to livestock within 60 days of application. DO NOT graze treated sunflowers.

Preharvest: Leave 60 days from application to harvest.

Re-cropping: DO NOT sow wheat, barley, oats or flax within 10 months of application. DO NOT seed canola, lentils, peas, fababees, tame mustard, alfalfa, canaryseed, dry beans, fescues or red clover within 22 months of application. All other crops must not be sown until a “field bioassay” is performed at 22 months (or more) after application. Growers may experience reduced yields if other crops (such as corn) are grown without following these guidelines.

**Aerial Application:** DO NOT apply by air.

**Storage:** May be frozen.

**Buffer Zones:**

<table>
<thead>
<tr>
<th>CROP (By ground only*)</th>
<th>Buffer Zones (metres†)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Canola, Sunflower, Brassica carinata</td>
<td>4</td>
</tr>
<tr>
<td>Mustard (Condiment and Oilseed types)</td>
<td>3</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

**Sprayer Cleaning:**
Sprayers used to apply Muster should be flushed out immediately after Muster is used. Refer to ‘Method A’ in the general section on sprayer cleaning on page 15 to 16.

**Hazard Rating:**
None indicated.
**Company:**
BASF Canada (PCP#25111)

**Formulation:**
35% imazamox and 35% imazethapyr formulated as a dispersible granule.
Container size - 8 x 86.5 g water soluble packs per 40 acre case.

**Crops and Staging:**

<table>
<thead>
<tr>
<th>CROP</th>
<th>LEAF STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field pea; Fababean</td>
<td>1 to 6 nodes/true leaf stage</td>
</tr>
<tr>
<td>Clearfield canola;</td>
<td>2 to 6 leaf</td>
</tr>
<tr>
<td>Clearfield oilseed mustard (B. juncea)</td>
<td></td>
</tr>
<tr>
<td>Clearfield lentil</td>
<td>1 to 9 above ground nodes</td>
</tr>
<tr>
<td>Soybean</td>
<td>1 to 3</td>
</tr>
<tr>
<td>Fenugreek (seed or forage);</td>
<td>1 to 4</td>
</tr>
<tr>
<td>Alfalfa†; Bird’s-foot trefoil†*</td>
<td></td>
</tr>
</tbody>
</table>

* Temporary crop yellowing may be observed shortly after application in field pea, fababean, and CLEARFIELD canola.
† Seedling and established.

Weeds, Rates and Staging:

Merge adjuvant (sold separately) must be used at a rate of 0.5 L per 100 L of spray solution.

At 17.3 g per acre (40 acres per case), Odyssey will control:

**Grasses** - 1 to 4 main stem leaves, until tillers are visible:
- Barnyard grass
- Green foxtail
- Persian darnel

**Broadleaf Weeds** - cotyledon to 4 leaf stage unless otherwise indicated:
- Chickweed
- Cleavers (up to 4 whorls)
- Flixweed
- Green smartweed
- Hemp-nettle*
- Lamb’s-quarters***
- Redroot pigweed
- Russian thistle†
- Shepherd’s-purse

**Grasses** - 1 to 4 main stem leaves, until tillers are visible:
- Barnyard grass
- Green foxtail
- Persian darnel

**Broadleaf Weeds** - cotyledon to 4 leaf stage unless otherwise indicated:
- Chickweed
- Cleavers (up to 4 whorls)
- Flixweed
- Green smartweed
- Hemp-nettle*
- Lamb’s-quarters***
- Redroot pigweed
- Russian thistle†
- Shepherd’s-purse

* Suppression only in field peas and CLEARFIELD lentils.
** Suppression only in field peas and CLEARFIELD canola, not controlled in CLEARFIELD lentils.
*** Suppression only.
† Suppression only in CLEARFIELD lentils.

DO NOT apply Odyssey more than once or follow Odyssey with any product containing imazamox or imazethapyr in the same year.

Refer to the product label for complete mixing instructions for this product and its mixes. A general guide to mixing can be found on page 14.

**Application Information:**

**Water Volume:** 40 L per acre.

**Nozzles and Pressure:** Maximum 40 psi (275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage and a minimum of fine droplets that are prone to drift. Use 50 mesh or coarser filter screens.

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**

DO NOT spray if temperatures of +5°C are forecast within 3 days of application. Treat crops during warm weather when weeds are actively growing and soil moisture is adequate for rapid growth. Under cool or dry conditions, control of some weeds may be severely reduced.
Weed Control

Odyssey Ultra

This product is a prepackaged tank mix of Odyssey (page 254) and Poast Ultra (page 268). Information listed is restricted to Crop, Weeds, Rates and Tank mixes. For other detailed restrictions and other general information on the component products see the product pages listed above.

Company:
BASF Canada

Herbicide Group
1 - sethoxydim
2 – imazamox, imazethapyr
(Refer to page 45)

Formulation:
The Odyssey Ultra package contains the following components:
Odyssey Ultra A (PCP#31353): 35% imazamox and 35% imazethapyr formulated as a dispersible granule.
Container size - 8 x 86.5 g water soluble packs.
Odyssey Ultra B (PCP#31354): 450 g/L sethoxydim formulated as an emulsifiable concentrate.
Container size – 1 x 6.1 L jug.
Merge adjuvant (PCP#24702):
Container size – 1 x 8.1 L

Tank Mixes:
Herbicides:
In CLEARFIELD canola only:
Lontrel 360 (0.17 to 0.23 L/acre).
In field peas, CLEARFIELD canola, CLEARFIELD lentils, and soybeans only:
Poast Ultra (190 mL/acre).
Insecticides: None registered.
Fungicides: None registered.
Fertilizers: None registered.

Note: The above mixes are those listed on the Odyssey label only.
Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Rainfall within 3 hours of application may reduce control.
Re-Entry: DO NOT enter treated fields for 12 hours.
Grazing: DO NOT graze treated canola or soybean or cut for hay. Field pea may be fed to livestock 30 days after application. DO NOT harvest forage or cut for hay.
Preharvest Interval: DO NOT apply within 60 days of harvesting canola, fababean, oilseed Brassica juncea, field pea, and lentil. DO NOT apply within 85 days of harvesting soybean.
Re-cropping: Field pea, lentil, CLEARFIELD canola, canary-seed, oat, barley, field corn, chickpea and spring wheat (including durum) may be seeded the first full season after application. Flax, canola and sunflower may be seeded the second full season after application. The company recommends that a field bio-assay (a test strip grown to maturity) be conducted the year before growing any crops other than those listed above.

NOTE: Breakdown of Odyssey may be slowed or delayed by environmental conditions such as drought, excessive cold and/or acid soils (pH less than 6.5) resulting in an increased risk of injury to rotational crops. The most tolerant crops are CLEARFIELD canola and legume crops, then cereals. Contact manufacturer for additional information on re-cropping interval (1-877-371-2273).

Aerial Application: DO NOT apply by air.
Storage: DO NOT freeze. Store in a cool, dry place above 5oC.

Buffer Zones: Avoid spraying in situations where drift may occur. Leave a buffer zone of at least 11 m between the outside boundary of the sprayed area and sensitive areas such as shelterbelts, hedgerows, wetlands, woodlots, vegetated ditch banks, ponds, streams, and sloughs.

Sprayer Cleaning:
Refer to ‘Method C’ in the general sprayer cleaning section on page 15 to 16.

Hazard Rating:
⚠ Warning – Eye and Skin Irritant
⚠ Warning – Contains allergen “sulfites”
For an explanation of the symbols used here see page 11.
Company: Loveland Products Canada (PCP#29662)

Formulation: 160 g/L MCPA + 130 g/L mecoprop-p + 310 g/L dichlorprop-p formulated as a solution
Container size - 10 L.

Tank Mixes:
Herbicides:
Poast Ultra (0.04 L/acre)
Insecticides: None registered.
Fungicides: None registered.
Fertilizers: None registered.

See component products for more information on restrictions application details and handling. Use the most limiting restrictions across all components for the mix.

Crops and Staging:

<table>
<thead>
<tr>
<th>CROP</th>
<th>LEAF STAGE</th>
<th>DAYS TO HARVEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field pea</td>
<td>1 to 6*</td>
<td>60</td>
</tr>
<tr>
<td>CLEARFIELD canola</td>
<td>2 to 6</td>
<td>60</td>
</tr>
<tr>
<td>CLEARFIELD lentil</td>
<td>1 to 9*</td>
<td>60</td>
</tr>
<tr>
<td>Soybean</td>
<td>1 to 3</td>
<td>85</td>
</tr>
</tbody>
</table>

* Above-ground nodes

Weeds, Rates and Staging:

At 17.4 g per acre Odyssey Ultra A and 0.15 L per acre Odyssey Ultra B (one package treats 40 acres): Weeds controlled by Odyssey (Odyssey Ultra A) plus the grasses controlled by Poast Ultra (Odyssey Ultra B) plus the weeds below:

Japanese brome†*
Quackgrass (Suppression - 2 to 5 leaf)
† Spring seedlings only.
* Suppression of fall emerged Japanese brome with Odyssey Ultra alone but control with Poast Ultra (0.04 L/acre) tank mix.

Odyssey Ultra requires the addition of Merge adjuvant at 0.5 L per 100 L of spray solution.

Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

Optica Trio

Herbicide Group
4 - MCPA, mecoprop & dichlorprop
(Refer to page 45)
Crops and Staging:

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley, oat, spring wheat (including durum)</td>
<td>2 to 5 leaf</td>
</tr>
<tr>
<td>Winter wheat</td>
<td>Spring application only; up to 12 inches (30 cm) high (top leaf extended)</td>
</tr>
</tbody>
</table>

Weeds, Rates and Staging:

Weeds controlled at the 2 to 3 leaf stage unless otherwise indicated.

Apply at 0.61 L per acre to control:

- Lamb’s-quarters
- Volunteer canola
- Stinkweed
- Wild mustard

Apply at 1.0 L per acre to control the weeds listed above plus:

- Canada thistle*
- Lady’s-thumb (suppression)
- Chickweed (Common)
- Ragweed (Common)
- Cleavers (1 to 2 whorls)
- Redroot pigweed
- Kochia
- Wild buckwheat

* Top Growth Control only.

DO NOT apply Optica Trio more than once or follow application with any related product in the same year.

Application Information:

Water Volume: Minimum 20 L per acre.

Nozzles and Pressure: 30 to 43 psi (200 to 300 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE medium droplets.

How it Works:

Refer to Table 2 on page 47.

Effects of Growing Conditions:

Less than satisfactory control may result if weeds are not actively growing such as under conditions that are extremes of hot or cold, dry or wet weather prior to spraying.

Tank Mixes:

Herbicides:
- Spring wheat (including durum): Signal (93 mL/acre) plus supplied adjuvant.
- Insecticides: None registered.
- Fungicides: None registered.
- Fertilizers: None registered.

Note: The above mixes are those listed on the Optica Trio label only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:

Rainfall: No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information.

Re-entry: DO NOT enter treated fields for 12 hours.

Grazing: DO NOT feed treated crops to milking animals or harvest for forage within 7 days of application. Meat animals grazing treated crops must be removed 3 day prior to slaughter.

Preharvest: No pre-harvest interval indicated on label when Optica Trio is used alone.

Re-cropping: No information provided on label. Contact manufacturer for information.

Aerial Application: DO NOT apply by air.

Storage: Keep from freezing.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground only*</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:

No specific cleaning procedures are indicated on the label. Based on products with similar chemistry, ‘Method B’ found in the general sprayer cleaning section on page 15 to 16 or a commercial spray sprayer cleaning product, may provide adequate cleaning. Contact the manufacturer for more information.

Hazard Rating:

- Caution – Poison
- Danger - Corrosive to eyes

For an explanation of the symbols used here see page 11.
Option 35 DF/Option 2.25 OD

For use in Manitoba only.

Company:
Bayer CropScience

Formulations:
Option 35 DF (PCP#27425): 35% foramsulfuron formulated as a dispersible granule.
Container size - 8 x 100 g packets per case.

Option 2.25 OD (PCP#27424): 22.5 g/L foramsulfuron formulated as an oil dispersion.
Container size - 6.3 L jug.

Crops and Staging:
Field corn at the 1 to 8 leaf stage or 5 to 6 visible collars

Weeds and Staging:

<table>
<thead>
<tr>
<th>WEED</th>
<th>LEAF STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barnyard grass</td>
<td>1 to 6 (to early tillering)</td>
</tr>
<tr>
<td>Foxtail (green and yellow)</td>
<td>2 to 5 (to early tillering)</td>
</tr>
<tr>
<td>Proso millet</td>
<td>2 to 5 (to early tillering)</td>
</tr>
<tr>
<td>Witchgrass</td>
<td>2 to 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WEED</th>
<th>LEAF STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chickweed, common</td>
<td>4 to 6</td>
</tr>
<tr>
<td>Lamb’s-quarters</td>
<td>4 to 8</td>
</tr>
<tr>
<td>Mustard, wild</td>
<td>5 to 7</td>
</tr>
<tr>
<td>Mustard, wormseed</td>
<td>5 to 9</td>
</tr>
<tr>
<td>Nightshade, eastern black</td>
<td>1 to 5</td>
</tr>
<tr>
<td>Pigweed, redroot</td>
<td>1 to 7</td>
</tr>
<tr>
<td>Ragweed, common*</td>
<td>2 to 4</td>
</tr>
</tbody>
</table>

* Suppression only.

Rates:

Option 2.25 OD: 0.63 L per acre (10 acres per jug) plus 28% UAN (liquid 28-0-0) at 1.0 L per acre.

Option 35 DF: 40.5 g per acre (20 acres per case) plus 28% UAN (liquid 28-0-0) at 0.71 L per acre.

NOTE: Option 35 DF and Option 2.25 OD must be tank mixed with Banvel II at 121 mL per acre.

Add Option 35 DF or Option 2.25 OD to a half full tank, followed by Banvel II, then 28% UAN then Hasten adjuvant (for use with Option 35 DF only).

Application Information:

Water Volume:

Option 35 DF: 89 L per acre.
Option 2.25 OD: 60 L per acre

Nozzles and Pressure: Use 25 to 40 psi (175 to 275 kPa) when using conventional 80° or 110° flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE medium droplets. Use with 50 mesh or larger screens.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:

Under optimum conditions weed growth ceases within 1 to 3 days and yellowing of the growing point occurs in 5 to 10 days. Warm moist conditions provide for the best activity. Activity may be reduced or delayed if applied under cool and/or dry conditions or in the presence of heavy dew, fog, mist or rain or if weeds are dust covered. If the crop or weeds are under stress due to environmental conditions, delay application until the both crop and weeds have resumed active growth.

Tank Mixes:

Herbicides:

Banvel II (121 mL/acre)*

Insecticides: Avoid application to corn that has been treated with organophosphorous insecticides.

Fungicides: None registered.

Fertilizers: DO NOT use any fertilizers or additives other than 28% UAN (1 L/acre), recommended*.

* Option 35 DF must be applied to corn in Manitoba as a tank-mixture with Banvel II, 28% UAN and Hasten adjuvant. Option 2.25OD must be applied to corn in Manitoba as a tank-mixture with Banvel II and 28% UAN. See ‘Rates’ section above.
Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:

Rainfall: Within 6 hours may reduce control.
Re-entry: DO NOT enter treated fields until residues have dried.
Grazing: DO NOT graze treated corn crops or cut for forage within 45 days of application.
Preharvest Interval: Leave 70 days between application and harvest of grain.
Re-cropping: The following crops may be grown the season following application: alfalfa, barley, bean (dry common), canola, clover (red), corn (field and sweet), oat, pea, potato, soybean, timothy, spring wheat. Winter wheat may be seeded 4 months after application.
Aerial Application: DO NOT apply by air.
Storage: Keep dry.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method (ground only*)</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
<th>Aquatic Habitats of Depths</th>
<th>Terrestrial habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less than 1 m</td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td>Option 35 DF</td>
<td></td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Option 2.25 OD</td>
<td></td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones for ground applications can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:
Option residues in the spray tank can cause severe injury to sensitive crops at very low concentrations. Sprayers should be cleaned out immediately before using another product. Refer to ‘Method A’ in the general section on sprayer cleaning on page 15 to 16.

Hazard Rating:

Option 35 DF:

⚠️ Warning – Skin and Eye Irritant
Potential Skin Sensitizer

Option 2.25 OD:

⚠️ Caution – Eye Irritant
⚠️ Warning – Skin Irritant
Potential Skin Sensitizer

For an explanation of the symbols used here see page 11.

Outlook

Company: BASF Canada (PCP#29194)

Formulations:
720 g/L dimethanamid-P formulated as an emulsifiable concentrate.
Container size – 2 x 9 L.

Crops and Staging:
Potatoes - After seeding or hilling prior to emergence of the crop. DO NOT apply before seeding or hilling.

Weeds and Staging:
Prior to the emergence of foxtail (green and yellow), barnyard grass, crabgrass (large, smooth), redroot pigweed, eastern black nightshade*.
* Control with highest rate (390 mL/acre) only. Lower rates provide suppression only.

Herbicide Group
15 - dimethanamid
(Refer to page 45)
Rates:
Apply at 306 to 390 mL per acre. Apply at the higher rate on fine-textured or high organic soils and for heavier anticipated weed problems. DO NOT exceed the equivalent of a single application of Outlook or Frontier Max in a single season.

Pre-emergence surface treatments:

<table>
<thead>
<tr>
<th>SOIL TYPE (Texture)</th>
<th>Less than 3% Organic Matter</th>
<th>3 to 6% Organic Matter</th>
<th>7 to 10% Organic Matter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse</td>
<td>306</td>
<td>306</td>
<td>348</td>
</tr>
<tr>
<td>Medium and Fine</td>
<td>306</td>
<td>348</td>
<td>390</td>
</tr>
</tbody>
</table>

Application Information:

**Water Volume:** A minimum of 40 L per acre.

**Pressure:** 30 to 43 psi (200 to 300 kPa).

**Nozzles:** Flat fan or flood-jet. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE medium droplets. Use 16 mesh suction screen, 50 mesh elsewhere on sprayer.

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**
Rainfall is required within 7 to 10 days of application to activate and move Outlook into the soil zone. If dry conditions persist, a shallow cultivation or the use of a rotary hoe is necessary to move the herbicide into moist soil and control weed escapes. Shallow tillage is important to minimize dilution of the herbicide. If drought conditions persist after pre-emergence applications, weed control may not be adequate.

**Restrictions:**

**Rainfall:** Avoid heavy rainfall after application. A light to moderate rainfall 7 to 10 days after application is important for good weed control.

**Re-entry:** DO NOT enter treated fields for 24 hours.

**Preharvest Interval:** Leave 40 days between application and harvest.

**Grazing:** DO NOT graze within 40 days of application.

**Re-cropping:** In the event of a crop failure, treated fields may be seeded back to corn (field or sweet), soybeans, or dry common beans. DO NOT reseed potatoes after a crop failure. Cereal crops may be planted 100 days after application. The crops above plus green onions, potato and transplanted cabbage may be planted the next season after use. All other crops may be seeded 11 months after application.

**Aerial Application:** DO NOT apply by air.

**Storage:** DO NOT freeze. Must be stored under heated warehouse conditions.

**Buffer Zones:**

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground only*</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones for ground applications can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

**Herbicide Group**
4 - dicamba
19 - diflufenzopyr
(Refer to page 45)

**Company:**
BASF Canada (PCP#30065).

**Formulation:**
20% diflufenzopyr and 50% dicamba sodium salts formulated as water dispersible granules.

Container size - 4 x 3.4 kg.
Crops and Staging:
Established permanent grass pasture, non-cropland sites and rangeland. DO NOT apply Overdrive on annual crops or newly seeded grasses.

Weeds and Staging:
Biennial wormwood
Canada thistle*
Dandelion**
Kochia (up to 15 cm)***
Lady’s-thumb
Lamb’s-quarters
Leafy spurge**
Perennial sow-thistle (2 to 10 leaf)
Ragweed (common)
Redroot pigweed
Tall waterhemp
Velvetleaf
Volunteer canola (up to 4 leaf)
Wild buckwheat

Rates:
115 g per acre. (One package treats 118 acres)
Merge Adjuvant at the rate of 0.25 L per 100 L of spray solution or a nonionic surfactant at 0.25 L per 100L of spray solution plus ammonium nitrate (UAN 28%) at 1.25L per 100L of spray solution must also be added. Use of an anti-foam agent is suggested.

Application Information:
** Water Volume: **Minimum 89 L per acre. Use higher water volumes when treating dense or tall vegetation.
** Nozzles and Pressure:** Maximum 20 psi (150 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of application equipment and pressure that is designed to deliver an even coverage of ASABE coarse droplets that are less prone to drift. Non-target broadleaf plants are very sensitive to Overdrive drift. Avoid conditions that are conducive to drift. (See page 12 for drift control suggestions).

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
DO NOT spray if temperatures are expected to exceed 27°C. DO NOT spray in high humidity or fog. DO NOT spray if wind velocity exceeds 8 km/h. Established grasses growing under stress conditions can exhibit various injury symptoms that may be more pronounced if herbicides are applied.

Tank Mixes:
None registered.

Restrictions:
** Rainfall:** Heavy rain within 4 hours of application may reduce control.
** Re-entry:** DO NOT enter treated fields for at least 12 hours.
** Grazing:** DO NOT permit lactating dairy animals to graze fields within 7 days after application. DO NOT harvest forage or cut hay within 30 days after application. Withdraw meat animals from treated fields at least 3 days before slaughter.

Aerial Application: DO NOT apply by air.
** Storage:** Store in a cool, dry place.

Buffer Zones:
Hand-held or backpack sprayer and spot treatment DO NOT require a buffer zone from sensitive habitat, but efforts should be made to minimize exposure to sensitive plants and open water or wetlands.

Sprayer Cleaning:
Refer to ‘Method A’ in the general section on sprayer cleaning on page 15 to 16.

Hazard Rating:
⚠️ Caution – Poison
⚠️ Caution – Eye Irritant
⚠️ Potential Skin Sensitizer
⚠️ Warning – Contains the allergen sulfites
For an explanation of the symbols used here see page 11.
Company: Dow AgroSciences (PCP#31304)

Formulation:
20% halauxifen present as methyl ester and 20% florasulam formulated as a water dispersible granule. Container size - 4 x 1.6 kg jugs per case.

Crops and Staging:
Spring wheat (including durum) and barley:
2 leaf stage to just prior to emergence of the flag leaf.
Winter wheat: 3 leaf stage to just prior to emergence of the flag leaf.

Weeds and Staging:
Apply to actively growing weeds at the 1 to 8 leaf stage unless otherwise specified:

Weeds Controlled:
Buckwheat, wild Chickweed Cleavers (1 to 9 whorl stage) Dandelion (rosettes up to 30 cm in diameter) Fleabane, Canada (up to 15 cm) Flixweed Lambs' quarters Mustard, wild† Ragweed, common (up to 6 leaf) Redroot pigweed Round-leaved mallow (up to 6 leaf)

Weeds Suppressed:
Canada thistle (up to 30 cm) Kochia* (up to 15 cm) Hemp-nettle Sow-thistle, perennial††

* Light to moderate infestation (up to 150 plants/m2).
†† Best results prior to the 4 leaf (seedling) stage.

Rates:
Paradigm: 10 grams per acre (one 1.6 kg jug treats 160 acres).
Turbocharge or Intake adjuvant: 0.5 L per 100 L of spray solution. Surfactant purchased separately.

Herbicide Group
2 - florasulam
4 - halauxifen
(Refer to page 45)

Application Information:
Water Volume: Minimum 40 to 55 L per acre. Use the higher volume when there is a heavy crop canopy or weeds are at an advanced stage.

Nozzles and Pressure: Use 30 to 40 psi (200 to 275 kPa) if applying without drift reduction nozzles. Drift reduction nozzles may require higher pressures for proper performance. Select the nozzle and pressure combination that produces of ASABE coarse droplets while maintaining good coverage of foliage.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Weeds and crops must be actively growing. Extreme growing conditions such as drought or near freezing temperature prior to, at or following time of application may reduce weed control.

Tank Mixes:
* Turbocharge or Intake not required with tagged tank mixes.
** Add Agsurf or Agral 90 surfactants at 0.25 L per 100 L of spray solution.

Herbicides:
MCPA 600 Ester (232 mL/acre)* Curtail M (0.6 L/acre)*
Everest 2.0 (14.5 to 29 mL/acre)** Everest 2.0 + MCPA (rates above)** Everest 2.0 + Curtail M (rates above)** Simplicity (0.2 L/acre)** Simplicity + MCPA (rates above)** Simplicity + Curtail M (rates above)**

Insecticides: None registered.

Fungicides: None registered.

Fertilizers: None registered.

Note: The above mixes are those listed on the Paradigm label only. Dow also supports the following mixes that are not on the Paradigm label. Apply mixes according to the most restrictive use limitations for either product:
Herbicides: Axial BIA, Simplicity GoDRI

Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be
mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Within 1 hour may reduce control.
Re-Entry Interval: DO NOT enter treated fields for 12 hours.
Grazing: DO NOT graze livestock within 7 days of application. DO NOT cut for silage or hay within 21 days of application.
Pre-harvest Interval: DO NOT harvest crops within 60 days of application.
Re-cropping Interval: Barley, canola, flax, field peas, mustard (oriental, brown and yellow condiment as well as oilseed quality (B. juncea) varieties), soybeans, sunflower, and spring wheat may be seeded the spring following application. Lentils may be grown the second season after application.
Aerial Application: DO NOT apply by air.
Storage: Store in a cool, dry place in original container.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†)</th>
<th>Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
<td>Terrestrial habitat</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td>Ground only</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:
Refer to ‘Method A’ in the general section on sprayer cleaning on page 15 to 16. Check the cleanout requirements of pesticides mixed with this product. Additional cleanout measures may need to be integrated into those provided here.

Hazard Rating:

Caution – Potential skin sensitizer.

For an explanation of the symbols used here see page 11.

Company:
Gowan Canada (PCP#31210)

Formulation:
72.6 % halosulfuron methyl ester formulated as water dispersible granules
Container size: 567 g.

Crops and Staging:
Pre-emergent surface†:
Dry beans*: Apply 14.2 to 19 g/acre after seeding but prior to soil cracking.
-or-
Apply up to 28.3 g per acre to soil between crop rows with a hooded sprayer. Avoid contacting planted crop or injury may result. Maximum of one application per year.
Post-emergent foliar†:
Dry beans*: Apply 14.2 to 28.3 g per acre at the 2 to 4 trifoliate leaves, prior to flowering. Maximum of one application per year.

Herbicide Group 2- Halosulfuron
(Refer to page 45)

Corn (sweet, popcorn): Apply 19 to 28.3 g per acre up to the 10-12 leaf stage. A second application of 19 g per acre may be applied with drop nozzles if needed, avoiding contact with the whorl. Maximum of two applications per year.
Corn (Field): Apply 19 to 37.6 g per acre up to the 10-12 leaf stage. A second application of up to 37.6 g per acre may be applied with drop nozzles if needed. Maximum of two applications per year.
Proso (Crown) millet: Apply 14 to 19 g per acre from the 2 leaf up to prior to head emergence. Maximum one application per year.

* Note: not all varieties have been tested for tolerance. For untested varieties apply to a small area to determine tolerance prior to use on a large scale.
† Applications to emerged weeds require the addition of a non-ionic surfactant with 80% or greater active ingredient content at the lowest labelled rate for the surfactant regardless of crop stage.
When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.
Weeds, Rates and Staging:
Weeds controlled with pre-emergent soil applications of 14 to 19 g per acre unless otherwise indicated:

- Annual sunflower
- Canada fleabane
- Chickweed (common)
- Cocklebur
- Common groundsel
- Corn spurry
- Creeping yellowcress
- Flower-of-an-hour
- Fringed (Northern) willowherb
- Hairy galinsoga
- Jimsonweed
- Lamb’s-quarters
- Plantain, broadleaf
- Pigweed (redroot, smooth)
- Prickly lettuce
- Purslane*
- Ragweed (common)
- Round-leaved mallow
- Shepherd’s-purse
- Smartweed (Lady’s-thumb, Pennsylvania)
- Spiny amaranth
- Stinking Mayweed
- Wild mustard
- Wild radish
- Velvetleaf
- Yellow nutsedgeΔ

Δ Requires a rate of 28.3 to 37.6 g per acre rate for suppression based on the maximum rate for each crop.
* Suppression only

Weeds controlled from the 3 leaf stage (unless otherwise indicated) to the maximum leaf stage indicated:

<table>
<thead>
<tr>
<th>WEED</th>
<th>Maximum Weed Height (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14 to 19 g/acre</td>
</tr>
<tr>
<td>Annual sunflower</td>
<td>31</td>
</tr>
<tr>
<td>Bindweed (Hedge)*</td>
<td>5</td>
</tr>
<tr>
<td>Cocklebur</td>
<td>23</td>
</tr>
<tr>
<td>Common milkweed*</td>
<td>13</td>
</tr>
<tr>
<td>Corn spurry</td>
<td>5</td>
</tr>
<tr>
<td>Creeping yellowcress</td>
<td>5</td>
</tr>
<tr>
<td>Fleabane (Philadelphia)</td>
<td>8</td>
</tr>
<tr>
<td>Flower-of-an-hour</td>
<td>8</td>
</tr>
<tr>
<td>Hairy galinsoga</td>
<td>5</td>
</tr>
<tr>
<td>Horsetail*</td>
<td>5</td>
</tr>
<tr>
<td>Pigweed (redroot, smooth)</td>
<td>8</td>
</tr>
<tr>
<td>Ragweed (common)</td>
<td>23</td>
</tr>
<tr>
<td>Ragweed (giant)</td>
<td>8</td>
</tr>
<tr>
<td>Shepherd’s-purse</td>
<td>5</td>
</tr>
<tr>
<td>Smartweed (Lady’s-thumb, Pennsylvania)</td>
<td>5</td>
</tr>
<tr>
<td>Spiny amaranth</td>
<td>8</td>
</tr>
<tr>
<td>Wild mustard</td>
<td>8</td>
</tr>
<tr>
<td>Wild radish</td>
<td>8</td>
</tr>
<tr>
<td>Velvetleaf</td>
<td>23</td>
</tr>
<tr>
<td>Yellow nutsedgeΔ</td>
<td>8 to 15</td>
</tr>
</tbody>
</table>

* Suppression only.

Application Information:

Water Volume: Minimum 40 to 55 L per acre. Use the higher volume when there is a heavy crop canopy or weeds are at an advanced stage.

Nozzles and Pressure: Use 40 psi (275 kPa) if applying without drift reduction nozzles. Drift reduction nozzles may require higher pressures for proper performance. Select the nozzle and pressure combination that produces an ASABE medium droplets while maintaining good coverage of foliage.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Moisture is necessary to activate the herbicide in soil for effective weed control. Dry weather following applications may reduce effectiveness. Extremes in environmental conditions such as temperature, moisture, soil conditions, and cultural practices may affect activity.

Optimum activity is experienced between 12 to 24 °C when weeds are actively growing. Weeds may not be actively growing and as a result reduced activity will occur when temperatures are below 8 °C or above 27 °C.

Tank Mixes:

Herbicides:

In dry beans:
- Eptam 8E (1.72 to 2.12 L/acre) at the pre-emergence stage only. Requires incorporation – see Eptam page.

In field corn only:
- 2,4-D (label rates)
- Accent (label rates)
- Aatrex (label rates)
- Dicamba (label rates)
- Glyphosate in glyphosate tolerant corn only (label rates)

Insecticides: None registered. NOTE: The application of foliar organophosphate insecticides to treated crops can increase the risk of crop injury.

Fungicides: None registered.

Fertilizers: UAN or high grade ammonium sulfate (21-0-0) may be used if a tank mix partner requires it as an additive. Do not use liquid fertilizer as a spray carrier.

Note: The above mixes are those listed on the Permit label only. Gowan Canada supports the use of the following mixes that are not on the label:

- Dry Bean - glyphosate prior to ground crack.

Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.
Restrictions:

Rainfall: Activity of foliar applications may be reduced if rainfall or irrigation occurs within 4 hours. Pre-emergent surface applications will benefit from some rainfall but excessive rainfall (greater than 1 inch or 2.5 cm) shortly after application may result in injury, especially when seedling is shallow.

Re-Entry Interval: DO NOT enter treated fields for 12 hours.

Grazing: DO NOT graze or cut corn for livestock greenfeed within 30 days of the last application. Allow 30 days for sweet corn and 65 days for popcorn or grain corn from the last application to foliage and the harvesting of silage. Proso (crown) millet may be grazed immediately after treatment. DO NOT cut proso (crown) millet for hay within 37 days of application or feed straw within 50 days of application.

Pre-harvest Interval: DO NOT harvest dry beans within 30 days of post-emergent applications. DO NOT harvest proso (crown) millet within 50 days of application. There is no pre-harvest interval indicated for grain corn.

Re-cropping Interval: Delay seeding the following crops for the interval indicated:

- Dry common beans – no delay required
- Field corn - 1 month;
- cereals (wheat barley and oats) - 2 months;
- potatoes, peas forage legumes and soybeans - 1 year;
- canola and sunflowers - 2 years.

Aerial Application: DO NOT apply by air.

Storage: Store in a cool, dry place in original container.

Buffer Zones:

<table>
<thead>
<tr>
<th>Crop</th>
<th>Buffer Zones (metres(^\d)) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Proso (Crown) millet</td>
<td>10</td>
</tr>
<tr>
<td>Dry beans</td>
<td>10</td>
</tr>
<tr>
<td>Corn (sweet, pop)</td>
<td>15</td>
</tr>
<tr>
<td>Corn (field)</td>
<td>15</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:

Refer to Refer to ‘Method A’ in the general section on sprayer cleaning on page 15 to 16.

Hazard Rating:

\(\wedge\) Caution – Poison
\(\wedge\) Caution – Eye Irritant

For an explanation of the symbols used here see page 11.

Pinnacle SG

Company:
E. I. duPont Canada (PCP#22002)

Formulation:

*Pinnacle SG (PCP#29349): 50% thifensulfuron methyl as a water soluble granule.

Container size - 8 x 12 g water soluble pouches.

Crops and Staging:

Soybean - First fully expanded trifoliolate leaf to flower initiation. (*Tolerance best when applied up to 2nd trifoliolate stage*)

Weeds, Rates and Staging:

Apply up to 4 inches (10 cm) tall or wide:

*Pinnacle SG at 3.3 g per acre will control:
Lady’s-thumb
Redroot pigweed

*Pinnacle SG at 4.8 g per acre will control the weeds above plus:
Lamb’s-quarters
Velvetleaf (*one container treats 28.5 to 20 acres*).

Requires the addition of a non-ionic surfactant such as Agral 90, Agsurf II, or Citowett at 1 L per 1000 L of spray.
solution. Oil surfactant blends such as Assist at 0.4 to 0.8 L/acre, or Sure-Mix at 0.5 L per 100 L of spray solution may be used as adjuvants (check label for use rates). The addition of 28-0-0 liquid fertilizer at 4 L per 100 L of spray solution or 2.4 kg of 46-0-0 dry urea fertilizer may improve control of velvetleaf. Refer to the product label for complete mixing instructions.

A general guide to mixing can be found on page 14.

Application Information:
Water Volume: Minimum of 45 L per acre.
Nozzles and Pressure: Maximum 40 psi (275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE medium droplets.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Pinnacle applied to crops that have been under stress before application may result in crop injury. Stress conditions within 3 days after application may also result in crop injury.
Weeds under stress conditions at the time of application may not be adequately controlled.
Stress conditions are severe weather conditions, frost, low fertility, drought, water-saturated soils, and disease or insect damage.
Injury symptoms can be crop discoloration (yellowing, purpling or reddening of leaf veins), or stunting.

Tank Mixes:
Herbicides:
Assure II (0.2 L/acre) plus Sure-Mix*.
Basagran (0.71 or 0.91 L/acre) plus Assist adjuvant*.
Basagran Forté (0.71 or 0.91 L/acre)*.
Assure II (0.25 L/acre) plus Basagran Forté (0.71 or 0.91 L/acre) plus Sure-Mix adjuvant*.
* Refer to appropriate labels for Pinnacle and adjuvant rates of application.

Insecticides: None registered.
Fungicides: None registered.
Fertilizers: None registered.

Note: The above mixes are those listed on the Pinnacle label only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: If rainfall occurs soon after application control may be reduced. Several hours of dry weather are needed after application to allow uptake by the plants.
Re-entry: DO NOT enter treated fields for at least 12 hours.
Grazing: DO NOT graze or cut for feed.
Preharvest: Leave 60 days from application to harvest.
Re-cropping Interval: DO NOT plant any crop other than wheat or barley for 30 days after application.
Aerial Application: DO NOT apply by air.
Storage: Store in closed original container in a dry area away from food or feed.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground only*</td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td></td>
<td>Terrestrial habitat</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats. * Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy. Hand-held or backpack sprayers, inter-row hooded sprayers and spot treatments are exempt from buffer zone requirements. † Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:
Pinnacle can cause severe injury to sensitive crops at very low concentrations. Sprayers used to spray Pinnacle should be flushed out immediately after use. Refer to 'Method A' in the general section on sprayer cleaning on page 15 to 16.

Hazard Rating:

⚠️ Warning: Contains the allergen milk.

For an explanation of the symbols used here see page 11.
Company:
Dow AgroSciences (PCP#31303)

Formulation:
The Pixxaro package contains 2 components:
Pixxaro A (PCP# 31303): 16.2 g/L halauxifen and 250 g/L fluroxypyr present as ester and formulated as an emulsifiable concentrate.
Container size - 1 x 4.9 L.
Pixxaro B/Plus M Ester 600 (PCP# 29622): 600 g/L MCPA ester formulated as an emulsifiable concentrate.
Container size - 1 x 9.45 L.

Crops and Staging:
Wheat (spring, durum, winter) and barley:
3 leaf stage to just prior to emergence of the flag leaf.

Weeds and Staging:
Apply to actively growing weeds up to 10 cm high or wide unless otherwise specified:

Weeds Controlled:
Burdock (prior to 4 leaf)
Canada thistle (up to 30 cm)*
Chickweed††
Cleavers (1 to 9 whorl)
Cocklebur
Dandelion (rosettes up to 30 cm in diameter) *
Fleabane, Canada†
Flixweed
Hemp-nettle††
Kochia†
Lamb’s-quarters††
Marshelder (false ragweed)
Mustard (ball, wild)
Plantain, common
Prickly lettuce
Ragweed (common, giant)
Redroot pigweed††
Round-leaved mallow (up to 6 leaf)
Shepherd’s-purse (up to 20 cm)
Smartweed (green, lady’s-thumb)*
Sow-thistle, annual* (up to 4 leaf)
Stinkweed
Stork’s-bill††
Vetch
Volunteer alfalfa (up to 25 cm)
Volunteer canola††
Volunteer flax†
Wild buckwheat††
Wild radish
Wild sunflower (annual)

* Suppression only.
† Up to 15 cm in height.
†† 1 to 8 leaf stage.

Rates:
Pixxaro A: 125 mL per acre (one 4.9 L jug treats 40 acres).
Pixxaro B: 236 to 283 mL per acre. Use the 283 mL per acre rates for improved control of heavy infestations or larger redroot pigweed or smartweeds.

Application Information:
Water Volume:
Ground: Minimum 20 to 81 L per acre.
Aerial: Minimum 12 L per acre.
Nozzles and Pressure: Use 30 to 40 psi (200 to 275 kPa) if applying without drift reduction nozzles. Drift reduction nozzles may require higher pressures for proper performance. Select the nozzle and pressure combination that produces of ASABE coarse droplets while maintaining good coverage of foliage.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Weeds and crops must be actively growing. Weeds hardened off by cold weather or drought stress may not be adequately controlled or suppressed and re-growth may occur.

Tank Mixes:
Herbicides:
Spring wheat (including durum) and barley:
Fenoxaprop 120 EC (0.31 L/acre)
Liquid Achieve (0.2 L/acre plus adjuvant)
Puma Advance (0.41 L/acre)

Spring Wheat (including durum):
Clodinafop 240 EC (93 mL/acre plus adjuvant)
Everest 2.0 (14.5 to 29 mL/acre plus adjuvant)
Horizon NG (376 mL/acre)
Traxos (0.5 L/acre)

Insecticides: None registered.
Fungicides: None registered.
Fertilizers: None registered.
Note: The above mixes are those listed on the Pixxaro label only.
Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.

**Restrictions:**

**Rainfall:** Within 1 hour may reduce control.

**Re-Entry Interval:** DO NOT enter treated fields for 12 hours.

**Grazing:** DO NOT graze livestock within 7 days of application. DO NOT cut for silage or hay within 21 days of application.

**Pre-harvest Interval:** DO NOT harvest crops within 60 days of application.

**Re-cropping Interval:** Barley, canola, corn, flax, field peas, mustard (oriental, brown and yellow and oilseed quality (B. juncea) varieties), oats, soybean, spring wheat and sunflower may be seeded the first spring following application. Lentils may be grown the second season after application.

**Aerial Application:** May be applied by air.

**Storage:** Store over winter in a heated, dry place in original container.

### Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
<th>Aquatic Habitats of Depths</th>
<th>Terrestrial habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less than 1 m</td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td>Field sprayer</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Aerial (Fixed wing)</td>
<td></td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Aerial (Helicopter)</td>
<td></td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

### Sprayer Cleaning:

Refer to ‘Method A’ in the general section on sprayer cleaning on page 15 to 16. Check the cleanout requirements of pesticides mixed with this product. Additional cleanout measures may need to be integrated into those provided here.

### Hazard Rating:

**Pixxaro A:**

⚠️ Warning – Skin and Eye Irritant.

⚠️ Caution – Potential skin sensitizer.

**Pixxaro B:**

⚠️ Warning – Poison

For an explanation of the symbols used here see page 11.

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**Poast Ultra**

**Company:**

BASF Canada (PCP#24835)

**Formulation:**

450 g/L sethoxydim formulated as an emulsifiable concentrate.

Container size - 2 x 7.7 L

**Crops, Rates and Staging:**

Crops are tolerant at all growth stages. However, the Preharvest interval outlined in the “Restrictions;” section must be followed to avoid unacceptable residues of sethoxydim in harvested crops.

**To a maximum of 0.13 L per acre:**

Borage

**To a maximum rate of 0.19 L per acre:**

Chickpea

Herbicide Group 1 - sethoxydim

(Refer to page 45)
To a maximum rate of 0.23 L per acre:
Tame buckwheat

To a maximum rate of 0.26 L per acre:
Alsike clover**
Caraway
Cicer milkvetch**
Coriander
Dill
Safflower
Sainfoin**
Solin (low linolenic acid flax)
Sweet clover**

To a maximum rate of 0.45 L per acre:
Alfalfa
Alsike clover*
Canola
Chickling vetch
Cicer milkvetch*
Creeping red fescue (for seed only)
Dry beans (adzuki, kidney, lima, mung, pinto, white)
Dry field peas
Fababean
Fenugreek
Lentil
Lupin
Mustard
Potatoes
Sainfoin*
Soybeans
Sunflower
Sweet clover*

Weeds, Rates and Staging:
Optimum yield response occurs when weeds are controlled early.

<table>
<thead>
<tr>
<th>WEEDS AND STAGES</th>
<th>STAGING</th>
<th>RATE (L/ACRE)</th>
<th>ACRES TREATED PER 7.7 L CONTAINER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green or yellow foxtail, barnyard grass, volunteer corn, Persian darnel, proso millet, witchgrass, large crabgrass</td>
<td>1 to 6 leaf</td>
<td>0.13</td>
<td>60</td>
</tr>
<tr>
<td>Wild oats, volunteer wheat, oats and barley</td>
<td>1 to 6 leaf stage except for low rate (See footnote*)</td>
<td>0.13* or 0.19</td>
<td>60 or 40</td>
</tr>
<tr>
<td>Quackgrass suppression</td>
<td>1 to 3 leaf stage</td>
<td>0.19</td>
<td>40</td>
</tr>
<tr>
<td>Quackgrass (season long control)</td>
<td>1 to 3 leaf stage</td>
<td>0.45</td>
<td>17</td>
</tr>
<tr>
<td>Foxtail barley suppression</td>
<td>prior to tillering</td>
<td>0.45</td>
<td>17</td>
</tr>
</tbody>
</table>

* Use the low rate in canola, flax and peas only when
  • wild oat, volunteer wheat and volunteer barley are from 1 to 4 leaves (best results prior to tillering)
  • under ideal growing conditions (adequate moisture, good fertility and moderate temperatures (15 to 28°C). DO NOT apply under stress conditions.
  • with water volumes between 20 to 40 L per acre.

** Merge Adjuvant (sold separately): Must always be used with Poast Ultra. When Poast Ultra is applied alone use Merge at 0.5 L to 1.0 L per 100 L of total spray solution. When applying to quackgrass and/or foxtail barley use Merge at 1.0 L per 100 L of spray solution. See the tank mix section for Merge rates for tank mixing. Merge should be added at rates of 0.10 to 0.20 L per acre when applied by air.

Application Information:
Water Volume:
Ground: 20 to 40 L per acre
40 L to 81 L per acre if crop or weed growth is dense, and when spraying quackgrass.
Aerial: 10 to 20 L per acre

Nozzles and Pressure: Use 40 to 45 psi (275 to 300 kPa) with conventional 80o or 110o flat fan nozzles tilted forward at an angle of 45o. Low drift nozzles may require higher pressures for proper performance. Contact the herbicide manufacturer regarding the suitability of low drift nozzles for use with this product. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE medium droplets.

How it Works:
Refer to Table 2 on page 47.
Effects of Growing Conditions:
Most effective control is achieved when grasses are actively growing. Weeds stressed by drought, flooding, hot or prolonged cool temperatures (<15°C) and poor fertility are more difficult to control. Use the higher of the recommended rates for grasses stressed for less than 20 days. DO NOT apply to grasses stressed more than 20 days because of lack of moisture. Control may be reduced if temperatures are below 15°C. Subsequent tillering may occur under stress conditions or if fertility is low.

Tank Mixes:
**Herbicides:** The following tank mixes can be applied with 0.13 to 0.19 L/acre of **Poast Ultra**.

**Merge Adjuvant (sold separately):** Use at 0.75 to 1.0 L of Merge per 100 L of mixed spray solution for most mixes except when mixing with Pursuit use 1.0 L per 100 L of solution.

**In Flax:**
- Buctril M (0.4 L/acre)(including Solin).
- Logic M (0.5 L/acre)(including Solin).
- Lontrel 360 (0.23 to 0.34 L/acre).
- Lontrel 360 (0.23 to 0.34 L/acre) + MCPA Ester (0.28 to 0.38 L/acre - 600 g/L formulations).
- MCPA Ester (up to 0.38 L/acre - 600 g/L formulations).

The above tank mixes may reduce grass control, especially under adverse weather conditions.

**In Canola:**
- Lontrel 360 (0.17 to 0.34 L/acre).
- Muster (8 to 12 g/acre).
- Lontrel 360 (0.17 L/acre) + Muster (8 g/acre) + Merge (0.4 L/acre).

**In Liberty Link Canola only:**
- Poast Ultra (0.09 L/acre) + Liberty (1.08 L/acre).

**In Field Pea:**
- Poast Ultra (0.19 L/acre) plus Merge (0.4 L/acre) may be tank mixed with:
  - Pursuit (40 mL/acre) to control:
    - Chickweed
    - Cleavers
    - Hemp-nettle (peas only)
    - Redroot pigweed (light infestations only)
    - Smartweed
    - Stinkweed
    - Volunteer canola (non-CLEARFIELD varieties)
    - Wild buckwheat (light infestations only)
    - Wild mustard

The company does not provide guidelines for weed densities under light infestations. When in doubt, use the higher rate below or contact the manufacturer.

**Pursuit (85 mL/acre) for all weeds on the Pursuit label.**

Check label directions for mixing order and additional timing restrictions for broadleaf partners. Allow 4 days between application of Poast Ultra and application of herbicides other than those registered for tank mixing. Allow 5 days between application of Sencor and Poast Ultra. Allow 14 days for regrowth when applied in sequence with a grass control herbicide.

**Insecticides:** None registered.

**Fungicides:** None registered.

**Note:** The above mixes are those listed on the **Poast Ultra** label only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

**Restrictions:**

**Rainfall:** Within 1 hour of application may reduce control.

**Re-Entry:** DO NOT enter treated field for 12 hours.

**Grazing:** DO NOT graze the treated crop or cut for feed prior to crop maturity. Forage legumes may be cut after the specified Preharvest interval.

**PREHARVEST INTERVAL (DAYS)**

<table>
<thead>
<tr>
<th>CROPS</th>
<th>DAYS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forage legumes (excluding alfalfa)</td>
<td>30</td>
</tr>
<tr>
<td>Dry peas, fenugreek, flax</td>
<td>60</td>
</tr>
<tr>
<td>Lentil, chickpea</td>
<td>65</td>
</tr>
<tr>
<td>Canola, chickling vetch, alfalfa, borage</td>
<td>70</td>
</tr>
<tr>
<td>Mustard</td>
<td>76</td>
</tr>
<tr>
<td>Potato, dry bean, soybean, fababean, lupin</td>
<td>80</td>
</tr>
<tr>
<td>Buckwheat</td>
<td>85</td>
</tr>
<tr>
<td>Solin</td>
<td>86</td>
</tr>
<tr>
<td>Safflower</td>
<td>90</td>
</tr>
<tr>
<td>Sunflower</td>
<td>105</td>
</tr>
</tbody>
</table>

**Re-cropping:** DO NOT plant cereals or grass within 14 days of application.

**Aerial Application:** May be applied by air.

**Storage:** May be frozen.

**Buffer Zones:**

<table>
<thead>
<tr>
<th>Application method</th>
<th>Crops</th>
<th>Buffer Zones (metres)† Required for the Protection of: Aquatic Habitats of Depths</th>
<th>Terrestrial habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>Less than 1 m &amp; Greater than 1 m</td>
<td></td>
</tr>
<tr>
<td>Ground*</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Fixed wing airplane</td>
<td>Food or feed crops</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Shelter-belts</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Helicopter</td>
<td>Food or feed crops</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Shelter-belts</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance from downwind edge of spray boom and non-target area.
Sprayer Cleaning:
Refer to ‘Method B’ in the general section on sprayer cleaning on page 15 to 16. Empty and clean spray tank using this method if an oil film accumulates.

Hazard Rating:

\[\text{Caution – Poison}\]
\[\text{Caution – Eye and Skin Irritant}\]
For an explanation of the symbols used here see page 11.

Predicate

This product is a prepackaged tank mix of *Predicate Broadleaf* (equivalent to *Barricade SG* page 105), *Predicate Grass* (equivalent to *Varro* page 334), *Perimeter II* (see *Barricade II* page 105), and *NuFarm MCPA Ester 600* (page 237). Information listed is restricted to Crop, Weeds, Rates and Tank mixes. For other detailed restrictions and other general information on the component products see the product pages listed above.

Company:
E.I. DuPont Canada

Formulation:
The *Predicate* package contains the following components:
*Predicate Broadleaf* (PCP#31713): 25% thifensulfuron methyl and 25% tribenuron methyl formulated as a soluble granule. Container size - 486 g
*Predicate Grass* (PCP#31735): 10 g/L thiencarbazone-methyl formulated as a suspension concentrate. Container size – 8 L.
*Perimeter II* (PCP#30094): 333 g a.e./L formulated as an emulsifiable concentrate. Container size – 3.4 L.
*Nufarm MCPA Ester 600* (PCP#27803): 600 g a.e./L MCPA ester formulated as an emulsifiable concentrate. Container size - 7.6 L.

Crops and Staging:
Spring wheat (including durum):
Apply from the fully emerged 3 leaf to 6 leaf stage, with a maximum of three tillers, and before the first node can be felt in the stem. DO NOT apply beyond 35 days of emergence.

Winter wheat:
Spring application from the 3 tiller stage and before the first node can be felt in the stem.
DO NOT apply after the presence of the first node as crop injury may occur.

Rates
*Predicate Broadleaf*: 12 g/acre
*Predicate Grass*: 0.2 L/acre
*Perimeter II*: 85 mL/acre
*MCPA Ester 600*: 190 mL/acre
One case treats 40 acres

Weeds and Staging:
Weeds controlled by *Barricade II* and *Varro* plus:
Dandelion (spring and fall rosettes, up to 15 cm in diameter)
Scentless chamomile
Volunteer canola (all varieties) – 2 to 4 leaf
White cockle

See component products for more information on restrictions application details and handling. Use the most limiting restrictions across all components for the mix.
Company: Dow AgroSciences

Formulation:
The Prestige XC package has 2 components:
- **Prestige XC A (PCP#29462)**: 333 g a.e./L fluroxypyr
  Container size - 3.3 L or in bulk package 4 x (2 x 9.9 L)
- **Prestige XC B (PCP#29465)**: 50 g/L clopyralid and 280 g/L MCPA ester.
  Container size - 2 x 8.0 L or bulk package 4 x 96 liter.
All of the above components are formulated as an emulsifiable concentrates.

Crops and Staging:
Cereals:
Spring wheat (including durum), winter wheat (apply in the spring), barley, oat and canaryseed*

Forage Grasses* grown for seed production:
Seedling and established stands - 4 leaf until the emergence of the flag leaf.

Bromeagrass (meadow, smooth) Wheatgrass (crested, Fescue (creeping red, tall) Intermediate)
Timothy

* NOTE: Since these uses are registered under the User Requested Minor Use Label Expansion (URMULE) program, the manufacturer assumes no responsibility for herbicide performance. Users of this product on forage grasses and canary seed do so at their own risk.

Weeds, Rates and Staging:
Unless otherwise stated, the following weeds will be controlled if sprayed in the 2 to 4 leaf stage.

**Prestige XC A at 0.13 L per acre; Prestige XC B at 0.6 L per acre (one case treats 27 acres or bulk treat 640 acres) controls:**
- Burdock
- Canada thistle
  (light infestations)
- Cleavers (1-8 whorls)
- Field horsetail†
- Flixweed (spring seedlings only)
- Kochia
- Lamb’s-quarters
- Plantain†
- Prickly lettuce
- Ragweeds
- Shepherd’s-purse
- Stinkweed
- Stork’s-bill (1-8 leaf)
- Vetch
- Volunteer flax (1-12 cm)
- Volunteer sunflower
- Wild annual sunflower
- Wild buckwheat (1-8 leaf)
- Wild mustard
- Wild radish

The 480 acre per bulk container rate of Prestige XC or the 20 acre per case rate (Prestige XC A at 0.17 L per acre; Prestige XC B at 0.8 L per acre) controls the above weeds plus:
- Annual sow-thistle
- Canada thistle*
  (moderate to heavy infestations)
- Chickweed (up to 6 cm)
- Common groundsel
- Dandelion**
- Hemp-nettle (2-6 leaf stage)
- Perennial sow-thistle*
- Redroot pigweed
- Round-leaved mallow (1 to 6 leaf)
- Russian pigweed
- Scentless chamomile
- Smartweed
- Tartary buckwheat
- Volunteer canola

* Spray when 4 to 6 inches (10 to 15 cm) high. Season long control, with some regrowth in the fall.
** Spring rosettes only.
† Top growth control only.
Application Information:
Water Volume:
Ground: 20 to 40 L per acre.
Aerial: 12 to 20 L per acre. Consult label for buffer zones.
Nozzles and Pressure: Maximum 30 to 40 psi (200 to 275 kPa) with conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use nozzles and pressure designed to deliver proper coverage with ASABE coarse droplets. Tilt nozzles forward at a 45° angle to improve coverage of vertical targets.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
The activity of the Prestige is influenced by weather conditions. The temperature range for optimum activity is 12°C to 24°C. Reduced activity will occur when temperatures are below 8°C or above 27°C. Frost 3 days before or after application may reduce weed control and crop tolerance. Weed control may be reduced during stress conditions (drought or heat stress) or if heavy infestations exist.

Tank Mixes:
Herbicides:
In spring wheat (including durum) and barley:
Liquid Achieve (0.2 L/acre) plus Turbocharge adjuvant.
Assert (0.53 to 0.65 L/acre) plus acidifier.
Insecticides: None registered.
Fungicides: None registered.
Fertilizers: None registered.
Note: The above mixes are those listed on the Prestige XC label only.
Adding ingredients in the correct order is critical for optimum performance.
Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Within 6 hours of post-emergent application may result in reduced weed control.
Re-entry: DO NOT enter treated fields for at least 12 hours.
Grazing: DO NOT cut or graze treated fields of wheat, barley or canaryseed for 7 days after application. DO NOT cut treated forage grass fields for hay or forage. DO NOT graze treated forage grass fields.
Preharvest Interval: DO NOT harvest crop within 60 days of application.

Re-cropping: Wheat, oat, barley, rye (not under-seeded to forage legumes, clover or alfalfa), flax, canola, field pea* and mustard may be seeded the season following application.
*NOTE: DO NOT seed to field pea for at least 10 months following treatment. Very dry soil conditions following application can result in a risk of injury to field pea grown in rotation. If severe drought conditions are experienced during the months of June to August inclusive in the year of application delay seeding field pea an additional 12 months (22 months following application). Contact your local Dow AgroSciences representative or retailer for more information before seeding field peas following drought conditions in the previous year.
DO NOT seed legume forages or crops other than those listed above until the second season following application.

Aerial Application: May be applied by air.
Storage: Store product in original containers in a secure, dry, heated area. If the product is frozen, bring to room temperature and agitate before use.

Buffer Zones:
<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground only*</td>
<td>1</td>
</tr>
<tr>
<td>Fixed Wing aircraft</td>
<td>4</td>
</tr>
<tr>
<td>Helicopter</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones for ground applications can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:
Refer to ‘Method C’ in the general section on sprayer cleaning on page 15 to 16.

Hazard Rating:

Danger – Poison.

Warning - Eye and Skin Irritant
Potential Skin Sensitizer

For an explanation of the symbols used here see page 11.
Primextra II Magnum

Company:
Syngenta Canada (PCP#25730)

Formulation:
400 g/L of s-metolachlor + 320 g/L of atrazine formulated as a liquid.
Container size - 2 x 10 L.

Crops and Staging:
Corn - Preplant incorporated (PPI) or Pre-emergence if irrigated within 10 days of application.

Weeds and Staging:
Apply prior to the emergence of weeds. Weeds that have emerged prior to application will not be controlled.

American nightshade  Purslane
Barnyard grass  Ragweed
Buckwheat  Redroot pigweed
Eastern black nightshade  Smartweed (lady’s-thumb)
Foxtail (green, yellow)  Wild mustard
Lamb’s-quarters  Witchgrass
Prostrate pigweed  Yellow nutsedge*

* Herbicide must be incorporated for best control.

Rates:

<table>
<thead>
<tr>
<th>WEED POPULATIONS</th>
<th>RATE (L/acre)</th>
<th>ACRES TREATED PER 14 L CONTAINER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light infestations</td>
<td>1.2</td>
<td>11.7</td>
</tr>
<tr>
<td>Medium infestations</td>
<td>1.4</td>
<td>10</td>
</tr>
<tr>
<td>Heavy infestations</td>
<td>1.6</td>
<td>8.8</td>
</tr>
</tbody>
</table>

DO NOT apply to soils with less than 1% or more than 10% organic matter.

Application Information:
Water Volume: 61 L per acre
Pressure: 30 to 45 psi (200 to 300 kPa).
Nozzles: Flat fan with 50-mesh nozzle screens.

Incorporation:
Incorporate using S-tine or C-tine cultivators or tandem disk. DO NOT incorporate deeper than 4 inches (10 cm).
To ensure that the product remains in the top 2 inches (5 cm) of soil, apply to a firm seedbed free of large clods or lumps. If using tandem disks, set disks to work the soil at a depth of 4 inches (10 cm) and operate at a speed of 4 mph (6 km/hr). If using an S-tine cultivator, set the implement to work the soil to a depth of 4 inches (10 cm) and operate at a speed of 6 mph (10 km/hr).

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Extended periods of dry soil conditions may result in reduced weed control. Moderate rainfall after application will enhance activity. Heavy rainfall following application of Primextra II Magnum may dilute the metolachlor deeper than 2 inches (5 cm) and result in reduced weed control, particularly on light textured soils.

Tank Mixes:
Herbicides: None registered.
Insecticides: None registered.
Fertilizers: May be tank mixed with liquid fertilizer for preplant incorporated applications. Conduct a compatibility test by performing a jar test prior to mixing the products in the tank. May be impregnated onto dry bulk fertilizers (except nitrate or superphosphate fertilizers or limestone).

Note: The above mixes are those listed on the Primextra label only.
Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.
Restrictions:

Rainfall: Moderate rainfall shortly after application will enhance activity. Heavy rainfall reduces weed control by leaching the chemical out of the top few centimeters of soil. Inadequate rainfall after application (within 10 days) will cause reduced weed control.

Re-entry: DO NOT re-enter treatment area within 12 hours of application.

Grazing: DO NOT graze or cut corn for feed before ear emergence.

Re-cropping: This product contains Atrazine. All crops except corn and triazine-tolerant canola may be affected the year following the use of Atrazine. Other more sensitive crops may be affected two or more growing seasons after application.

Aerial Application: DO NOT apply by air.

Storage: Store in a dry place.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres*) Required for the Protection of:</th>
<th>(metres†) Aqua</th>
<th>Terrestrial habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground only*</td>
<td>29</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

Sprayer Cleaning:

No specific cleaning procedures are indicated on the label. Based on products with similar chemistry, 'Method B' found in the general sprayer cleaning section on page 15 to 16 or a commercial spray sprayer cleaning product, may provide adequate cleaning. Contact the manufacturer for more information.

Hazard Ratings

- Caution Poison
- Caution – Eye Irritant
- Potential Skin Sensitizer

For an explanation of the symbols used here see page 11.

Company:

E. I. duPont Canada (PCP#30057)

Formulation:

25% rimsulfuron formulated as a water soluble granule. Container size - 480 g.

Crops and Staging:

Irrigated potato* prior to flower initiation.

Potato tolerance differs by variety. Limit first use to a small area of each variety prior to widespread adoption in the field. Delay cultivation for 7 to 10 days after application.

* NOTE - Since applications to irrigated potato in western Canada has been registered under the User Requested Minor Use program, the manufacturer assumes no responsibility for herbicide performance. Application to irrigated potato in western Canada is at the risk of the user.

Herbicide Group

2 - rimsulfuron

(Refer to page 45)

Weeds and Staging:

<table>
<thead>
<tr>
<th>WEED</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barnyard grass</td>
<td>1 to 6 leaf stage, maximum 2 tillers</td>
</tr>
<tr>
<td>Green foxtail</td>
<td></td>
</tr>
<tr>
<td>Yellow foxtail</td>
<td></td>
</tr>
<tr>
<td>Witchgrass</td>
<td></td>
</tr>
<tr>
<td>Quackgrass</td>
<td>3 to 6 leaf stage (less than 10 inches or 25 cm leaf extended).</td>
</tr>
<tr>
<td>Redroot pigweed</td>
<td>4 to 6 leaf stage (less than 4 inches or 10 cm tall or across).</td>
</tr>
<tr>
<td>Lamb’s-quarters</td>
<td></td>
</tr>
</tbody>
</table>

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

DO NOT mix or load this product within 30 m of any sensitive aquatic habitats.
Rates:
24 g per acre (one package treats 20 acres).
Add a recommended non-ionic surfactant such as Citowett Plus, Agsurf II, or Agral 90 at 0.2 L per 100 L spray solution.
Make only one application per growing season.
Refer to the product label for complete mixing instructions for this product and its mixes.
A general guide to mixing can be found on page 14.

Application Information:
Water Volume: Minimum 40 L per acre.
Nozzles and Pressure: 25 to 40 psi (175 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE medium droplets. Use a 50 mesh or coarser screen and filter system.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Apply when the temperature 24 hours before and after application is between 5oC and 28oC. Temperatures beyond this range increase the potential for crop injury. Rapid fluctuations in temperature will stress the crop (greater than a 20°C difference within 24 to 36 hours). Allow 48 to 72 hours for the crop to acclimatize before spraying if severe temperature fluctuations occur. Crop injury may result if applications are made when potatoes are stressed by abnormally hot, humid, or cold weather conditions, frost, low fertility, drought, water saturated soil, compacted soil, previous pesticide applications, disease or insect damage. If potatoes have been injured by frost, wait 48 to 72 hours after normal growing conditions have resumed before applying. Warm, moist conditions after application promote good weed control while cool and/or dry conditions may reduce or delay activity. Weeds hardened off by cold weather or drought stress may not be controlled.

Tank Mixes:
None registered.

Restrictions:
Rainfall: Within 2 to 4 hours may reduce control.
Re-entry: DO NOT enter treated fields for at least 12 hours.
Preharvest: Leave 30 days from application to harvest.
Grazing: DO NOT graze the treated crop or cut for hay.
Re-cropping: Spring barley, soybean, white bean, red clover, sorghum, potato and field corn may be planted the year after application. Winter wheat may be planted 4 months after application. For all other crops, a field bioassay is recommended before planting.
Aerial application: DO NOT apply by air.
Storage: May be frozen.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td>Ground only*</td>
<td>Less than 1 m</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.
DO NOT apply in areas where surface water from the treated area can run off to adjacent cropland, streams, irrigation water or wells.

Sprayer Cleaning:
Refer to ‘Method A’ found in the general sprayer cleaning section on page 15 to 16. Check the label or contact the manufacturer for more specific sprayer cleaning information.

Hazard Rating:

⚠️ Warning – Eye Irritant

Warning – Contains the allergen sodium sulfite.

For an explanation of the symbols used here see page 11.
**Pulsar**

**Company:**
Syngenta Canada

**Formulation:**
86.9 g/L dicamba and 113.3 g/L fluroxypyr formulated as an emulsifiable concentrate.
Container size - 2 x 9.82 L, 78.6 L

**Crops and Staging:**
Barley and spring wheat (including durum) from the 2 to 5 leaf stage.
When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

**Weeds, Rates and Staging:**
Unless otherwise indicated apply when weeds are at the 2 to 3 leaf stage and rosettes are less than 2 inches (5 cm) across.

At 246 mL per acre (80 acre per case) **Pulsar** controls:
- Cleavers
- Kochia (up to 9-leaf)

At 371 mL/acre (53 acre per case) **Pulsar** controls the weeds above plus:
- Lamb’s-quarters*
- Redroot pigweed*
- Russian thistle
- Suppression only

**Application Information:**
**Water Volume:** Minimum 44.5 L per acre.

**Nozzles and Pressure:** For conventional flat fan nozzles use a maximum pressure between 40 and 45 PSI (275 to 310 kPa) for the preformulated product. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with **ASABE medium droplets.**

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**
DO NOT apply to crops that are stressed (frost, low fertility, drought or flooding, disease or insect damage) as crop injury or reduced weed control may result.

**Tank Mixes:**
**Herbicides:**
- Barley, Spring wheat, and durum only:
  - MCPA LV600 ester (0.23 L/acre)
- Spring wheat, and durum:
  - Horizon NG (376 mL/acre)
  - Horizon NG (376 mL/acre) plus MCPA LV600 ester (0.23 L/acre)
- Traxos (label rate)
- Traxos (label rate) + MCPA Ester (rates above)
**Fertilizers:** None registered

Note: The above mixes are those listed on the **Pulsar** label only.
Syngenta also supports the following mixes that are not on the **Pulsar** label. Apply mixes according to the most restrictive use limitations for either product:

**Herbicides:**
- 2,4-D Ester, 2,4-D Ester + Sierra 2.0, Express SG, Refine SG, Sierra 2.0.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

**Restrictions:**
**Rainfall:** Within 1 hour may reduce control.
**Re-Entry:** DO NOT enter treated fields for at least 12 hours.
**Preharvest:** Leave 60 days between treatment and harvest.
**Grazing:** Treated crops may be grazed, or cut for hay or silage after 7 days when used alone, or a minimum of 12 days when mixed or longer if the intervals are longer for the tank mix partner.
Re-cropping: Wheat, barley, oats, rye, forage grasses, flax, canola, mustard, lentils and peas may be grown the following season. There are no recropping restrictions the second year after application.

Aerial Application: DO NOT apply by air.

Storage: May be frozen. If frozen, bring to room temperature and agitate before use. This product is combustible. DO NOT store near heat or open flame.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†)</th>
<th>Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground only*</td>
<td>15</td>
<td>Aquatic habitat</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Terrestrial habitat</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Legumes are particularly sensitive to Pulsar.

Handheld or backpack applications do not require a buffer.

Sprayer Cleaning:
Refer to ‘Method B’ in the general section on sprayer cleaning on page 15 to 16.

Hazard Rating:

- Danger – Poison
- Warning – Eye Irritant
- Caution – Skin Irritant.

For an explanation of the symbols used here see page 11.

Company:
Manufactured by Productserra for sale by Great Northern Growers (Clever - PCP#31365)
Univar Canada (Masterline Quinclorac - PCP#31753)

Formulation:
75% percent quinclorac formulated as a dry flowable.
Container size - 1 kg bags.

Crops and Staging:
Spring wheat (including durum) - 1 to 5 leaf.
Canola - 2 to 6 leaf
Mustard (brown, oriental) - 2 to 6 leaf
When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

Note: Import tolerances (Maximum Residue Limits) for quinclorac residues in canola and mustard have yet to be established by certain importing countries. Producers should check with their commodity buyer before application.

Weeds, Rates and Staging:
Apply Quinclorac at 55 to 67* g per acre (18 to 15 acres per case) plus Merge adjuvant (purchased separately) at 1 L per 100 L of spray solution to control:

- Grasses:
  Barnyard grass (1 to 5 leaves)
  Green foxtail* (1 to 5 leaves, up to 2 tillers)
- Broadleaves:
  Cleavers (1 to 3 whorls)
  Volunteer flax (1 to 8 cm)
  Sow-thistle (annual and perennial)**

* Use the high rate for heavy infestations of green foxtail only. For clarification of what constitutes a heavy infestation contact the manufacturer.
** Suppression only.

Herbicide Group
4 – quinclorac (broadleaves)
26 – quinclorac (grasses)
(Refer to page 45)
DO NOT apply products that contain quinclorac more than once every two years.

Early treatment of weeds is important to maximize crop yield potential by eliminating early weed competition. Refer to broadleaf tank mix partner for additional timing restrictions.

**Application Information:**

**Water Volume:** Minimum 45 L per acre.

**Nozzles & Pressure:** 40 to 60 psi (275 to 425 kPa) when using standard flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with a minimum of drift. Flat fan nozzles may be tilted forward 45 degrees to improve coverage on vertical surfaces (i.e. grasses). Use a 50 mesh or coarser screen and filter system.

**How it Works:**

Refer to Table 2 on page 47.

**Effects of Growing Conditions:**

DO NOT apply to crop that is under stress from conditions such as frost, hail, flooding, drought or extremes in temperature. Cool weather may delay weed control and if prolonged may result in poor weed control.

**Tank Mixes:**

**Herbicides:** When mixing with broadleaf partners a slight reduction in green foxtail control may result. If spraying for green foxtail, use the high rate of Quinclorac.

In spring wheat (including durum) only:

- 2,4-D amine or ester (160 to 212 g ae/acre)
- Buctril M (0.40 L/acre)
- MCPA amine or ester (0.34 to 0.45 L/acre - 500 g/L formulations)

Add Merge adjuvant at 1 L per 100 L spray solution for all tank mixes. Refer to individual product labels for application details such as staging and varietal restrictions.

**Insecticides:** None registered.

**Fungicides:** None registered.

**Fertilizers:** None registered.

Allow 4 days between the application of Quinclorac and any other chemical not listed as a tank mix.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

**Restrictions:**

**Rainfall:** Within 6 hours may reduce control.

**Re-Entry:** DO NOT enter treated fields for 12 hours after application.

**Grazing:** DO NOT graze or cut for feed within 77 days of application.

**Preharvest:** DO NOT harvest wheat within 77 days of application. DO NOT harvest canola or mustard within 60 days of application.

**Recropping:** In case of crop failure, only barley or spring wheat (including durum) may be reseeded the same year. Barley, canola, field peas, sunflowers and wheat may be grown the year after application. Flax and lentils may be grown the second year after application. On low organic matter soils or under dry conditions, flax and lentils should not be grown until the third year after application. DO NOT use Quinclorac on land where potatoes or vegetables are grown.

**Aerial Application:** DO NOT apply by air.

**Storage:** May be frozen. Should product freeze, warm to room temperature before using.

**Buffer Zones:** DO NOT apply within 10 metres of aquatic habitats. Avoid drift onto terrestrial habitats. See page 36 for a description of these habitats.

**Sprayer Cleaning:**

Refer to ‘Method A’ in the general section on sprayer cleaning on page 15 to 16.

**Hazard Rating:**

⚠️ Caution – Poison

⚠️ Caution – Eye and Skin Irritant

For an explanation of the symbols used here see page 11.
**Quizalofop**

**Company:**
E. I. duPont Canada *(Assure II - PCP#25462)*
Gowan Canada *(Yuma GL - PCP#30100)*

**Formulation:**
96 g/L quizalofop-P-ethyl formulated as an emulsifiable concentrate.

**Container size:**
- Assure II - 8 L Assure II + 8 L SureMix adjuvant, or 500 L Assure II + 500 L SureMix adjuvant.
- Yuma GL - 8 L Yuma GL + 8 L XA Oil Concentrate.

**Crops and Staging:**
**Annual Crops:** No leaf stage restrictions, but do not apply beyond Preharvest intervals listed in the table:

<table>
<thead>
<tr>
<th>CROP</th>
<th>PREHARVEST INTERVAL (DAYS)</th>
<th>MAX LEAF STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camelina*</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>Canola</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>Chickpea</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Dry Edible Bean*†</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Ethiopian Mustard (B. carinata)*</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>Faba Bean*</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Flax, or Solin (low linolenic acid flax)</td>
<td>82</td>
<td></td>
</tr>
<tr>
<td>Hemp (for fibre, seed, or oil)*††</td>
<td>73</td>
<td>6 leaf (up to 25 cm)</td>
</tr>
<tr>
<td>Lentil</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Oriental mustard (condiment types and oilseed quality types B. junca)*</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>Pea (field and processing)</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Soybean</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Sunflower*††</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Yellow and Brown Mustard††</td>
<td>64</td>
<td></td>
</tr>
</tbody>
</table>

† **NOTE:** While *Quizalofop* has been registered for use on all dry field bean types not all types have been tested for tolerance. When using *Quizalofop* on a new dry bean type or variety for the first time evaluate tolerance on a small area first before applying large acreages and check with seed supplier for variety sensitivity.

†† *Assure II* only.

**Forage Crops (seed production only):**
**Seedling or Establish:** Alfalfa, alsike clover*, red clover*, creeping red fescue.
**Seedling only:** Bird’s-foot trefoil*, white clover*, sweet clover*, and saïnfoin*.

* **NOTE** - Since applications to these crops have been registered under the User Requested Minor Use program, the manufacturer assumes no responsibility for herbicide performance. Application to these crops is at the risk of the user.

When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

**Weeds, Rates and Staging:**
Apply *Quizalofop* according to weed stage below to the maximum rates of 0.3 L per acre for all crops except Ethiopian mustard (*B. carinata*) where the maximum rate is 0.2 L per acre.

Add one of the following registered adjuvants to the spray tank when applying quizalofop:
- **SureMix**, **Merge** or **Liberate** (0.5 L per 100 L of spray solution)
- **LI700** (0.25 to 0.5 L per 100 L of spray solution).
- **XA Oil Concentrate** (0.5 to 1.0 L per 100 L of spray solution)**

Use the higher rate of **XA Oil Concentrate** when wild oats or quackgrass are present in the field or when growing conditions are poor.

**** Use **XA Oil Concentrate** with **Yuma GL** only.

**Herbicide Group 1 - quizalofop**
*Refer to page 45*
**Weed Control**

<table>
<thead>
<tr>
<th>Weed</th>
<th>Stage</th>
<th>Rate L/Acre</th>
<th>Rate Acres PER 8 L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green foxtail</td>
<td>2 leaf to early tillering</td>
<td>0.15</td>
<td>54</td>
</tr>
<tr>
<td>Volunteer wheat, barley &amp; oat*</td>
<td>2 leaf to early tillering</td>
<td>0.15</td>
<td>54</td>
</tr>
<tr>
<td>Volunteer corn</td>
<td>2 to 6 leaf stage</td>
<td>0.15</td>
<td>54</td>
</tr>
<tr>
<td>Wild oat*</td>
<td>up to 2 tillers</td>
<td>0.20</td>
<td>40</td>
</tr>
<tr>
<td>Barnyard grass, yellow foxtail, proso millet, old witchgrass</td>
<td>2 leaf to early tillering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quack grass suppression</td>
<td>2 to 6 leaf stage</td>
<td>0.20</td>
<td>40</td>
</tr>
<tr>
<td>Foxtail barley†</td>
<td>3 to 4 leaf max 3 tillers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Downy and Japanese brome††</td>
<td>2 to 5 leaf stage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quack grass season long control</td>
<td>2 to 6 leaf stage††</td>
<td>0.30</td>
<td>26</td>
</tr>
</tbody>
</table>

* Best results are likely to occur if applications are made before tillering begins. Apply at the 2 to 3 leaf stage for optimum control. Optimum weed control and yield response occurs when weeds are removed before tillering.

† Control with Assure II only and suppression with Yuma GL.

†† Control with Assure II only.

Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

**Application Information:**

**Water Volume:**

- **Ground:** Minimum 40 L per acre. Up to 162 L per acre of water may be used under heavy populations to improve coverage.

- **Aerial:** Minimum 10 L per acre to a maximum of 20 L per acre.

**Nozzles and Pressure:** 30 to 40 psi (210 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE medium droplets. Use a 50 mesh or coarser screen and filter system.

**How it Works:**

Refer to Table 2 on page 47.

**Effects of Growing Conditions:**

Crop injury may occur if crops are stressed because of drought or flooding. Less than acceptable weed control may be expected if weeds are under stress because of drought, flooding or cool weather.

**Tank Mixes:**

**Herbicides:**

- **In Canola:** Muster (8 to 12 g/acre).
- **In Dry Bean (Pinto, Pink, Great Northern and Small Red):** Basagran (label rates with Quizalofop at 0.25 L/acre plus SureMix adjuvant)
- **In Oriental Mustard (B. juncea condiment and oilseed):** Quizalofop (0.15 to 2.0 L/acre) plus Muster (8 g/acre) plus SureMix adjuvant. DO NOT use on yellow mustard as injury will result.
- **In Soybean:**
  - Pinnacle (2.2 to 3.3 g/acre).
  - Quizalofop (0.25 L/acre) plus Pinnacle (2.2 to 3.3 g/acre) plus Basagran Forte (0.71 to 0.91 L/acre) plus SureMix.
- **In Tribenuron Tolerant Sunflowers:** Express SG (6 g/acre) plus SureMix or Merge.
- **In Established creeping red fescue for seed:** Quizalofop at 0.2 to 0.3 L/acre may be tank mixed with Ally (3 g/acre). Allow 24 hours after application before applying a broadleaf herbicide. If the broadleaf herbicide is applied first, wait 7 days before application of Quizalofop.

**Insecticides:** None registered.

**Fungicides:** None registered.

**Fertilizers:** None registered.

**Note:** The above mixes are those listed on the Quizalofop label only.

**Quizalofop manufacturers may also support mixes with pesticides that are not on the quizalofop labels. Check with each manufacturer for the products they support. Mixes must be applied according to the most restrictive use limitations for all products added to the tank.**

**Herbicides:** Ares, Eclipse*, Glyphosate (glyphosate tolerant canola and soybean only), Liberty, Lontrel*, Lontrel+Muster*, Odyssey, Pursuit, Solo, Viper ADV.

*Assure II only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

**Restrictions:**

- **Rainfall:** Within 1 hour of application may reduce control.
- **Re-Entry Interval:** 4 days for Camelina and 12 hours for all other crops.
- **Grazing:** DO NOT graze treated crops or cut for feed in the year of treatment.
- **Preharvest Interval:** See ‘Crops and Staging’ chart above.
**Reclaim**

**Company:** Dow AgroSciences

**Formulation:**

*Reclaim* has two components:

- **Reclaim A (PCP#29751):** 52.5% aminopyralid + 9.45% metsulfuron methyl formulated as a water dispersible granule. Container size - 1.84 kg.
- **Reclaim B (PCP#29750):** 564 g/L 2,4-D Ester formulated as an emulsifiable concentrate. Container size - 2 x 8 L.

*NOTE: Limited availability through selected retail outlets.*

**Crops and Staging:**

Rangeland and pastures - Apply in spring or early summer.

**Weeds, Rates and Staging:**

Apply when weeds are young and actively growing in the vegetative stage.

- **Reclaim A:** Apply at 92 g per acre.
- **Reclaim B:** Apply at 0.8 L per acre.

One case treats 20 acres.

**Weeds Controlled:**

The following broadleaf weeds, invasive plants and shrubs will be controlled for 24 months after application.

- Canada Thistle
- Prairie sage
- Dandelion
- Wild Rose
- Wolf willow (Silver-berry)
- Shrubby cinquefoil
- Buckbrush (western snow-berry)
- Pasture sage (fringed sage)

**Herbicide Group**

- 2 - metsulfuron
- 4 - aminopyralid & 2,4-D

*(Refer to page 45)*

**Sprayer Cleaning:**

Cleanout is recommended but no specific cleaning procedures are indicated on the label. Based on products with similar chemistry, ‘Method B’ found in the general sprayer cleaning section on page 15 to 16 or a commercial spray sprayer cleaning product, may provide adequate cleaning. Contact the manufacturer for more information.

**Hazard Rating:**

- **Danger – Corrosive to eyes**
- **Skin irritant, Potential skin sensitizer**

For an explanation of the symbols used here see page 11.

**Buffer Zones:**

<table>
<thead>
<tr>
<th>Rates (L/acre)</th>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
<th>Aquatic Habitats of Depths</th>
<th>Terrestrial habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Less than 1 m</td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td>All rates</td>
<td>Ground *</td>
<td>1</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Up to 0.15</td>
<td>Winged aircraft</td>
<td>0</td>
<td></td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>Helicopter</td>
<td>0</td>
<td></td>
<td>55</td>
</tr>
<tr>
<td>Up to 0.20</td>
<td>Winged aircraft</td>
<td>0</td>
<td></td>
<td>85</td>
</tr>
<tr>
<td></td>
<td>Helicopter</td>
<td>0</td>
<td></td>
<td>70</td>
</tr>
<tr>
<td>Up to 0.30</td>
<td>Winged aircraft</td>
<td>1</td>
<td></td>
<td>125</td>
</tr>
<tr>
<td></td>
<td>Helicopter</td>
<td>1</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones for ground applications can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.
Application Information:

Water Volume:

*Ground application*: 45 L per acre minimum. For better coverage apply at 80 L per acre.

*Aerial application*: 20 L per acre minimum

Nozzles and Pressure: Use a combination of application equipment and pressures that will apply *ASABE coarse* droplets in a uniform pattern. Drift of even small amounts of *Reclaim* into sensitive plants or areas where sensitive crops may be grown can cause injury. DO NOT apply under conditions prone to drift (i.e. high winds, dead calm, or temperature inversions).

How it Works:

Refer to Table 2 on page 47.

Effects of Growing Conditions:

Application should be avoided when pasture and targeted weeds are under stress of drought, excess moisture, extreme heat or cold or other environmental stresses. Target weeds must be actively growing. Avoid applications when temperatures exceed 28°C.

Tank Mixes:

None registered

Restrictions:

Rainfall: No rainfast period is specified on the label. Contact manufacturer for more information.

Re-entry: DO NOT re-enter treated areas for 12 hours.

Grazing: DO NOT allow lactating dairy animals to graze treated areas within 7 days of application. Withdraw meat animals from treated areas and feed untreated feed for at least 3 days before slaughter. DO NOT harvest forage or cut hay within 30 days of application.

Re-cropping: DO NOT apply to pastures where legumes are an essential component. DO NOT break up treated pasture and plant to sensitive broadleaf crops for at least 3 years after application.

Aerial Application: May be applied by air.

Storage: Store product in original, labeled containers in a secure, dry, cool area. DO NOT freeze.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†)</th>
<th>Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Aquatic habitat</td>
</tr>
<tr>
<td>Ground*</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Fixed wing airplane</td>
<td>80 to 175**</td>
<td>250 to 750**</td>
</tr>
<tr>
<td>Helicopter</td>
<td>70 to 150**</td>
<td>175 to 650**</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

** Distance varies depending on spray droplet size. Consult the *Reclaim* label to determine buffer zone size when applying by air.

† Distance is measured from the downwind edge of the boom to sensitive areas.

DO NOT apply this product directly to any water body or mix or load near water or wells. DO NOT apply when heavy rains are forecast or on moderate to steep slopes toward sensitive areas or to light soils with shallow water table. Contact the provincial environment department for permits to apply near water.

Sprayer Cleaning:

Refer to ‘Method A’ found in the general sprayer cleaning section on page 15 to 16 or a commercial spray sprayer cleaning product such as *All Clear* or *Clean Out* spray cleaner. The inclusion of detergent in ‘Method B’ may provide improved cleaning. Contact the manufacturer for more information.

Hazard Rating:

⚠️ Warning – Poison

For an explanation of the symbols used here see page 11.
Company:  
Syngenta Canada (PCP#24779)

Formulation:  
240 g/L fomesafen formulated as a solution.  
Container size - 10 L.

Crops and Staging:  
Soybeans and dry beans* in the 1 to 2 trifoliate leaf stage.  
DO NOT use before the 1st trifoliate leaf stage or increased  
risk of crop injury may result. For use in the Red River  
Valley of Manitoba only.  
*NOTE - Since applications to beans in the Red River Valley  
has been registered under the User Requested Minor Use pro-  
gram, the manufacturer assumes no responsibility for herbicide  
performance. Application to beans is at the risk of the user.

Weeds and Staging:  
Broadleaf weeds controlled by Basagran at the 0.71 L per  
acre rate plus improved control of the following weeds up  
to the 4-leaf stage:  
Cocklebur  
Eastern black nightshade  
Lady’s-thumb  
Lamb’s-quarters  
Ragweed (common)  
Redroot pigweed*  
Volunteer canola  
Wild mustard  
* Suppression only

Rate:  
Reflex is registered in the Red River Valley of Manitoba only  
as a tank mix at a rate of 235 mL per acre Reflex plus 0.71 L  
per acre Basagran plus Agral 90 at 1 L per 1000 L of spray  
solution.

Application Information:  
Water Volume: Minimum 81 L per acre. Increase water vol-  
ume to 142 L per acre for fields with heavy weed densities or  
with weeds at the upper limit of their recommended stage.  
Pressure: 275 kPa (40 psi). Increase pressure to 420 kPa (60  
psi) for fields with heavy weed densities or with weeds at  
the upper limit of their recommended stage.  
Nozzles: Use nozzles capable of delivering appropriate  
pressures and volumes.

How it Works:  
Refer to Table 2 on page 47.

Effects of Growing Conditions:  
Weed control and crop tolerance may be reduced under  
certain stress conditions such as cold temperatures, excess  
moisture, drought and injury from hail or previous herbicide  
applications.

Tank Mixes:  
Herbicides: Reflex is only registered for use in a Basagran  
tank mix. See Rates.

Restrictions:  
Rainfall: Within 4 hours may reduce control.  
Grazing: DO NOT graze treated crop or cut for hay. There  
is insufficient data to support such use.  
Preharvest: Leave at least 84 days from application to harvest.  
Re-cropping: Winter wheat may be sown 4 months after  
application. Spring wheat, dry beans, soybeans and field  
corn may be grown the year following an application.  
DO NOT apply Reflex to any field more often than once  
every 2 years.  
These re-cropping restrictions refer only to the Red River  
Valley of Manitoba. Use outside this region is not regis-  
tered as re-cropping options have not been determined.

Aerial Application: DO NOT apply by air.

Storage: Store in a cool place away from food or feed.

Buffer Zones: Leave a buffer zone of at least 15 m between  
the last spray swath and the edge of sensitive terrestrial  
areas such as shelterbelts, hedgerows and shrublands as  
well as aquatic areas such as ponds, streams, rivers, prairie  
potholes and sloughs. DO NOT apply when winds are  
greater than 15 km/hr.

Sprayer Cleaning:  
No specific cleaning procedures are indicated on the label.  
Based on products with similar chemistry, ‘Method B’ found  
in the general sprayer cleaning section on page 15 to 16 or  
a commercial spray sprayer cleaning product, may provide  
adequate cleaning. Contact the manufacturer for more infor-  
mation.

Hazard Rating:  
Danger – Corrosive to Eyes  
For an explanation of the symbols used here see page 11.
**Company:**
Dow AgroSciences (PCP#30632)

**Formulation:**
40 g/L aminopyralid and 400 g/L 2,4-D both present as amine salts formulated as a solution.

Container size - 2 x 10 L

*Note: Limited availability through selected retail outlets.*

Use a maximum of one application of *Restore II* products or other products containing aminopyralid per season.

**Crops and Staging:**
Rangeland and pastures - Apply in spring or early summer.

**Weeds, Rates and Staging:**
Apply when weeds are young and actively growing in the vegetative stage for control unless indicated otherwise.

*Restore II* at 0.57 L per acre will control:

- Annual sow-thistle
- Bull thistle
- Burdock (<4 leaf)
- Buttercup (hairy, tall)
- Canada fleabane
- Canada thistle††
- Common broomweed
- Common plantain
- Daisy fleabane
- Goat's-beard
- Horse-nettle
- Nodding thistle
- Ox-eye daisy
- Perennial sow-thistle
- Privet twig
- Spotted knapweed
- Stinging nettle
- Sweet clover
- Yellow star-thistle

As well as other annual “Susceptible Weeds” controlled by 2,4-D on the 2,4-D page.

*Restore II* at 0.86 L per acre will control:

- Canada goldenrod††
- Cudweed
- Curled dock (<4 leaf)
- Dog mustard
- French sorrel
- Hawkweed
- Hairy fleabane
- Heal all
- Narrow-leaved hawk's-beard
- Scentless chamomile
- Sheep sorrel
- Sulphur cinquefoil††
- Tansy ragwort
- Western ragweed

As well as other annual “Hard to Control Weeds” controlled by 2,4-D on the 2,4-D page.

**Application Information:**

**Water volume:**
*Ground application:* 40 L per acre minimum.<br>*Aerial application:* 20 L per acre minimum

**Nozzles and Pressure:** Use a combination of application equipment and pressures that will apply ASABE coarse droplets in a uniform pattern.

Drift of even small amounts of *Restore* into sensitive plants or areas where sensitive crops may be grown can cause injury. DO NOT apply under conditions prone to drift (i.e. high winds, dead calm, or temperature inversions).

Avoid applications closer that the drip line or outer edge of the canopies of trees or injury may occur to the tree.

*NOTE: Use closed handling systems when using bulk containers and/or if handling more than 663 L of product per day. Handheld applications are limited to 20 L of product per day. Respirators must be worn if applying more than 12.5 L per day using handheld equipment.*

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**
Application should be avoided under conditions of drought or other environmental stress.

**Tank Mixes:**
None registered.
Restrictions:

Rainfall: No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturer for more information.

Re-entry: DO NOT re-enter treated areas for 12 hours.

Grazing: DO NOT allow lactating dairy animals to graze treated areas within 7 days of application. Withdraw meat animals from treated fields at least 3 days before slaughter. DO NOT harvest forage or cut hay within 30 days of application. Allow 3 days of grazing on an untreated pasture (or feed untreated hay) before transferring livestock to areas where sensitive broadleaf crops may be grown.

Re-cropping: If legumes are essential in a pasture, DO NOT use Restore. DO NOT break up treated pasture and plant to sensitive broadleaf crops for at least 3 years after application of Restore.

Aerial Application: May be applied by air.

Storage: Store product in original, labelled containers in a secure, dry, cool area. DO NOT freeze.

Buffer Zones:
Handheld equipment is exempt from the buffer zones indicated below when implementing Early Detection and Rapid Response measures on isolated plants or patches. DO NOT apply to water.

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†)</th>
<th>Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Aquatic Habitats</td>
</tr>
<tr>
<td>Ground *</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Fixed wing airplane</td>
<td>80 to 175**</td>
<td>80 to 175**</td>
</tr>
<tr>
<td>Helicopter</td>
<td>70 to 150**</td>
<td>70 to 150**</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

** Distance varies depending on spray droplet size. Consult the Restore II label to determine buffer zone size when applying by air.

† Distance is measured from the downwind edge of the boom to sensitive areas.

DO NOT apply this product directly to any water body or mix or load near water or wells. DO NOT apply when heavy rains are forecast or on moderate to steep slopes toward sensitive areas or to light soils with shallow water table. Contact the provincial environment department for permits to apply near water.

Sprayer Cleaning:
'Method A' found in the general sprayer cleaning section on page 15 to 16.

Hazard Rating:

⚠ Danger – Eye and Skin Irritant

For an explanation of the symbols used here see page 11.
Weed Control

Company:
Loveland Products Canada

Formulation
The Retain SG package has 3 components:

- **Retain A (PCP#30129):** 33.35% thifensulfuron + 16.65% tribenuron formulated as a water soluble granule.
  Container size - 486 g

- **Retain B (PCP#29557):** 180 g/L fluroxypyr formulated as an emulsifiable concentrate.
  Container size - 4.8 L

- **Loveland Products Canada 2,4-D ester 700 (PCP#29006):** 660 g/L 2,4-D ester formulated as an emulsifiable concentrate.
  Container size - 6.8 L

Crops and Staging:
Spring wheat (including durum), barley - 4 leaf to flag leaf stage.

Weeds and Staging:
Apply from the seedling to 4 leaf or whorl stage of the following weeds:
Weeds controlled by thifensulfuron/tribenuron plus cleavers*
* Not Group 2 resistant biotypes

Herbicide Group
2 - thifensulfuron & tribenuron
4 - fluroxypyr & 2,4-D
(Refer to page 45)

Rates
- **Retain A:** 8 g per acre.
- **Retain B:** 0.12 L per acre
- **Loveland Products Canada 2,4-D:** 0.2 L per acre
One case per 40 acres
Add Agral 90, Agsurf II, or Citowett Plus at 0.2 L per 100 L of spray solution. Retain SG may degrade if left in the sprayer for an extended period. Apply within 24 hours of mixing.

Tank Mixes:
Loveland Products Canada supports the following mixes that are not on the Retain SG label. Apply mixes according to the most restrictive use limitations for either product:

- **Herbicides:** Axial, Everest 2.0, Traxos, Simplicity. Varro, WildCat, Puma Advance.

Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

See component products for more information on restrictions, application details and handling. Use the most limiting restrictions across all components for the mix.
**Company:**
Syngenta Canada, distributed by Univar Environmental (PCP#26271)

**Formulation:**
240 g/L diquat formulated as a solution.
Container sizes: 4 x 3.78L.

**Use:**
For use in farm dugouts and other clear, slow moving water bodies to control water weeds, such as:
- Canada water weed
- Flowering Rush
- Coontail
- Pond weeds
- Duckweed
- Water milfoil

Offers temporary control of certain species of algae.
High levels of suspended organic matter or clay particles in water will reduce control.

**Timing:**
Mid-May through late June when water weeds or algae are actively growing. Apply before weeds have developed a heavy mat of growth for effective control.

**Rates:**
**Dugouts less than 5 feet (1.5 m) deep:** Apply **Reward** at 7.4 L per acre.
At this rate, 2.2 L of **Reward** will treat a dugout that is 160 feet by 80 feet (49 m x 24.4 m).

**Dugouts more than 5 feet (1.5 m) deep:** Apply **Reward** at 10.1 to 11.8 L per acre.
At these rates, a dugout that is 160 feet by 80 feet (49 m x 24.4 m) will require 3.0 to 3.5 L of **Reward**.

**Milfoil** can be controlled in early stages by 3.7 L per acre in early stages of growth.

**Application:**
Dilute 1 part **Reward** with 4 parts clean water.
Spray over the water surface, inject below the water surface from a moving boat or for small water bodies, apply from the banks. See label for detailed instructions. Note: **Reward** is bound rapidly to soil, so material must enter the water directly to be effective.

**How it Works:**
Refer to Table 2 on page 47.

**Restrictions:**
**Grazing:** DO NOT use water for animal consumption for 24 hours after application.
**Irrigation:** DO NOT use water for irrigation for 5 days after application.
**Domestic Use:** DO NOT use water for human consumption for 5 days after application. DO NOT swim in water for 24 hours after treatment.
**Storage:** DO NOT freeze.
**Environment:** If weed growth is dense, protect fish by not treating more than one-fourth of dugout at a time.

**Equipment Clean Out:**
Refer to page ‘Method C’ in the general section on sprayer cleaning on 15.

**Hazard Rating:**
- ✩ Warning – Poison
- ☢ Caution – Skin Irritant
- ✭ Potential Skin Sensitizer

For an explanation of the symbols used here see page 11.
Company:
Dow AgroSciences

Formulation
The Salute package contains the following components:
Salute A (PCP#31353): 72% clopyralid formulated as a water soluble granule.
Container size – 2.25 kg.
Salute B (PCP#31354): 35 g/L imazamox and 15 g/L imazapyr formulated as solution.
Container size – 1 x 9.8 L jug.
Merge adjuvant (PCP#24702):
Container size - 8.1 L

Crops and Staging:
CLEARFIELD canola from the 2 to 6 leaf stage.

Weeds and Staging:
Weeds controlled by Ares plus:
Top growth control of:
Annual sow-thistle
Perennial sow-thistle
Canada thistle

Rates
Salute A: 56 g per acre.
Salute B: 245 mL per acre.
Merge adjuvant (purchased separately): 0.5 L per 100 L of spray solution.
(One package treats 40 acres)
Minimum one application of Salute or other products that contain imazamox (Ares, Solo, Odyssey) per year.

See component products for more information on restrictions application details and handling. Unless indicated differently above use the most limiting restrictions across all components for the mix.

Herbicide Group
2 – imazamox, imazapyr
4 - clopyralid
(Refer to page 45)

Tank Mixes:
None registered.

Restrictions:
Re-cropping: The year following Salute application fields can be seeded to canary seed, field peas*, field corn, CLEARFIELD canola/oilseed B. juncea, spring wheat, spring barley, tame oats. Two years following Salute application fields can be seeded to canola (all types), flax, sunflower, durum wheat, lentils, chick pea

* DO NOT seed to field peas for at least 10 months following treatment. Very dry soil conditions following application can result in a risk of injury to field peas grown in rotation. If severe drought conditions are experienced during the months of June to August inclusive in the year of application (22 months following application), contact your local Dow AgroSciences representative or retailer for more information before seeding field peas following drought conditions in the previous year.

See component products for more information on restrictions application details and handling. Unless indicated differently above use the most limiting restrictions across all components for the mix.
Company:
Nufarm Agriculture

Formulation:
The Signal FSU package contains three components:
**Signal F** (PCP#31434): 112 g ai/L clodinafop propargyl and 217 g ae/L fluroxypyr ester formulated as an emulsifiable concentrate.
Container size – 8 L.
**Boost** (PCP#30377): 50% thifensulfuron methyl and 25% tribenuron methyl formulated as a water dispersible granule.
Container size – 320 g
**Enhance Adjuvant** (PCP#29952)
Container size – 4 L.

Crops and Staging:
Wheat (spring, durum) only: 2 leaf up to the emergence of the 4th tiller.

Weeds and Staging:
Grass weeds:

<table>
<thead>
<tr>
<th>WEED</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barnyard grass</td>
<td>1 to 5 leaf prior to tillering</td>
</tr>
<tr>
<td>Green and yellow foxtail</td>
<td>1 to 5 leaf stage, prior to emergence of 3rd tiller</td>
</tr>
<tr>
<td>Volunteer canaryseed, wild oats</td>
<td>1 to 6 leaf, maximum 3 tillers</td>
</tr>
<tr>
<td>Volunteer oats</td>
<td>3 to 6 leaf, maximum 3 tillers</td>
</tr>
</tbody>
</table>

Broadleaf weeds:
Unless otherwise noted below, apply to young and actively growing weeds that are less than 4 inches (10 cm) in height or width.

<table>
<thead>
<tr>
<th>WEED</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual smartweed (green, lady’s-thumb)</td>
<td></td>
</tr>
<tr>
<td>Ball mustard</td>
<td></td>
</tr>
<tr>
<td>Chickweed (1 to 6 leaf)</td>
<td></td>
</tr>
<tr>
<td>Cleavers (1 to 4 whorls)</td>
<td></td>
</tr>
<tr>
<td>Common groundsel</td>
<td></td>
</tr>
<tr>
<td>Corn spurry</td>
<td></td>
</tr>
<tr>
<td>Cow cockle</td>
<td></td>
</tr>
<tr>
<td>Flixweed</td>
<td></td>
</tr>
<tr>
<td>Hemp-nettle</td>
<td></td>
</tr>
<tr>
<td>Kochia (2 to 8 leaf)</td>
<td></td>
</tr>
<tr>
<td>Lamb’s-quarters</td>
<td></td>
</tr>
</tbody>
</table>

Weeds Suppressed:
Canada thistle, sow-thistle (less than 6 inches (15 cm) tall or across and prior to budding)
Round-leaved mallow (2 to 6 leaf)
Scentless chamomile
Stork’s-bill (2 to 6 leaf)

Rate:
**Signal F**: 0.2 L per acre
**Boost**: 8 g per acre
**Enhance Adjuvant**: 0.25 L per 100 L of total spray solution. (Once package treats 40 acres)

Maximum one application per year of Signal FSU or other products containing clodinafop, thifensulfuron, tribenuron, or fluroxypyr.

Thifensulfuron/tribenuron may degrade if left in the sprayer for an extended period. **Apply within 24 hours of mixing**. Refer to the product label for complete mixing instructions.
Application Information:

**Water Volume:** Minimum 40 L per acre.

**Nozzles and Pressure:** Use 29 to 40 psi (200 to 275 kPa) if applying without drift reduction nozzles. Drift reduction nozzles may require higher pressures for proper performance. Select the nozzle and pressure combination that produces of **ASABE coarse** droplets while maintaining good coverage of foliage. Use of 50 mesh screens or coarser are required. Keep booms lower than 60 cm from crop canopy.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Application to crops stressed by extreme weather conditions such as frost, hail, saturated soils or drought as well as low fertility, insect damage or disease pressure may result in crop injury and/or reduce weed control.

Crop and weeds that are growing rapidly produce optimum activity. The optimum temperature range for the best activity is between 12 to 24 degrees C. Activity will be reduced below 8 degrees C and above 27 degrees C.

Tank Mixes:
**Herbicides:**
- *In wheat (spring and durum) only:*
  - 2,4-D Ester (up to 226 g ae per acre)
  - MCPA Ester (up to 452 mL of a 500 g/L form or 377 mL of a 600 g/L form per acre)
**Insecticides:** None registered.
**Fungicides:** None registered.
**Fertilizers:** None registered.

Note: The above mixes are those listed on the **Signal F** and **Boost** labels only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
**Rainfall:** Within 4 hours will reduce control.

**Re-Entry Interval:** DO NOT enter treated fields for 12 hours.

**Pre-harvest Interval:** Leave 60 days between application and harvest.

**Grazing:** DO NOT graze or feed treated crop to livestock within 3 days of application.

**Recropping:** Barley, canola, field peas, flax, forage grasses, lentils, mustard, oats, rye and registered crops may be seeded the season after application.

Aerial Application: DO NOT apply by aircraft.

**Storage:** Store in a cool, dry place in original container. Shake well before using. If frozen, warm liquid component gradually to 10 degrees C and shake well to reconstitute component before use.

**Buffer Zones:**

<table>
<thead>
<tr>
<th>Crop</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats</td>
</tr>
<tr>
<td><strong>Ground only</strong></td>
<td>15</td>
</tr>
</tbody>
</table>

See the key to product pages on page 27 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using-shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy..

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Tank Cleaning:
Thifensulfuron/tribenuron can cause severe injury to sensitive crops at very low concentrations. Sprayers used to spray Thifensulfuron/tribenuron should be drained and flushed out immediately after use.

Refer to ‘Method A’ in the general section on sprayer cleaning on page 15 to 16. The addition of detergent will enhance cleanout.

Hazard Rating:

**Signal F:**
- Danger – Skin irritant
- Caution Eye irritant

**Boost:**
- Warning – Skin and Eye Irritant

**Enhance Adjuvant:**
- Caution – Skin irritant
- Warning, contains the allergen soy

For an explanation of the symbols used here see page 11.
Simazine

Company:
Syngenta Canada distributed by Univar Environmental (Princep Nine-T - PCP#16370)
Loveland Products Canada (Simazine 480 - PCP#23181)

Formulations:
Princep Nine-T: 90% simazine formulated as a water dispersible granular. Container sizes: 5 kg.
Simazine 480: 480 g/L simazine formulated as a solution. Container sizes: 2 x 10L.

Crops and Staging:
Established alfalfa or bird’s-foot trefoil (Princep Nine-T only):
DO NOT use in year of seeding. Apply after final cut in fall until freeze-up. DO NOT apply to the same field more than three consecutive years. Residues may build up with yearly applications.
Corn (Field and Sweet): Apply one week prior to seeding and incorporate to a depth of 1 inch (2.5 cm), OR apply no later than 4 days after seeding corn. Rainfall is required to activate herbicide.
Established shelterbelts (elm (American, Siberian), caragana, green ash, Manitoba (boxelder) maple): Apply in fall or early spring before weeds begin growth. Injury may occur to shelter belts growing under saline conditions. DO NOT apply to frozen ground

Weeds and Staging:
Simazine is applied prior to the emergence of the weeds and kills them when they are exposed to the treated layer of soil.
Barnyard grass
Lamb’s-quarters
Perennial species starting from seed
Purslane
Ragweed
Smartweed (including lady’s-thumb)
Volunteer clovers
Wild buckwheat
Wild oats
Yellow foxtail

Rates:
Forage crops:
Princep Nine-T: 0.45 kg per acre.
Corn:
Princep Nine-T: 0.61 to 0.81 kg per acre.
Simazine 480: 1.4 to 3.4 L per acre.
Shelterbelts:
Princep Nine-T: 1.8 kg per acre.
Simazine 480: 3.8 to 5.7 L per acre.
* Rate of application to corn is dependent on soil texture. Refer to specific labels for correct application rates on corn.

Application Information:
Water Volume: Minimum 121 L per acre. In shelterbelts, use a minimum of 202 L per acre.
Pressure and Nozzles: For conventional flat fan nozzles use a maximum pressure of 30 to 45 psi (200 to 300 kPa). Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE medium droplets.
Use 50 mesh or coarser nozzle screens and filter system.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
When applying to forage stands, dry soil conditions at the time of weed emergence may result in reduced weed control.

Tank Mixes:
None registered.
Note: The above mixes are those listed on the simazine labels only.
Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.
**Restrictions:**

**Rainfall:** Moderate rainfall after application enhances activity.

**Re-Entry:** DO NOT re-enter treated areas for 12 hours.

**Grazing:** In forage stands, allow 30 days between application and grazing, 60 days between application and cutting for feed. DO NOT graze or cut corn for feed prior to ear emergence.

**Re-cropping:** *Simazine* is persistent and residues may persist for several years depending on soil pH, available soil moisture, number of yearly applications, and the sensitivity of the following crop. *Simazine* will break down in soil more slowly under conditions of high pH and/or low rainfall. Corn will tolerate soil residues of *simazine* and may be planted the year of application. White beans, onions, peas may be injured 12 month after application.

**Aerial Application:** DO NOT apply by air.

**Storage:** DO NOT freeze *Simazine 480*. *Princep Nine-T* may be frozen. Store in a cool, dry place.

**Buffer Zones:**

<table>
<thead>
<tr>
<th>Crops</th>
<th>Buffer Zones (metres)† Required for the Protection of:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td>Alfalfa</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Bird’s-foot trefoil, sweet corn</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Field corn</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Shelterbelts</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

**Sprayer Cleaning:**

No specific cleaning procedures are indicated on the label. Based on products with similar chemistry, ‘Method B’ found in the general sprayer cleaning section on page 15 to 16 or a commercial spray sprayer cleaning product, may provide adequate cleaning. Contact the manufacturer for more information.

**Hazard Rating:**

⚠️ Caution – Poison. (*Simazine 480*)

For an explanation of the symbols used here see page 11.
**Simplicity**

**Company:**
Dow AgroSciences

**Formulation:**

*Simplicity 30 OD (PCP#28887):* 30 g/L pyroxasulam formulated as an oil dispersion.
Container size - 2 x 8 L

*Simplicity GoDRI (PCP#31916):* 21.5% pyroxasulam formulated as a water dispersible granule.
Container size - 4 x 2.24 kg.

**Crops and Staging:**

**Wheat (Spring, and durum):** 3 leaf stage until prior to the emergence of the flag leaf (up to 6 leaf plus 2 tillers).

**Winter wheat:** 1 to 3 leaf stage in fall or 2 to 7 leaf plus 4 tillers in spring.

When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

**Weeds, Rates and Staging:**

**Wild oats (less than 75 plants per sqm):** *Simplicity 30 OD* at 0.15 L per acre (one case treats 106 acres) or *Simplicity GoDRI* at 21 g per acre (one 2.24 kg jug treats 106 acres).

*All weeds listed below:* *Simplicity 30 OD* at 0.20 L per acre (one case treats 80 acres) or *Simplicity GoDRI* at 28 g per acre (one 2.24 kg jug treats 80 acres)

Shake *Simplicity 30 OD* jug well before adding to spray tank.

**Grasses:**

<table>
<thead>
<tr>
<th>WEED</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild oat</td>
<td>up to the 4 leaf, 2 tillers</td>
</tr>
<tr>
<td>Barnyard grass, Yellow foxtail Green foxtail*</td>
<td>1 to 5 leaf</td>
</tr>
<tr>
<td>Japanese brome</td>
<td>1 to 6 leaf</td>
</tr>
<tr>
<td>Downy brome†</td>
<td></td>
</tr>
</tbody>
</table>

**Broadleaves:**

- Canada thistle* (up to 30 cm, before budding)
- Cleavers (up to 6 whorl)
- Cow cockle (up to 8 leaf)
- Common chickweed (up to 10 cm)
- Corn spurry (up to 2 whorl or 10 cm tall)
- Dandelion* (spring rosettes <20 cm diameter)*
- Flixweed (up to 10 cm)
- Hemp-nettle (1-8 leaf)
- Redroot pigweed (1-8 leaf)
- Round-leaved mallow (up to 6 leaf or 10 cm)
- Russian thistle* (up to 10 cm)
- Shepherd’s-purse (up to 30 cm)
- Smartweed (1-5 leaf)
- Stinkweed (up to 30 cm)
- Volunteer canola (1-6 leaf)**
- Wild buckwheat (1-4 leaf)*

* Suppression only.
** Not Clearfield varieties
† Control with fall application in winter wheat; suppression only in spring applications on both winter and spring wheat.

When applied alone, *Simplicity* must be applied using a non-ionic surfactants (*Agral 90, AgSurf II*) at 0.25 L per 100 L.

**Winter wheat (Simplicity alone) use one of the following adjuvants:**

- *Assist* at 0.8 L per 100 L of spray
- *Merge* at 0.5 L per 100 L of spray (spring application only)
* Adjuvants purchased separately.

**Application Information:**

**Water Volume:**

- **Ground:** 20 to 40 L per acre.
- **Aerial:** 12 L per acre

**Nozzles and Pressure:** Use a combination of nozzles and pressure designed to deliver thorough, even coverage with *ASABE coarse* droplets. See the label for detailed instructions on aerial application.

**How it Works:**

Refer to Table 2 on page 47.

**Effects of Growing Conditions:**

DO NOT apply to crops that are stressed (frost, low fertility, drought or flooding, disease or insect damage) as crop injury may result and/or weed control may be reduced.
Tank Mixes:
Herbicides:
The addition of an adjuvant is not required in tank mixes unless the adjuvant is required by the tank mix partner.

<table>
<thead>
<tr>
<th>TANK-MIX PARTNER</th>
<th>PRODUCT RATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,4-D Ester</td>
<td>280 g ae per acre</td>
</tr>
<tr>
<td>Buctril M</td>
<td>0.4 L per acre</td>
</tr>
<tr>
<td>Curtail M</td>
<td>0.6 L per acre</td>
</tr>
<tr>
<td>Frontline 2,4-D (florasulam + 2,4-D)</td>
<td>60 acres per case</td>
</tr>
<tr>
<td>Frontline XL (florasulam + MCPA)</td>
<td>0.5 L per acre</td>
</tr>
<tr>
<td>MCPA ester (600 formulation)</td>
<td>0.23 to 0.38 L per acre</td>
</tr>
<tr>
<td>OctTain XL**</td>
<td>0.45 L per acre</td>
</tr>
<tr>
<td>Prestige XC</td>
<td>27 acres per case</td>
</tr>
<tr>
<td>Spectrum (florasulam + Curtail M)</td>
<td>20 acres per case</td>
</tr>
<tr>
<td>Stellar**</td>
<td>label rates</td>
</tr>
<tr>
<td>Thumper</td>
<td>0.4 L per acre</td>
</tr>
</tbody>
</table>

Fungicides:
Tilt* (label rates)
Stratego*(label rates)
MCPA + Tilt *
MCPA + Stratego*

Fertilizers: None registered
* High rate of Simplicity only.
** Simplicity GoDRI only.

Note: The above mixes are those listed on the Simplicity label only.

Dow AgroSciences also supports the following mixes that are not on the Simplicity label. Apply mixes according to the most restrictive use limitations for either product:
Herbicides: 2,4-D ester (up to 420 g ae/acre), Attain XC (low use rate), Attain XC + either Tilt or Stratego, Barricade, Bromoxynil, Paradigm, Pixxaro, Retain, Thifensulfuron/tribenuron.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Within 2 hours may reduce control.
Preharvest: Leave 60 days between treatment and harvest.
Grazing: Must NOT be grazed or fed to livestock for 7 days after treating crop.
Recropping: Barley, condiment and oilseed quality brown mustard (B. juncea types), canola, chickpea, dry bean, flax, lentil, oat, field pea, potato, spring wheat, soybean, sunflower and yellow mustard may be seeded 11 months following treatment.
Aerial Application: May be applied by air.
Storage: Avoid freezing, store above -9°C. Allow product to warm above 7°C before using and thoroughly mix the product prior to use.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Buffer Zones (metres)</td>
</tr>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground*</td>
<td>1</td>
</tr>
<tr>
<td>Helicopter</td>
<td>1</td>
</tr>
<tr>
<td>Fixed wing aircraft</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats. * These distances can be reduced by 30% using cones on individual nozzles and by 70% using a full shield (shroud, curtain) that extends to the crop canopy. † Distance is measured from the downwind edge of the boom to sensitive areas.

Sprayer Cleaning:
Equipment used to apply Simplicity should not be used to apply other pesticides to sensitive crops without thorough cleaning. To avoid subsequent injury to crops other than cereals, all spraying equipment must be thoroughly cleaned both inside and out, as follows:
1. Immediately after spraying drain the sprayer tank. Any contamination on the outside of the spraying equipment should be removed by washing with clean water.
2. Rinse inside of tank with clean water and flush through booms and hoses using at least one tenth of the spray tank volume. Drain tank completely.
3. Add All Clear tank cleaner at 0.5 L per 100 L of water while filling the tank ½ full with clean water. Agitate for at least 15 minutes ensuring the cleaning solution comes in contact with interior surfaces. Flush the boom and hoses with the cleaning solution and be sure to remove caps at the end of booms to allow cleaning solution to reach all areas of the boom. Leave the spray solution in the sprayer for an extended period if possible (eg. overnight). Thoroughly drain the sprayer.
4. Remove nozzles and screens and clean separately with All Clear cleaning solution (50 mL in 10 L water).
5. Rinse the tank with clean water and flush through the booms and hoses using at least one tenth of the spray tank volume. Drain tank completely.

Refer to page 15 to 16 for additional information on sprayer cleaning.

Hazard Rating:

Warning – Poison
Warning – Contains the allergen soy
Caution – Eye and Skin Irritant, Potential Skin Sensitizer

For an explanation of the symbols used here see page 11.
Solo

**Company:**
BASF Canada
All crops listed under ‘Crops And Staging:’ below (PCP#25496)
CLEARFIELD canola only (PCP#28741)

**Formulation:**
70% imazamox as a water dispersible granule.
Container size - 4 x 117 g water soluble bags.

**Crops and Staging:**
CLEARFIELD sunflower: 2 to 8 leaf stage.
CLEARFIELD canola: 2 to 6 leaf stage.
CLEARFIELD lentil: 2 to 6 leaf stage.
CLEARFIELD oilseed mustard (*Brassica juncea*): 2 to 6 leaf stage.
Temporary crop yellowing may be observed shortly after application in CLEARFIELD canola.

**Weeds and Staging:**
Grasses - 1 to 4 main stem leaves, early until tillering.
- Barnyard grass
- Green foxtail
- Japanese brome*
- Persian darnel
- Volunteer barley
- Volunteer canaryseed

Broadleaf Weeds - cotyledon to 4 leaf stage.
- Cleavers*
- Cow cockle
- Green smartweed
- Lamb’s-quarters
- Redroot pigweed
- Shepherd’s-purse
- Stinkweed
- Volunteer canola (not CLEARFIELD varieties)
- Wild buckwheat*
- Wild mustard

* Suppression only.

**Rates:**
Solo: 11.7 g per acre (40 acres per case)
Merge adjuvant (sold separately): Must be used with Solo at a rate of 0.5 L of Merge per 100 L of total mixed spray solution.

DO NOT apply Solo more than once or follow Solo with any other products containing imazamox in the same year.
Refer to the product label for complete mixing instructions for this product and its mixes.
A general guide to mixing can be found on page 14.

**Application Information:**
**Water Volume:** 40 L per acre.

**Nozzles and Pressure:** Use 40 psi (275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage and a minimum of fine droplets that are prone to drift. Use 50 mesh or coarser filter screens.

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**
DO NOT spray if temperatures of +5°C are forecast within 3 days of application. Treat crops during warm weather when weeds are actively growing and soil moisture is adequate for rapid growth. Under cool or dry conditions, control of some weeds may be severely reduced.

**Tank Mixes:**
None registered.

**Restrictions:**
**Rainfall:** DO NOT spray if there is a forecast of rain during or soon after application as it may reduce control.
**Re-Entry:** DO NOT enter treated fields for 12 hours.
**Grazing:** DO NOT graze treated canola or lentil or cut for feed within 20 days of application.
DO NOT graze treated sunflower or cut for straw.

**Preharvest Interval:** DO NOT apply to canola or lentil within 60 days of harvest.
DO NOT apply to sunflower within 70 days of harvest.

**Re-cropping:** Winter wheat may be seeded 3 months after application. Barley, canaryseed, canola, chickpea, field corn, field pea, flax, lentil, oat, sunflower, and spring wheat (including durum) may be seeded the first spring after application and tame mustard (condiment types only) the second season after application. The company recommends that a field
bioassay (a test strip grown to maturity) be conducted the year before growing any crops other than those listed above. Contact manufacturer for additional information on recropping intervals (1-877-371-2273).

**Aerial Application:** DO NOT apply by air.

**Storage:** DO NOT freeze. Store in a cool, dry place above 5° C.

**Buffer Zones:** Avoid spraying in situations where drift may occur. Leave at least 11 m between the outside edge of the sprayed area and sensitive non-target areas such as shelterbelts, hedgerows, wetlands, woodlots, vegetated ditch banks, ponds, streams, and sloughs.

**Sprayer Cleaning:**
Refer to ‘Method C’ in the general sprayer cleaning section on page 15.

**Hazard Rating:**

⚠️ Warning – Eye and Skin Irritant.
May cause eye damage.

For an explanation of the symbols used here see page 11.

---

**Spectrum**

*(this referring text to be removed in the 2018 edition)*

See florasulam + Curtail M on page 171.

---

**Stellar**

*(this referring text to be removed in the 2018 edition)*

See florasulam/fluroxypyr + MCPA Ester on page 175.

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**Tandem**

**Company:**
Dow AgroSciences

**Herbicide Group**
2 - pyrosulam
4 - fluroxypyr

*(Refer to page 45)*

**Formulation:**
The Tandem package has 2 components:

- **Tandem A** (PCP# 29985): 30 g/L pyrosulam formulated as an oil dispersion.
  Container size - 8 L jug.

- **Tandem B** (PCP# 29965): 333 g ae/L fluroxypyr formulated as an emulsifiable concentrate.
  Container size - 4.84 L.
Crops and Staging:
Spring wheat (including durum): 3 leaf stage until the first node can be felt in the stem (up to 6 leaf plus 2 tillers).
When tank-mixing always check the tank mix partner recommendations for additional staging restrictions.
Winter wheat: Apply in the spring from the 3 tiller stage to just before the flag leaf stage.

Weeds, Rates and Staging:
*Tandem A* at 0.15 L per acre plus *Tandem B* at 85 mL per acre (53 acres per case):
- Cleavers (up to 6 whorls)
- Wild oats (less than 75 plants per sqm)
*Tandem A* at 0.20 L per acre plus *Tandem B* at 127 mL per acre (40 acres per case):
- Grasses:
  - **Wild oat** up to the 4 leaf, 2 tillers
  - **Barnyard grass, Yellow foxtail** 1 to 5 leaf
  - **Green foxtail** 1 to 6 leaf
  - **Japanese brome** 1 to 6 leaf
  - **Downy brome** 2 to 6 leaf, 4 tillers

<table>
<thead>
<tr>
<th>WEED</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild buckwheat*</td>
<td>4 leaves</td>
</tr>
<tr>
<td>Smartweed</td>
<td>5 leaves</td>
</tr>
<tr>
<td>Round-leaved mallow,</td>
<td>6 leaves</td>
</tr>
<tr>
<td>Volunteer canola**</td>
<td></td>
</tr>
<tr>
<td>Cleavers, Cow cockle,</td>
<td>8 leaves or whorls</td>
</tr>
<tr>
<td>Hemp-nettle†, Kochia,</td>
<td></td>
</tr>
<tr>
<td>Redroot pigweed, Stork's-bill*</td>
<td></td>
</tr>
<tr>
<td>Common chickweed,</td>
<td>10 cm</td>
</tr>
<tr>
<td>Flixweed, Russian thistle*</td>
<td></td>
</tr>
<tr>
<td>Volunteer flax</td>
<td>12 cm</td>
</tr>
<tr>
<td>Dandelion*</td>
<td>up to 20 cm, diameter</td>
</tr>
<tr>
<td>Canada thistle*</td>
<td>up to 30 cm, prebud</td>
</tr>
</tbody>
</table>

* Suppression only.
** Not Clearfield varieties
† NOTE Group 2 resistant biotypes only controlled to the 6 leaf stage.

Application Information:
Water Volume:
*Ground*: 20 to 40 L per acre.
*Aerial*: 20 L per acre.

Nozzles and Pressure: Use 29 to 40 psi (200 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with *ASABE coarse* droplets. Low drift nozzles may require higher pressures for proper performance. See the label for detailed instructions on aerial application.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
The temperature range for optimum activity is 12°C to 24°C. Reduced activity will occur when temperatures are below 8°C or above 27°C. Frost before application (3 days) or shortly after (3 days) may reduce weed control and crop tolerance. Weed control may be reduced during stress conditions, (e.g. drought, heat or cold stress, or if weeds have initiated flowering), or if heavy infestations exist.

Tank Mixes:
Herbicides:
*In spring wheat (including durum)*:
- 2,4-D Ester 700 (0.24 to 0.32 L/acre)
- Curtail M (0.61 to 0.81 L/acre)
- MCPA Ester (0.24 to 0.38 L/acre) (600 g ae/L forms)
Fungicides:
- Tilt , Stratego

Note: The above mixes are those listed on the *Tandem* label only.
Adding ingredients in the correct order is critical for optimum performance.
Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Within 2 hours may reduce control.
Re-entry: DO NOT re-enter treated fields for 12 hours.
Preharvest Interval: Leave 60 days from treatment to harvest.
Grazing: Must NOT be grazed or fed to livestock for 7 days after treating crop.
Recropping: Barley, canola, flax, lentil, mustard, oat, field pea, spring wheat may be seeded 11 months following treatment or fields may be fallowed.
Aerial Application: May be applied by air.
Storage: Avoid freezing, store above -9°C. Allow product to warm above 7°C before using and thoroughly mix the product prior to use.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td></td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td></td>
<td>Terrestrial habitat</td>
</tr>
<tr>
<td>Ground *</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Helicopter</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>55</td>
</tr>
<tr>
<td>Fixed wing aircraft</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>65</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* These distances can be reduced by 30% using cones on individual nozzles and by 70% using a full shield (shroud, curtain) that extends to the crop canopy.
† Distance is measured from the downwind edge of the boom to sensitive areas.

Sprayer Cleaning:

Equipment used to apply *Tandem* should not be used to apply other pesticides to sensitive crops without thorough cleaning.

Refer to ‘Method A’ on page 15 to 16 for additional information on sprayer cleaning.

All Clear tank cleaner at 0.5 L per 100 L of water or Clean-Out tank cleaner at 0.25 L per 100 liters of water may be used in place of ammonia in the sprayer clean-out process.

Hazard Rating:

*Tandem A:*

- ✱ Warning – Poison.
- ✱ Warning – Contains the allergens soy.
- ▼ Caution – Eye and Skin Irritant, Potential Skin Sensitizer

*Tandem B:*

- ☢ Danger – Poison.
- ☢ Warning - Eye and Skin Irritant
- ▼ Potential Skin Sensitizer

For an explanation of the symbols used here see page 11.
**Company:**
BASF Canada

**Formulation:**
The Tensile package contains 2 components:
Solo (PCP#28741): 70% imazamox formulated as a dispersible granule.
Container size - 4 x 117 g water soluble bags.
Lontrel Dry (PCP#27306): 75% clopyralid formulated as a dispersible granule.
Container size - 2 x 810 g.

**Crops and Staging:**
CLEARFIELD canola varieties: 2 to 6 leaf stage.
Apply only to CLEARFIELD canola varieties; application to any other variety of canola or any other crop will result in crop death.

**Weeds and Staging:**
Weeds controlled by Solo plus:
- Canada thistle (rosette to pre-bud stage)*
- Sow-thistle, perennial*
- Wild buckwheat
- Sow-thistle, annual

* Top growth control for 6 to 8 weeks

**Herbicide Group**
2 - imazamox
4 - clopyralid
(Refer to page 45)

**Rates:**
Solo: 11.7 g per acre.
Lontrel Dry: 40 g per acre.
(One case treats 40 acres)
Merge: 0.5 L per 100 L of spray solution (sold separately).
At a spray volume of 40 L per acre one 8.1 L jug of Merge will treat 40 acres. Tensile MUST be applied with Merge adjuvant.
DO NOT apply Tensile more than once or follow Tensile with any other products containing clopyralid or imazamox in the same year.

Refer to the product label for complete mixing instructions for this product and its mixes. A general guide to mixing can be found on page 14.

**Restrictions and Application Information:**
See component products for additional information including restrictions. Use the most limiting restrictions across all components for the mix. Particular attention should be paid to the recropping restrictions for both Solo and Lontrel.
Company:
E. I. duPont Canada (Refine SG)
Arysta LifeSciences (Deploy WDG)
FMC of Canada (Nimble)
Farmers of North America (MPower R)

Formulation:
Refine SG (PCP#28285): 33.35% thifensulfuron methyl plus 16.65% tribenuron methyl formulated as a water soluble granule.
Container size - 486 g.
Deploy WDG (PCP#30846); MPower R (PCP#30945); Nimble (PCP#29467) = 75% WDG formulations: 50% thifensulfuron methyl plus 25% tribenuron methyl formulated as a water dispersible granule.
Container size - 320 g.

Crops and Staging:
Apply from 2 leaf to the flag leaf stage.
When tank mixing, always check the tank mix partner recommendations for additional staging restrictions
Cereals:
Barley
Oat
Wheat (including durum spring and winter)

Seedling or established forage grasses for forage or seed production:
Brome grass (meadow, smooth)
Fescue (creeping red, tall)
Kentucky bluegrass**
Orchardgrass

Seedgrass:
Wheatgrass (crested, intermediate, northern, pubescent, slender, stream-bank, tall, western)

Weeds and Staging:
Unless otherwise noted below, apply to young and actively growing weeds that are less than 4 inches (10 cm) in height or width.

Weeds Controlled:
Annual smartweed (green, lady’s-thumb)
Ball mustard
Chickweed (1 to 6 leaf)
Common groundsel
Corn spurry
Cow cockle
Flixweed
Hemp-nettle
Lamb’s-quarters
Narrow-leaved hawk’s-beard
Redroot pigweed
Russian thistle
Shepherd’s-purse
Stinkweed
Tartary buckwheat
Volunteer canola
Tartary buckwheat
Volunteer sunflower
Wild buckwheat*
Wild mustard

Weeds Suppressed:
Canada thistle, sow-thistle (less than 6 inches (15 cm) tall or across and prior to budding)
Cleavers (1 to 3 whorls)
Round-leaved mallow (2 to 6 leaf)
Scentless chamomile
Stork’s-bill (2 to 6 leaves)
Toadflax (less than 6 inches or 15 cm tall)

* Refine SG: up to 5 leaf stage; 75% WDG formulations: up to 3 leaf stage only.

** Established stands only.

* NOTE: Since the use of this product on forage grasses is registered under the User Requested Minor Use registration system, the manufacturer assumes no responsibility for herbicide performance. Users of this product on forage grass do so at their own risk.
Rate:
*Refine SG*: 12 g per acre (one 486 g container treats 40 acres).
*75% WDG formulations*: 8 g per acre (one 320 g container treats 40 acres).
Maximum of one application of *Thifensulfuron/tribenuron* or other products with the same ingredients per year.
Add *Agral 90*, *Agsurf*, or *Citowett Plus* surfactants at 0.2 L per 100 L of spray solution.
*75% WDG formulations* may also use *Liberate* and *Nufarm Enhance* surfactants at 0.2 L per 100 L of spray solution.
*Thifensulfuron/tribenuron* may degrade if left in the sprayer for an extended period. *Apply within 24 hours of mixing.* Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

Application Information:
Water Volume:
*Ground*: Minimum 22 L per acre.
*Aerial (Refine SG only)*: Minimum 10 L to maximum 20 L per acre.

Nozzles and Pressure: Use 30 to 40 psi (210 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with *ASABE medium* droplets. Use a 50 mesh or coarser screen and filter system.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
DO NOT apply to wheat, barley or oats that are stressed by severe weather conditions (frost, drought or water saturated soil) as crop injury may result.
Under certain conditions (heavy rainfall, prolonged cool weather, frost conditions, wide fluctuations in day/night temperatures) lightening in crop colour and reduction in crop height may occur.
**Tank Mixes:**

**Herbicides:**

Tank mix partners applied at all label rates. Recommended adjuvants are used unless otherwise noted.

<table>
<thead>
<tr>
<th>Tank Mix Partner</th>
<th>CROPS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spring wheat</td>
</tr>
<tr>
<td>2,4-D amine or ester (160 to 212 g ae/acre)*†</td>
<td>✓</td>
</tr>
<tr>
<td>Clodinafop 240EC (95 to 115 mL/acre) plus Score adjuvant</td>
<td>✓</td>
</tr>
<tr>
<td>Clodinafop 240EC (95 mL/acre) + Dicamba (Banvel II rates below) plus Score adjuvant</td>
<td>✓</td>
</tr>
<tr>
<td>Clodinafop 240EC (95 mL/acre) + MCPA ester (0.23° or 0.34 to 0.45 L/acre)* plus Score adjuvant</td>
<td>✓</td>
</tr>
<tr>
<td>Curtail M (0.61 L/acre) †</td>
<td>✓</td>
</tr>
<tr>
<td>Dicamba (Banvel II only at 44.5 mL/acre to 58.7 mL/acre**)†</td>
<td>✓</td>
</tr>
<tr>
<td>Fenoxaprop 120EC (0.16 to 0.31 L/acre)</td>
<td>✓</td>
</tr>
<tr>
<td>Fenoxaprop 120EC (0.16 to 0.31 L/acre) + MCPA ester (0.23° or 0.34 L/acre)*</td>
<td>✓</td>
</tr>
<tr>
<td>Fluroxypyr + 2,4-D (Flurox 2,4 only)†</td>
<td>✓‡</td>
</tr>
<tr>
<td>Imazamethabenz (Assert only)</td>
<td>✓</td>
</tr>
<tr>
<td>Imazamethabenz (Assert only) + MCPA ester (0.28 to 0.45 L/acre)*</td>
<td>✓</td>
</tr>
<tr>
<td>Lontrel 360 (85 mL/acre) †</td>
<td>✓</td>
</tr>
<tr>
<td>Lontrel 360 (85 mL/acre) + 2,4-D ester* or MCPA ester* (0.34 L/acre) †</td>
<td>✓</td>
</tr>
<tr>
<td>MCPA amine or ester (0.23 ° or 0.28 to 0.45 L/acre)*</td>
<td>✓</td>
</tr>
<tr>
<td>Simplicity 30 OD (0.15 to 0.20 L/acre) †</td>
<td>✓†</td>
</tr>
</tbody>
</table>

† Marked tank mixes require the addition of a non-ionic surfactant. Unmarked mixes do not require additional adjuvant beyond what is provided for by the tank mix partner.

∆ Refine SG only.

∆∆ Deploy, MPower R and Nimble only.

* 500 g ai/L formulation.

** High rate of Banvel II with Refine SG only.

◊ Tank mix with 0.23 L/acre to control Clearfield canola at the 2 to 4 leaf stage.

Check the above tank mix partner(s) respective labels for additional staging and varietal restrictions.
Fertilizers: None registered.

Note: The above mixes are those listed on the Thifensulfuron/tribenuron labels only.

E.I. duPont also supports the following mixes that are not on the Refine SG label. Mixes must be applied according to the most restrictive use limitations for either product:

Herbicides: Attain XC, Axial Bla, Flucarbazone 2.0, Flucarbazone 2.0 + 2,4-D, Puma Advance, Simplicity, Traxos

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:

Rainfall: Rainfall of 1 inch (25 mm) or more beginning within 1 hour of application of Refine SG or 4 hours for 75% WDG formulations may reduce control.

Re-Entry: DO NOT re-enter treated fields for 12 hours.

Grazing: Must NOT be grazed or fed to livestock for 7 days after treatment.

Re-cropping: No restrictions the year after treatment. Canola, flax, lentil and alfalfa may be planted 2 months after application.

Aerial Application: Refine SG may be applied by air. DO NOT apply 75% WDG formulations by air.

Storage: Store in a cool, dry place. May be frozen.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres)</th>
<th>Buffer Zones (metres†)</th>
<th>Required for the Protection of:</th>
<th>Aquatic Habitats of Depths</th>
<th>Terrestrial habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Less than 1 m</td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td>Ground *</td>
<td>1</td>
<td>0</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed wing airplane</td>
<td>1</td>
<td>0</td>
<td>125</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helicopter</td>
<td>1</td>
<td>0</td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

75% WDG formulations (Ground equipment only): Leave a 15 m buffer zone between last spray swath and sensitive upland or aquatic habitats such as shelterbelts, wetlands, sloughs, and woodlots.

Sprayer Cleaning:

Thifensulfuron/tribenuron can cause severe injury to sensitive crops at very low concentrations. Sprayers used to spray Thifensulfuron/tribenuron should be drained and flushed out immediately after use.

Refer to ‘Method A’ in the general section on sprayer cleaning on page 15 to 16. If mixing with another pesticide with different cleaning measures, those measures should be integrated into ‘Method A’ (e.g. addition of detergent).

Hazard Rating:

75% WDG formulations:

⚠️ Warning – Eye and Skin Irritant

Refine SG:

⚠️ Warning – Contains the allergen milk.

For an explanation of the symbols used here see page 11.
Thifensulfuron/tribenuron + MCPA ester

These products are prepackaged tank mix of Refine SG (page 301) and MCPA ester (page 237). Information listed is restricted to Crop, Weeds and Rates and Tank mixes. For other detailed information on the component products see the product pages listed above.

Company:
E. I. duPont Canada (Refine M)
Loveland Products Canada (BroadSide)

Formulation:
Refine SG (PCP#28285): 33.35% thifensulfuron methyl + 16.65% tribenuron methyl; formulated as a water soluble granule.
Container size - 8 x 121 g water soluble packets.
-MCPA ester (PCP#26161): 500g/ L MCPA formulated as an emulsifiable concentrate.
Container size - 2x 9.1 L of MCPA ester.
-or-
MCPA ester (PCP#27803): 600g/ L MCPA formulated as an emulsifiable concentrate.
Container size - 2x 7.6 L of MCPA ester.

Crops and Staging:
Barley, wheat (including durum and winter) and oat from full 3 leaf to the flag leaf stage.
When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

Weeds and Staging:
Weeds Controlled or Suppressed by Refine SG plus 'Susceptible Weeds' controlled by MCPA ester, plus:

- Dandelion (rosettes, less than 15 cm in diameter)
- Volunteer canola (2 to 4 leaf) (including CLEARFIELD varieties)

Rate:
Refine SG: 12 g per acre
MCPA Ester: (500 g per L) - 0.23 L per acre, (600 g per L) - 0.19 L per acre
(One case treats 80 acres)
Refer to the product labels for complete mixing instructions.
A general guide to mixing can be found on page 14.

Tank Mixes:
Herbicides:
In spring wheat (including durum) and barley:
Assert (0.54 to 0.67 L/acre)
In spring wheat (NOT durum) and barley:
Lontrel 360 (85 mL/acre)
Check the above tank mix partners respective labels for additional staging and varietal restrictions.
Note: The above mixes are those listed on the Refine SG label only.

E.I. duPont also supports the following mixes that are not on the Refine M label. Apply mixes according to the most restrictive use limitations for either product:
Herbicides: Axial BIA, Horizon NG, Puma Advance, Traxos
See component products for more information on restrictions application details and handling. Use the most limiting restrictions of each component.
**Topramezone**

**Company:**
AmVac Corporation, distributed in Canada by UAP (Impact - PCP#28141)
BASF Canada (Armezon - PCP#30131)

**Formulation:**
336 g/L topramezone formulated as a suspension.
Container size - 8 L
Armezon: 0.6 L.
Impact: 8 L.

**Crops and Staging:**
**Corn (field†, seed, sweet‡†):** From the 1 to 7 leaf stage
† Including both conventional and herbicide tolerant varieties.
‡† NOTE: Tolerance of sweet corn varieties to topramezone and its mix partners may be variable. When tolerance is unknown, check with the supplier of seed and/or apply to a small area first to assess tolerance.

**Weeds and Staging:**
The following weeds are controlled with topramezone unless otherwise indicated:
Topramezone MUST BE applied in tank mix with one of the herbicide options indicated in 'Tank Mixes':

**Grass weeds below from the 1 to 4 leaf stage:**
- Barnyard grass*
- Foxtail (green and yellow)*

**Broadleaf weeds below from the 1 to 8 leaf stage:**
- Chickweed (common)*
- Pigweed (redroot, green)
- Kochia (up to 10 cm)**
- Ragweed (common)
- Lamb’s-quarters*
- Velvetleaf*
- Lady’s-thumb*
- Volunteer canola (up to 6 leaf)**
- Nightshade (eastern black)
- Wild mustard

* Suppression only.
** Armezón only. All types including glyphosate-resistant varieties.

**Rates:**
15 mL per acre
Must be applied with either:
- Merge adjuvant at 0.5 L per 100 L of spray solution
- Assist (or XA Oil concentrate*) at 1.25 L per 100 L plus UAN (liquid 28-0-0) at 1.25 L per 100 L of spray solution.
Maximum one application of topramezone per season.

**Application Information:**
**Water Volume:** Minimum 81 L per acre.
**Nozzles and Pressure:** Use 20 to 40 psi (140-276 kPa) if applying without drift reduction nozzles. Drift reduction nozzles may require higher pressures for proper performance. Select the nozzle and pressure combination that produces of ASABE medium droplets while maintaining good coverage of foliage.

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**
When weeds are stressed because of drought, flooding, hot or cool temperatures, weeds are not actively growing, control may be reduced.

**Tank Mixes:**
**Herbicides:**
Topramezone must be mixed with one of the following:

**Field and Sweet Corn**
- AAtrex (0.42 L/acre) (DO NOT use Merge with this mix in sweet corn)

**Field corn only:**
- Frontier Max (0.3 L/acre) + AAtrex (rates above)
- Glyphosate tolerant corn only:
  - Glyphosate (360 g ae per acre, no adjuvant required) (see glyphosate page for details)
  - Glyphosate + AAtrex (rates above)
  - Glyphosate + AAtrex (rates above) + Frontier Max (rates above)
Insecticides: None registered.
Fungicides: None registered.
Fertilizers: None registered.

Note: The above mixes are those listed on the toprame-zone label only.
Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: DO NOT apply if heavy rain is forecast. Contact manufacturer for more information.
Re-entry: DO NOT enter treated fields for at least 12 hours.
Grazing: DO NOT graze treated fields or cut for feed within 45 days of application.
Pre-harvest Interval: Leave 45 days between application and harvest.
Re-cropping: Field corn only may be seeded to treated areas after a crop failure. Winter wheat may be seeded a minimum four months after application. Spring wheat, field corn, navy (white) bean, soybean, pea and alfalfa may be seeded the following crop year. Check tank mix options for additional reseeding restrictions. Conduct a field bioassay (a test strip grown to maturity) the year before growing any other crop.
Aerial Application: DO NOT apply by air.
Storage: Store in a cool (above 5°C), dry area. If product is frozen, bring to room temperature and agitate before use.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres(^{\dagger}))</th>
<th>Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
<td>Terrestrial habitat</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td>Ground *</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
\(^{\dagger}\) Distance measured as metres from the downwind edge of the spray boom to sensitive habitat. Spray when winds are under 16 km/hr, but not dead calm.

Sprayer Cleaning:
Refer to ‘Method A’ in the general section on sprayer cleaning on pages 15 to 16.

Hazard Rating:

⚠️ Warning – Contains the allergen soy.

For an explanation of the symbols used here see page 11.
Company:
Dow AgroSciences (PCP#9005)

Formulation:
240 g/L picloram acid present as a potassium salt, formulated as a solution.
Container size - 10 L, 3.6 L
Note: Available only through selected retail outlets.

Crop and Staging:
Apply at any stage of permanent grass pastures, rangeland and non-cropland.
NOTE: It is strongly recommended that this product be applied by a licensed applicator.

Weeds, Rates and Staging:
For the control of biennial and deep-rooted perennial weeds listed below:

<table>
<thead>
<tr>
<th>Weed</th>
<th>Rate L/Acre</th>
<th>Backpack (mL of Tordon 22K per 100 M²)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scentless chamomile</td>
<td>0.445</td>
<td>11</td>
</tr>
<tr>
<td>Knapweed (diffuse, spotted)</td>
<td>0.91</td>
<td>22</td>
</tr>
<tr>
<td>Canada thistle, pasture sage, poverty weed, Russian knapweed, perennial sow-thistle</td>
<td>1.8</td>
<td>45</td>
</tr>
<tr>
<td>Leafy spurge, field bindweed, toadflax</td>
<td>3.6†</td>
<td>90†</td>
</tr>
</tbody>
</table>

† NOTE: This rate is only registered for use with hand application equipment (wand or backpack) and only one acre of every two may be treated in this manner at this rate.
* mix with 18 litres of water and the spray solution over 100 square metres.

For best results, applications should be made when perennial weeds have fully developed, green leaves. Application in late summer (or periods of dry weather) when plants are not actively growing may result in unsatisfactory control.

Application Information:
Water Volume: 160 to 325 L per acre without spray running off foliage.
Nozzles and Pressure: Maximum 150 to 350 kPa (20 to 50 psi) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of application equipment and pressure that is designed to deliver an even coverage of coarse droplets that are not prone to drift. Non-target broadleaf plants are very sensitive to Tordon 22K drift. Avoid conditions that are conducive to drift. (See page 12 for drift control suggestions)

How it Works:
Tordon 22K interferes with cell division, causing leaf cupping, stem distortion and eventual death. Tordon 22K is absorbed through the leaves and roots.

IMPORTANT: Tordon 22K is a very persistent and water-soluble herbicide. Treated soil should NOT be moved from the treated area. DO NOT apply to soils that are permeable, have sinkholes, or lie over limestone bedrock. DO NOT apply to soils whose surfaces are composed of fractured rock or unconsolidated gravel. Application to these sites may allow the movement of herbicide to underlying water sources or aquifers. If shallow aquifers are present, DO NOT apply Tordon 22K. This product is moderately toxic to fish. DO NOT apply to any water bodies or in areas where the runoff from treated areas will reach fish-bearing waters.

Tordon 22K must not be applied on range and pasture acres that are irrigated. DO NOT compost or mulch clippings from grass treated with Tordon 22K.

Effects of Growing Conditions:
Avoid application when pasture and target weeds are under stress from drought, flooding, extreme heat or cold, as injury to grass or unacceptable control may result. Avoid spraying if temperatures exceed 28°C.

Tank Mixes:
None registered.
**Restrictions:**

**Rainfall:** Rain within 6 hours of application may cause poor results. Heavy rainfall may dissolve and carry Tordon 22K away from the target area, or it may leach dissolved Tordon 22K out of the root zone or to undesirable locations.

**Grazing:** DO NOT graze lactating dairy animals within 6 weeks after treatment. There are no grazing restrictions for other livestock. DO NOT use manure from animals grazing treated forage to fertilize susceptible plants or crops.

**Re-cropping:** Tordon 22K may persist in the soil for up to 5 years. For this reason Tordon 22K may only be applied on permanent grass pastures and rangeland unless applied by an authorized pesticide applicator. Avoid the root zone of desirable trees or shrubs.

**Aerial Application:** DO NOT apply by air.

**Storage:** DO NOT freeze.

**Buffer Zones:**
Hand-held or backpack sprayer and spot treatment DO NOT require a buffer zone from sensitive habitat, but efforts should be made to minimize exposure to sensitive plants and open water or wetlands.

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres)</th>
<th>Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground only</td>
<td>1</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aquatic Habitats Terrestrial habitat</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* These distances can be reduced by 30% using cones on individual nozzles and by 70% using a full shield (shroud, curtain) that extends to the crop canopy.

† Distance is measured from the downwind edge of the boom to sensitive areas.

**Sprayer Cleaning:**
Tordon 22K can cause severe injury to sensitive crops (especially pulses and other broadleaf crops) at very low concentrations. Spray equipment should be flushed out immediately after spraying Tordon 22K. Refer to ‘Method A’ in the general section on sprayer cleaning on page 15 to 16.

**Hazard Rating:**

⚠️ Caution – Poison.

🔒 Danger – Eye Irritant.

⚠️ May Cause Skin Irritation.

For an explanation of the symbols used here see page 11.
Tralkoxydim

Company:
Dow AgroSciences (Liquid Achieve - PCP#28555; Turbocharge adjuvant - PCP#28554 or Intake adjuvant - PCP#31243)
ADAMA Canada (Bison - PCP#29256; Addit adjuvant - PCP#29263)
Loveland Products Canada (Marengo - PCP#29289; Turbocharge B adjuvant - PCP#29288)
Nufarm Agriculture (Nufarm Tralkoxydim - PCP#30176; Nufarm Tralkoxydim Adjuvant - PCP#30175)

Formulation:
400 g/L tralkoxydim formulated as a suspension concentrate.
Container sizes -
Marengo: 8 L of tralkoxydim plus 4L Turbocharge.
Bison: 8 L of tralkoxydim plus 8 L Addit adjuvant
Liquid Achieve: 8 L of tralkoxydim (Turbocharge and Intake adjuvants sold separately).
Nufarm Tralkoxydim: 8 L of tralkoxydim plus 4 L Nufarm Tralkoxydim Adjuvant
Contact manufacturers.

Crops and Staging:
No staging restrictions unless otherwise indicated.
Cereals:
Barley Triticale
Rye (spring & fall) Wheat (spring, durum, & winter)

Forage legumes: May be used on wheat and barley crops undersown to the following (if not tank mixed with a broadleaf herbicide).
Alfalfa Clovers
Bird’s-foot trefoil Sanfoin

Forage Grasses (seed production only)*:
Under-seeded with a cereal or grown alone (seedling or established)*:
Brome grass (meadow, smooth) Wheatgrass (crested, intermediate)
Creeping red fescue

Under-seeded with a cereal or grown alone (seedling only)*:
Wheatgrass (northern, slender, western)

Herbicide Group 1 - tralkoxydim
(Refer to page 45)

* Liquid Achieve, Nufarm Tralkoxydim and Bison only. NOTE - Since applications to these crops have been registered under the User Requested Minor Use program, the manufacturer assumes no responsibility for herbicide performance. Applications to these crops is at the risk of the user.
When tank mixing, always check the tank mix partner recommendations for additional staging restrictions.

Weeds and Staging:
Wild oats - 1 to 6 leaf stage (total leaves including tillers), with a maximum of 2 tillers.
Volunteer tame oats - 1 to 6 leaf stage.
Green and yellow foxtail - 1 to 5 leaf stage (total leaves including tillers), with a maximum of 1 tiller.
Barnyard grass, Persian darnel - 1 to 4 leaf stage (total leaves including tillers).
For forage grasses and perennial cereal rye, apply prior to tillering of the above weeds.
Apply at the 2 to 3 leaf stage for optimum control. Optimum weed control and yield response occurs when weeds are removed before tillering.

Rates:
0.2 L per acre. One 8 L jug of tralkoxydim treats 40 acres.
Add Turbocharge, Intake, Nufarm Tralkoxydim Adjuvant, or Addit adjuvant at a rate of 0.5 L per 100 L spray solution. Under adverse conditions or heavy weed infestations add Intake adjuvant to Liquid Achieve at 1 L per 100 L of spray solution.
Maximum one application of these products or other products containing tralkoxydim per season.
Note: If water analysis shows bicarbonate levels are 400 ppm or greater, add 0.9 to 1.8 kg of active ammonium sulphate per 100 L of spray water prior to mixing.
Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14

Application Information:
Water Volume:
Ground: 20 to 40 L per acre. Application in less than 20 L per acre water volume may result in mixing problems or unacceptable crop injury.
Aerial: 12 to 18 L per acre.
Nozzles and Pressure:
Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE medium droplets. See the label for detailed instructions on aerial application.

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**
Cereal crops that have set tillers may incur injury (yellowing and/or stunting) if applications are made within 48 hours of freezing temperatures. Cereal crops that have not set tillers may be injured if exposed to temperatures of 4°C or less up to 48 hours before or after application. Tank mixing with a broadleaf weed herbicide under adverse conditions may increase severity of crop injury. Crops under stress from foliar diseases or low fertility are more susceptible to injury from application. Temporary crop injury may occur when tralkoxydim tank mixes (particularly dichloprop/2,4-D ester products, and bromoxynil/MCPA ester products + additional MCPA Ester) are applied under extreme environmental conditions (dry or wet, cool or hot weather) resulting in crop stress. Control of grasses could be reduced when they are stressed due to drought, heat, lack of fertility, flooding or prolonged cool temperatures.

**Tank Mixes:**
Tank mix partners applied at all label rates and include recommended adjuvants unless otherwise noted.

**Herbicides:**
DO NOT tank mix tralkoxydim products with a broadleaf herbicide when applying to underseeded forage grasses or legumes.

<table>
<thead>
<tr>
<th>Tank Mix Partner</th>
<th>CROPS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spring wheat</td>
</tr>
<tr>
<td>2,4-D ester (205 g ae/acre)†</td>
<td>•</td>
</tr>
<tr>
<td>Bromoxynil†</td>
<td>•</td>
</tr>
<tr>
<td>Bromoxynil + 2,4-D (0.40 L/acre)‡</td>
<td>•</td>
</tr>
<tr>
<td>Bromoxynil/MCPA Ester‡</td>
<td>•</td>
</tr>
<tr>
<td>Curtail M (0.81 L/acre)</td>
<td>•</td>
</tr>
<tr>
<td>Dichlorprop/2,4-D*</td>
<td>•</td>
</tr>
<tr>
<td>Fluroxypyr + 2,4-D (Attain XC and OcTTain only)†††</td>
<td>•</td>
</tr>
<tr>
<td>Fluroxypyr + MCPA (Trophy only)</td>
<td>•</td>
</tr>
<tr>
<td>Infinity‡‡</td>
<td>•</td>
</tr>
<tr>
<td>Lontrel (0.11 L/acre) + MCPA ester (0.38 L/acre - 600 g/L forms)</td>
<td>•</td>
</tr>
<tr>
<td>MCPA ester† (0.38 L/acre - 600 g/L forms)</td>
<td>•</td>
</tr>
<tr>
<td>Prestige XC†††</td>
<td>•</td>
</tr>
</tbody>
</table>

† Manufacturers may support different brands of generic products with their product. Check the tralkoxydim product label for specific brands registered.

‡‡ Liquid Achieve only.

††† Liquid Achieve and Marengo only.

* Tank mixes may result in some temporary initial injury under adverse environmental conditions.

** Temporary crop injury can occur if applied prior to the 4 leaf stage. A reduction in wild oat control may occur with this mix.

*** Buctril M mixed with either Liquid Achieve or Marengo only in winter wheat, fall rye and triticale.

DO NOT tank mix tralkoxydim products with herbicides or formulations of herbicides not listed above as loss of grass control may result.
When applying broadleaf herbicides not listed above, in the same field, always apply tralkoxydim first. Apply the broadleaf product no sooner than seven days after application of tralkoxydim.

**Insecticides:**

*Matador* (49 mL/acre)

*Matador* tank mixes with *Bison* may also be combined with bromoxynil or bromoxynil/MCPA ester products.

**Fungicides:** None registered.

**Fertilizers:** None registered.

**Note:** The above mixes are those listed on the *tralkoxydim* labels only.

Various manufacturers may also support additional mixes that are not on the *tralkoxydim* labels. Check with manufacturers for more details.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

### Restrictions:

**Rainfall:** Within 1 hour will reduce control.

**Re-entry:** DO NOT enter treated field for 12 hours.

**Grazing:** Straw from treated grain crops may be fed to livestock. Immature cereal crops may be grazed or cut for hay 16 days after treatment. DO NOT feed or graze forage crops in year of treatment

**Preharvest:** Leave 60 days from application to harvest.

**Re-cropping:** DO NOT replant treated areas to tame oat or corn for at least 4 weeks after application.

**Aerial Application:** May be applied by air to cereal crops only. DO NOT apply within 50 m of fish bearing waters and wildlife habitat.

**Storage:** Store in a dry place. DO NOT freeze.

### Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Terrestrial habitat</td>
</tr>
<tr>
<td>Ground*</td>
<td>3</td>
</tr>
<tr>
<td>Helicopter</td>
<td>80</td>
</tr>
<tr>
<td>Fixed wing aircraft</td>
<td>100</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

**Sprayer Cleaning:**

Refer to ‘Method A’ in the general section on sprayer cleaning on page 15 to 16.

**Hazard Rating:**

⚠ Caution – Skin and Eye Irritant

For an explanation of the symbols used here see page 11.
**Travallas**

**Company:**
E.I. Dupont Canada (PCP#31685)

**Formulation:**
3 g ai/L metsulfuron methyl; 30 g ai/L thifensulfuron methyl; and 150 g ae/L fluroxypyr ester formulated as suspension concentrate liquid.

Container size - 2 x 8 L.

**Crops, Rates and Staging:**
**Barley, Wheat (spring, durum):**
Apply 0.2 L per acre from the 2 leaf to flag leaf stage (prior to head emergence).

Maximum one application per year of Travallas or other products containing metsulfuron, thifensulfuron or fluroxypyr.

**Weeds and Staging:**
Weeds controlled up to 10 cm tall or wide unless otherwise indicated:
- Canada thistle (maximum 15 cm and prior to bud)*
- Cleavers (1 to 6 whorl)
- Common chickweed (1 to 6 leaf)
- Corn spurry
- Cow cockle
- Dandelion (fall or spring germinating rosettes up to 25 cm)
- Flixweed
- Hemp-nettle
- Kochia

* Suppression only

**Application Information:**
**Water Volume:**
*Ground:* Minimum 22 L per acre.

*Aerial:* Apply in between 10 and 20 L/acre of water

**Nozzles and Pressure:** Use 30 to 40 psi (210 to 275 kPa) if applying without drift reduction nozzles. Drift reduction nozzles may require higher pressures for proper performance. Select the nozzle and pressure combination that produces of ASABE coarse droplets while maintaining good coverage of foliage. Use of 50 mesh screens or coarser are required. Keep booms lower than 60 cm from crop canopy.

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**
Application to crops stressed by extreme weather conditions such as frost, hail, saturated soils or drought as well as low fertility, insect damage or disease pressure may result in crop injury and/or reduce weed control. The conditions above as well as wide fluctuations in day/night temperatures or prolonged cool weather may shorten the crop slightly.

Crop and weeds that are growing rapidly produce optimum activity. The optimum temperature range for the best activity is between 12 to 24 degrees C. Activity will be reduced below 8 degrees C and above 27 degrees C.

**Tank Mixes:**
Tank mix partners applied at all label rates and include recommended adjuvants unless otherwise noted.

**Herbicides:**
- In barley and spring wheat (including durum) only: MCPA Ester (up to 113 g ae per acre)
- In spring wheat (including durum) only: Simplicity plus surfactant
- In spring wheat (NOT including durum) only: Traxos
- In spring wheat (NOT including durum) only: Flucarbazone (Everest 2.0 only)

**Insecticides:** None registered.

**Fungicides:**
- In Barley and spring wheat (including durum) only: Acapela

**Fertilizers:** None registered.

Note: The above mixes are those listed on the Travallas label only.

E.I. Dupont Canada supports the following mixes that are not on the Travallas label. Apply mixes according to the most restrictive use limitations for either label.

**Herbicides:**
- Barley and spring wheat (NOT including durum): Axial BIA
Company: Syngenta Canada

Formulation:
25 g/L pinoxaden and 25 g/L clodinafop propargyl formulated as an emulsifiable concentrate.

Container size - 2 X 10 L, 80 L, 400 L.

See the key to product pages on page 27 for an explanation of the different habitats.

* Buffer zones may be reduced when using drift reduction measures. See the Buffer Zone Calculator on the Pest Management Regulatory Agency web site.

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Spray when winds are under 16 km/hr, but not dead calm.

Tank Cleaning:
Thifensulfuron/tribenuron and/or metsulfuron can cause severe injury to sensitive crops at very low concentrations. Sprayers used to spray Thifensulfuron/tribenuron and/or metsulfuron should be drained and flushed out immediately after use.

Refer to ‘Method A’ in the general section on sprayer cleaning on page 15 to 16. When mixing with another pesticide with different cleaning measures, those measures should be integrated into ‘Method A’ (e.g. addition of detergent).

Hazard Rating:

\[ \text{Caution – Skin Irritant} \]

Potential skin sensitizer
Contains the allergen soy.

For an explanation of the symbols used here see page 11.

<table>
<thead>
<tr>
<th>Crop</th>
<th>Buffer Zones (metres(^\dagger)) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground application</td>
<td>1</td>
</tr>
<tr>
<td>Aerial (fixed wing)</td>
<td>1</td>
</tr>
<tr>
<td>Aerial (helicopter)</td>
<td>1</td>
</tr>
</tbody>
</table>

Traxos

Herbicide Group
1 - pinoxaden and clodinafop
(Refer to page 45)

Crops and Staging:
Spring wheat (including durum) - prior to the emergence of the 4th tiller.

When tank mixing, check broadleaf product description for additional restrictions.
Weeds, Rates and Staging,
0.5 L per acre, no additional adjuvant required (packages treat 40, 160 and 800 acres). Maximum one application of this product or those with the same ingredients in a season.

For control of:

<table>
<thead>
<tr>
<th>WEED</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barnyard grass, Persian darnel</td>
<td>1 to 5 leaves prior to tillering</td>
</tr>
<tr>
<td>Green and yellow foxtail</td>
<td>1 to 5 leaves, maximum 2 tillers</td>
</tr>
<tr>
<td>Volunteer canaryseed, Volunteer oats, wild oats, proso (Crown) millet</td>
<td>1 to 6 leaves, maximum 3 tillers</td>
</tr>
</tbody>
</table>

Optimum yield response occurs when weeds are controlled in early stages.

Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

Application Information:
Water Volume:
Ground – Minimum 20 L up to 40 L per acre.
Aerial* – Minimum 12 L/acre.

Nozzles and Pressure: 40 to 45 psi (275 to 310 kPa) when using conventional 80° or 110° flat fan stainless steel nozzles tilted forward at an angle of 45°. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE coarse droplets.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Warm, moist growing conditions promote active weed growth and enhance activity. Weeds hardened off by environmental stress such as cold weather, drought or excessive heat may not be adequately controlled.

Tank Mixes:
Herbicides:
Buctril M* (label rates)
Curtail M (0.6 to 0.81 L/acre)
Infinity (0.33 L/acre)
MCPA 600 ester (0.28 to 0.37 L/acre)
Mextrol 450M (0.5 L/acre)
Pulsar (80 acres / case)
Pulsar (80 acres / case) + MCPA 600 ester (0.23 L/acre)
Trophy (20 acres per case)

Refer to the broadleaf herbicide label for crop staging, and other information.

Insecticides: Matador (25 to 33 mL/acre).
Fungicides: Tilt (0.1 L* to 0.2 L/acre).
Fertilizers: None registered.

* Aerial application approved.

Note: The above mixes are those listed on the Traxos label only.

Syngenta also supports the following mixes that are not on the Traxos label. Apply mixes according to the most restrictive use limitations for either product:

Herbicides: Attain XC (low label rate), Barricade II, Broadside, Enforcer D, Enforcer M, Momentum+MCPA ester, OctTain XL, Paradigm, Pixxaro, Prestige XC, Pulsar + Express SG (up to 6 g/acre), thifensulfuron/tribenuron + MCPA, Retain, Stellar, Thumper

Fungicides: Fuse (see tebuconazole); Propel, Quilt

Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Within 1 hour may reduce control.
Re-entry: DO NOT enter treated fields for at least 12 hours.
Grazing: DO NOT graze or harvest treated crops for forage within 7 days of application.
Preharvest: Leave at least 60 days from application to harvest.
Re-cropping: No restrictions in the year following treatment.
Storage: Store in a cool, dry, ventilated area away from food or feed. Avoid ignition sources. If frozen, thaw and shake well before using.

Aerial Application: May be applied by air.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td></td>
<td>Terrestrial habitat</td>
</tr>
<tr>
<td>Ground</td>
<td>1</td>
</tr>
<tr>
<td>Aerial by airplane or helicopter</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance is measured from the downwind edge of the boom to sensitive areas.
Sprayer Cleaning:
Refer to ‘Method A’ in the general section on sprayer cleaning on page 15 to 16.

Hazard Rating:
⚠️ Warning – Skin Irritant
For an explanation of the symbols used here see page 11.

TraxosTwo

This product is a prepackaged tank mix of TraxosTwo Grass (equivalent to Traxos – see page 314) and TraxosTwo Broadleaf (equivalent to Octtain - see fluroxypyr+2,4-D on page 184). Information listed is restricted to Crop, Weeds, Rates and Tank mixes. For other detailed restrictions and other general information on the component products see the product pages listed above.

Company:
Syngenta Canada

Formulation:
The TraxosTwo package contains the following components:

- **TraxosTwo Grass Component (PCP# 31674):** 25 g/L pinoxaden and 25 g/L clodinafop-propargyl formulated as an emulsifiable concentrate.
  Container size - 10 L

- **TraxosTwo Broadleaf Component (PCP# 31673):** 90 g/L fluroxypyr plus 360 g/L 2,4-D LV ester formulated as an emulsifiable concentrate.
  Container size - 9 L

Herbicide Group
1 – pinoxaden, clodinafop
4 – fluroxypyr, 2,4-D
(Refer to page 45)

Rates:

- **TraxosTwo Grass Component:** 0.5 L/acre
- **TraxosTwo Broadleaf Component:** 0.45 L/acre

One case treats 20 acres

Weeds and Staging:
Weeds controlled by Traxos plus the weeds controlled by Octtain.

See component products for more information on restrictions application details and handling. Use the most limiting restrictions across all components for the mix.

Crops and Staging:

- **Spring wheat (including durum):** Apply from the 4 leaf stage up to the emergence of the fourth tiller.
Tribenuron

Company:
E. I. duPont Canada (Express SG)
Nufarm Agriculture (Spike)
FMC of Canada (Nuance)
Farmers of North America (MPower X)
Arysta Lifescience (Inferno WDG)

Formulation:
Express SG (PCP#28262): 50% tribenuron methyl, formulated as a water soluble granule (WSG).
75% WDG formulations
(Nuance - PCP#29468; MPower X - PCP#30964; Inferno WDG - PCP#30838; Spike - PCP#30376): 75% tribenuron methyl, formulated as a water dispersible granule (WDG).

Container sizes - Express SG*: 486 g.
MPower X*; Inferno WDG* and Nuance*: 320 g.
Spike: 160 g, 3.6 kg
* All products are purchased alone but must be used accordingly in combination with a registered tank mix herbicide.

Crops and Staging:
Tribenuron + glyphosate:
In the fall or spring prior to the seeding of:
Field Crops: Barley Canary seed† Dry bean† Fababean† Lupin† Oat† Pea† Soybean† Wheat (spring, durum, winter†)
Forage Crops‡: Alfalfa Alsike clover Bromegrass (meadow, smooth) Creeping red fescue Red clover (forage and seed production) Timothy†

Allow at least one day (24 hours) between application and seeding.
In the fall prior to seeding:
The crops listed above plus:
canola† flax† lentil†

Tribenuron + 2,4-D ester:
Fallow†† Wheat (spring and durum), barley††† - 3 leaf up to emergence of the flag leaf.

Express SG† plus non-ionic surfactant:
Post-emergent in rangeland and pasture – stage according to weeds.

Express SG + Hasten NT adjuvant:
Tribenuron tolerant sunflower† (eg. ExpressSun SU7 variety) – 2 to 8 leaves.
† Express SG only.
†† Express SG, Inferno WDG, MPower X and Nuance only.
††† Inferno WDG, MPower X and Nuance only.

Weeds, Rates and Staging,
Pre-seeding application and fallow mixed with glyphosate‡:
Express SG at 6 g per acre or 75% WDG tribenuron formulations at 4 g per acre plus glyphosate (any brand) at 180 g ae per acre (see glyphosate pages for equivalent product rates.)

Weeds controlled by glyphosate products at the rates above plus:
Canada thistle rosettes** Cow cockle * Dandelion (up to 6 inches) Narrow-leaved hawk’s-beard Scentless chamomile‡‡‡ White cockle (rosettes)‡‡‡ Volunteer canola (including glyphosate tolerant varieties)***

Fallow: Allow 10 days between application and tillage (fallow).
NOTE: Injury to pulse crops, forage grasses and forage legumes may occur on coarse-textured soils, low in organic matter (less than 3%), or in fields with variable soils, gravelly areas, sandy areas or eroded knolls. Avoid planting pulse crops in soils containing more than 50% sand.
* NOTE: Since these uses are registered under the User Requested Minor Use Label Expansion (URMULE) program, the manufacturer assumes no responsibility for herbicide performance. Those who apply these uses do so at their own risk.

Tribenuron 2 - tribenuron
(Refer to page 45)
Fallow

Express SG 6 g per acre or Inferno WDG; MPower X and Nuance at 4 g per acre plus 2,4-D ester 170 g (6 oz.) ae per acre (e.g. 0.24 L per acre LV 700 formulation):
Weeds controlled by 2,4-D ester 170 g (6 oz.) ae per acre plus:
Flixweed
Stinkweed

Post-emergent in barley and spring wheat (including durum):
Nuance, Inferno WDG and MPower X only at 4 g per acre plus 2,4-D ester 170 g (6 oz.) ae per acre (e.g. 0.24 L per acre LV 700 formulation):
Weeds controlled by 2,4-D plus the following weeds up to 4 inches (10 cm) unless otherwise indicated:
Annual sunflower
Canada thistle (top growth)
Cow cockle
Redroot pigweed
Wild buckwheat (1 to 3 leaf)**
Post-emergent for control of the emerged weeds below in Rangeland and Pasture only:
Express SG only at 6 g per acre at the early bud – pre-bloom stage:
Tall buttercup
Narrow-leaved hawk’s-beard
Express SG only at 12 g per acre
The weeds listed above plus:
Dandelion
White cockle
Common tansy

Post-emergent in Tribenuron Tolerant Sunflowers:
Express SG only at 6 g per acre (one 486 g package of Express SG treats 80 acres) plus Hasten NT adjuvant at 0.5L per 100L of spray solution will control:
Lamb’s-quarters (up to 9 leaf)
Wild buckwheat** (up to 6 leaf)
† Express SG only.
* Up to the 3 leaf stage
** Suppression only
*** Up to 6 inches
♦ Allow 10 days between treatment and tillage.
♣ Fall rosettes and spring seedlings.
♦♦ Addition of a non-ionic surfactant at 0.2 L per 100 L of spray solution is required.

Tribenuron may degrade if left in the sprayer for an extended period. Apply within 24 hours of mixing.

Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

Application Information:

Water Volume: 22 to 40 L per acre.
Nozzles and Pressure: Use appropriate pressure for nozzle. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE medium droplets or larger. Use a 50 mesh or coarser screen and filter system.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:

Warm, moist growing conditions promote active weed growth and enhance the activity of tribenuron. Weeds hardened off by environmental stress such as cold weather, drought or excessive heat may not be adequately controlled.

Tank Mixes:

Herbicides:
Prior to seeding registered crops (all products):
Must be mixed with glyphosate.
Fallow: All products
Must be mixed with either glyphosate or 2,4-D ester.
In spring wheat (including durum) and barley (Nuance Inferno WDG and MPower X only):
Assert (0.53 to 0.65 L/acre);
Fenoxaprop (Cougar and Cordon only - 155 mL/acre).
In spring wheat (NOT durum) and barley (Nuance; Inferno WDG and MPower X only):
Banvel II (44.5 mL/acre)

Tribenuron Tolerant Sunflowers (Express SG only):
Assure II (label rates) plus Merge or Suremix adjuvants.

Insecticides: None registered.

Fungicides: None registered.

Fertilizers: None registered.

Note: The above mixes are those listed on the tribenuron labels only.

Adding ingredients in the correct order is critical for optimum performance. Check product labels for directions. General guidelines can be found on page 14.
**Restrictions:**

**Rainfall:** Within 6 hours will reduce control.

**Re-entry:** DO NOT enter treated fields for 12 hours.

**Grazing:**

**75% WDG formulations:** DO NOT graze treated crops within 30 days of application.

**Express SG:** Forage may be grazed immediately following application.

**Preharvest Interval:**

**75% WDG formulations:** Leave 60 days between spraying and harvest of cereals.

**Express SG:** Leave 70 days between spraying and harvest of sunflower.

**Re-Cropping:** There are no restrictions one year after treatment.

**75% WDG formulations:** Canola, flax, lentil and alfalfa may be planted 2 months after application.

**Express SG:** Canola, flax, and lentil may be planted 2 months after application or in the spring following a fall application.

**Aerial Application:** DO NOT apply by air.

**Storage:** Store in a cool, dry place. May be frozen.

**Buffer Zones:**

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres&lt;sup&gt;†&lt;/sup&gt;) Required for the Protection of:</th>
<th>Aquatic Habitats of Depths</th>
<th>Terrestrial habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less than 1 m</td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td>Fallow, preseed, range and pasture</td>
<td></td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Tribenuron tolerant sunflowers</td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Tribenuron tolerant sunflowers</td>
<td></td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

† Distance is measured from the downwind edge of the boom to sensitive areas.

Handheld or backpack sprayers do not require a buffer zone.

**Sprayer Cleaning:**

*Tribenuron* can cause severe injury to sensitive crops at very low concentrations. Sprayers used to spray *Tribenuron* should be flushed out immediately after use. Refer to 'Method A' in the general section on sprayer cleaning on page 15 to 16. *This ammonia rinse process should be done twice for the WDG formulations.* See the labels of the various products for specific instructions. The addition of detergent may improve cleanout, especially when mixing with other products.

**Hazard Rating:**

**Express SG and Spike:**

⚠️ Warning – Eye Irritant

Potential Skin Sensitizer

**Nuance, MPower X and Inferno WDG:**

⚠️ Caution – Eye and skin irritant

**All products:**

⚠️ Warning - Contains the allergens milk and sulfites

For an explanation of the symbols used here see page 11.
Company:
E. I. duPont Canada (Express Pro - PCP#29212)
FMC of Canada (Nuance Pro - PCP#31873)

Formulation:
42.9% tribenuron methyl, and 8.6% metsulfuron methyl formulated as a water soluble granule.
Container size - 560 g container.
_Tribenuron/Metsulfuron_ is purchased alone but must be mixed with glyphosate before use.

Crops and Staging:
For application to summer-fallow, post-harvest* and prior to seeding of the following crops:
Spring wheat  Winter wheat
Durum wheat  Barley

Allow at least one day (24 hours) between application and seeding.

Fallow and Post-harvest* application:
Allow 10 days between fallow or post-harvest* treatment and tillage.
DO NOT use _Tribenuron/Metsulfuron_ on highly variable soils that have large gravely or sandy areas, eroded knolls or calcium deposits.
* Express Pro only.

Weeds, Rates and Staging:
_Tribenuron/Metsulfuron_ at 7 g per acre (one container treats 80 acres) plus glyphosate at a rate equivalent to 180 g ae per acre (equivalent of 0.5 L per acre of a 360 g per L formulation):

Weeds controlled by glyphosate products at these rates plus up to 3 inches (8 cm) unless otherwise indicated:

- Canada thistle rosettes**
- Cleavers†
- Cow cockle*
- Dandelion ***†
- Narrow-leaved hawk’s-beard†
- Night-flowering catchfly**

† Residual control
* Up to the 3 leaf stage
** Suppression only
*** Up to 6 inches

Herbicide Group
2 - tribenuron & metsulfuron
(Refer to page 45)

_Tribenuron/Metsulfuron_ may degrade if left in the sprayer for an extended period. Apply within 24 hours of mixing.
Apply a maximum of one application of _Express Pro, Nuance Pro_ or other products containing the ingredients tribenuron or metsulfuron per year.
Refer to the product label for complete mixing instructions.
A general guide to mixing can be found on page 14.

Application Information:
Water Volume: 22 to 45 L per acre.
Nozzles and Pressure: Use a combination of nozzles and pressure designed to deliver thorough, even coverage with _ASABE medium_ droplets. Low drift nozzles may require higher pressures for proper performance.
Screens: Use 50 mesh or larger screens in both nozzles and in-line filters.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Registered crops seeded following _Tribenuron/Metsulfuron_ application become stressed by drought, low fertility, saline soils, waterlogged soils (soils at or near field capacity), disease or insect damage may be injured. This injury may be worse on light or low organic matter soils. Weeds hardened off by environmental stress such as those above may not be adequately controlled.

Tank Mixes:
Herbicides: Must be mixed with glyphosate.
Insecticides: None registered.
Fungicides: None registered.
Fertilizers: None registered.
**Note:** The above mixes are those listed on the _Tribenuron/Metsulfuron_ labels only.
Adding ingredients in the correct order is critical for optimum performance. Check product labels for directions.
General guidelines can be found on page 14.

Restrictions:
Rainfall: No rainfast period is specified on the label; required interval may be up to 8 hours. Contact manufacturers for more information.
Weed Control

Re-Entry: Wait 12 hours before re-entering treated fields.

Re-cropping: Barley and wheat (spring, winter and durum) may be seeded a minimum of 24 hours after application. Oats may be seeded the season following application. Canola, flax and peas may be planted 10 months following application.

Aerial Application: DO NOT apply by air.

Storage: Store in a cool, dry place. May be frozen.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td></td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td>-ground only⁠</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Terrestrial habitat*</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:

*Tribenuron/Metsulfuron* can cause severe injury to sensitive crops at very low concentrations. Sprayers used to spray this product should be flushed out immediately after use. Refer to 'Method A' found in the general sprayer cleaning section on page 15 to 16. Check the label or contact the manufacturer for more specific sprayer cleaning information.

Hazard Rating:

Express Pro only:

🔍 Caution – Poison
🔥 Warning – Eye Irritant
⚠️ Potential Skin Sensitizer.

Both Products:

🔍 Contains the allergens sulphites and milk.

For an explanation of the symbols used here see page 11.
Company:
Dow AgroSciences (Treflan)
Nufarm Agriculture (Rival)
Loveland Products Canada (Bonanza)

Formulation:
Bonanza 480 EC (PCP#28289): 480 g/L trifluralin formulated as an emulsifiable concentrate.
Container size - 9.45 L, 205 L.
Bonanza 10G (PCP#22744): 10% trifluralin formulated as a granular.
Container size - 22.7 kg, 500 kg bags.
Rival EC (PCP#18612): 500 g/L trifluralin formulated as an emulsifiable concentrate in.
Container size - 9 L, 900 L.
Rival 10G (PCP#18926): 10% trifluralin formulated as a granular.
Container size - 22.7 kg, 454 kg bags.
Treflan EC (PCP#23933): 480 g/L trifluralin formulated as an emulsifiable concentrate.
Container size - 9.45 L, 115 L.

Crops and Staging:
Certain formulations are not registered for all the crops listed here. Refer to the specific product label for details. All products are for pre-plant incorporated use only.

Fallow use in the brown soil zone of Saskatchewan (Granular products only): Spring wheat (including durum).

Not for use in Manitoba.
Apply to fallow fields in May, June, or July for weed control during both years of a fallow-wheat rotation or in the fall (September or October) or spring prior to wheat seeding.
DO NOT apply following harvest when the previous crop was treated with another trifluralin product (Treflan, Rival or Bonanza). This includes application the previous summer or fall.
DO NOT apply trifluralin following harvest or to fallow when the previous year’s crop was an oilseed, barley or pulse crop treated with a deep incorporated, spring or fall applied trifluralin product.

Green and Yellow Foxtail Control in Cereals:
Liquids applied in spring only (after seeding but prior to crop emergence) - spring wheat (including semi-dwarf and durum).
Granulars applied in fall only (after September 1 but before freeze-up) - spring wheat (including semi-dwarf and durum).

Broadleaf and Grassy Weed Control in other crops:
Spring applied liquid or granular formulations:
Canola, pea, sunflower, safflower (liquid formulations), dry bean, mustard, fababean, alfalfa, sainfoin, sweet clover, soybean, forage legumes (cicer milk-vetch, seedling alsike clover, red clover, bird’s-foot trefoil).
Fall applied granular formulations: Canola, pea, sunflower, dry bean, mustard, fababean, soybean, barley, lentil and flax.

Trifluralin liquids only: prior to planting shelterbelt transplants (elm, caragana, green ash, Scots pine).

Weeds:
Fallow use in the brown soil zone of Saskatchewan (Granular products only):

Fallow Year:
Barnyard grass
Cow cockle
Green foxtail
Lamb’s-quarters
Persian dandel

Crop Year:
Green foxtail
Lamb’s-quarters
Wild oat

* Suppression only

Green and Yellow Foxtail Control in Cereals:
Foxtail (green and yellow)

Broadleaf and Grassy Weed Control in other crops:
Barnyard grass
Brome (downy, Japanese)
Chickweed
Cow cockle
Foxtail (green, yellow)
Knotweed

Lamb’s-quarters
Persian dandel
Pigweed
Purslane
Wild buckwheat*
Wild oats*

* Some plants may escape herbicide treatment but are not competitive with the crop.
† Suppression only with Treflan EC and Bonanza 480 EC.
Rates and Staging:

Fallow use in the brown soil zone of Saskatchewan (Granular products only):
DO NOT apply to sandy soils with less than 1% organic matter. Application to severely eroded knolls is not recommended. DO NOT apply to wet soils, soils in poor working condition, soils which contain more than 8 percent organic matter, or soils subject to prolonged periods of flooding.
Granules may be applied to fallow fields or following harvest, provided crop residues or green growth do not interfere with cultivation (prevent soil mixing).
Over-application caused by overlapping, improper calibration or non-uniform application may result in reduced crop stand, delayed development or reduced yields.

During the fallow year, susceptible weeds may not be fully controlled until after the second fallow operation has established a uniform layer of treated soil. Control of wild oats in the crop year may be variable depending on wild oat population as well as soil and climatic conditions. Some wild buckwheat may escape but its growth will be retarded and result in limited competition to the wheat crop.

Pre-emergent control of green and yellow foxtail:

**Liquids**

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>RATES (L/ACRE)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LIGHT AND MEDIUM SOIL TEXTURE</strong></td>
<td><strong>HEAVY SOIL TEXTURE</strong></td>
</tr>
<tr>
<td>Rival EC</td>
<td>0.49 to 0.57 L</td>
</tr>
<tr>
<td>Treflan EC, Bonanza 480 EC</td>
<td>0.49 L</td>
</tr>
</tbody>
</table>

Granulars products (wheat only)

Rival 10G / Bonanza 10G at 2.23 kg per acre in all soil textures with 2 to 8% organic matter.

* Control of green foxtail only, on soils between 2 to 8% organic matter.

**Broadleaf and Grassy Weed Control in other crops:**

For use in canola, pea, sunflower, dry bean, mustard, fababean, seedling alfalfa (spring only), seedling sweet clover (spring only), soybean.

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>SOIL TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Light soils with less than 6% organic matter</strong></td>
<td><strong>Medium to heavy soils with 6 to 15% organic matter</strong></td>
</tr>
<tr>
<td><strong>Spring</strong></td>
<td><strong>Fall</strong></td>
</tr>
<tr>
<td>Rival EC</td>
<td>0.65 L/acre</td>
</tr>
<tr>
<td>Rival 10G</td>
<td>3.43 kg/acre**</td>
</tr>
<tr>
<td>Treflan EC</td>
<td>0.69 L/acre</td>
</tr>
<tr>
<td>Bonanza 10G</td>
<td>Not registered</td>
</tr>
<tr>
<td>Bonanza 480 EC</td>
<td>0.69 L/acre</td>
</tr>
</tbody>
</table>

* Although liquid formulations are registered for fall application, this use is not recommended as tillage requirements before and after application will predispose fields to erosion.
** Spring applications of granular formulations are recommended for Manitoba only.
For use in barley (fall only), apply:

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>SOIL TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 to 4% organic matter</td>
</tr>
<tr>
<td>Light Soil Texture*</td>
<td>Medium to Heavy Soil Texture**</td>
</tr>
<tr>
<td>Rival 10G, Bonanza 10G</td>
<td>3.44 kg/acre</td>
</tr>
<tr>
<td>Bonanza 480 EC</td>
<td>0.93 L/acre</td>
</tr>
<tr>
<td>Treflan EC</td>
<td>0.93 L/acre</td>
</tr>
<tr>
<td>Rival EC</td>
<td>0.89 L/acre</td>
</tr>
</tbody>
</table>

* Light textured soils can be defined as sandy to sandy-loam.
** Medium to Heavy textured soils can be defined as loam to clay.

For use in flax or lentils (fall only), apply:

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>SOIL TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Soils with 2 to 6% organic matter</td>
</tr>
<tr>
<td>Light Soil Texture*</td>
<td>Medium-Heavy Soil Texture**</td>
</tr>
<tr>
<td>Rival 10G, Bonanza 10G</td>
<td>4.45 kg/acre</td>
</tr>
<tr>
<td>Bonanza 480 EC</td>
<td>0.93 L/acre</td>
</tr>
<tr>
<td>Treflan EC</td>
<td>0.93 L/acre</td>
</tr>
<tr>
<td>Rival EC</td>
<td>0.89 L/acre</td>
</tr>
</tbody>
</table>

* Light textured soils can be defined as Sandy to Sandy-loam.
** Medium to Heavy textured soils can be defined as loam to clay.
*** Rates vary among products. Refer to product label for specific information.

Application:

Liquid Formulations:

Water Volume: Minimum 40 L per acre.

Nozzles and Pressure: Maximum 40 psi (275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE medium droplets or larger.

Dry Granular Formulations: Use equipment capable of metering granular herbicides and applying in an even layer over the surface of the soil. Close applicator lid after filling to avoid prolonged exposure to direct sunlight.

Incorporation:

Fallow use in the brown soil zone of Saskatchewan:
Apply granules to the soil surface and incorporate immediately, in the same operation if possible. DO NOT delay incorporation more than 24 hours after application. Use a deep tillage cultivator, field cultivator or disc implement set to work 2 to 3 inches (5 to 8 cm) deep, and operating at 8 to 10 km/hr. Granules should not be incorporated when soil is crusted, lumpy or too wet for good mixing action.

May - July: A second incorporation at the same depth and at an angle to the first should be done when weed growth requires it. Wait at least one week before making the second incorporation. After completing two fallow incorporations, additional operations with a rod weeder, shallow tillage or fall 2,4-D application may be required to control remaining weed growth.

September - October: A second incorporation may be done in the fall a minimum of 3 days later. Alternatively, to conserve crop residues cover through the winter, the second incorporation can be completed in the spring at the same depth and at an angle to the first incorporation. When both incorporations take place in the fall, shallow spring tillage should be completed in the spring. If a discer or air seeder is used for seeding, separate spring tillage may not be necessary.

NOTE: Fall application is not recommended on soils where a lack of crop residue cover combined with the required incorporation would leave the soil vulnerable to erosion.
Spring (In the year of seeding): Apply granules and incorporate immediately, in the same operation if possible. DO NOT delay the first incorporation longer than 24 hours after application. The second incorporation must be delayed a minimum of 3 days following the first incorporation. When applied to cold soils, wait 14 days before making second incorporation.

The second incorporation should be done at an angle to the first incorporation, and at the same depth. If a discer or air seeder is used for seeding, the seeding operation can be used as the second incorporation.

Green and Yellow Foxtail control in Cereals:

Liquid formulations: Apply and incorporate in spring just after seeding. Incorporate to a depth of 1 to 1.5 inches (2 to 4 cm) into a bare soil free of crop residues (80 percent black when viewed from above) using diamond or tine type harrows operated at a speed of 6 mph (9 km/h). Incorporate twice, with the second incorporation at right angles to the first. The first incorporation should be performed immediately in the same direction of application. Both incorporations should be done within 24 hours of application. When tank mixing liquid formulations with Avadex BW, follow the same incorporation procedure.

Granular formulations: May be applied to standing or pre-worked stubble. Very heavy trash fields should be worked prior to application to allow product penetration to the soil surface. Incorporate with cultivators or disc implements only. Perform the first tillage operation within 24 hours of application. Incorporate at a working speed of 5 to 8 mph (8 to 13 km/hr) and to a depth of 2 to 3 inches (5 to 8 cm). Wait a minimum of 5 days, then incorporate a second time at right angles to the first. This second incorporation may be delayed until the following spring. Subsequent working should be no deeper than 2 to 3 inches (5 to 8 cm).

Broadleaf and Grassy Weed Control in other crops:

Granular formulations are recommended for use in fall or spring as a pre-plant incorporated treatment on broadleaf crops listed on the product label. The liquid formulations should be used only on soils free of lumps and relatively free of crop residues (75% black) and are recommended only for spring use. Granular formulations may be applied to standing or pre-worked stubble. Very heavy crop residues should be worked prior to application to allow product penetration to the soil surface. DO NOT use liquid or formulations of trifluralin as a pre-plant incorporated treatment in barley, as severe injury will result. Only the fall applications of Rival 10G, and Bonanza 10G are registered for use as pre-plant incorporated treatments in barley. For fall application of granular formulations, work the chemical into the soil between September 1 and freeze-up. Use a discer or field cultivator (vibrating shank-type). Disc implements are preferred on stubble. Set equipment to cut at 3 to 4 inches (8 to 10 cm) depth. The initial incorporation should be done within 24 hours of application.

The second incorporation should be done at right angles to the first. The second incorporation may be delayed until spring, except when planting barley, flax or lentils; for these crops both incorporations must be done in fall. Delay the second incorporation 5 days for better weed control. This will allow greater release of the chemical onto soil particles and assure more even distribution. Fall application of granular trifluralin on flax, lentils or barley is not recommended on soils prone to erosion, as the 2 fall incorporations necessary in these crops may leave soils vulnerable to wind or water erosion.

For spring application of liquid and granular formulations, work the chemical into the soil prior to seeding by setting the implement at 3 to 4 inches (8 to 10 cm) cutting depth. The first incorporation must be done within 24 hours of application. The second incorporation must be done at right angles to the first. If incorporating granular trifluralin, delay the second incorporation for 3 days after the first to achieve better weed control.

Seeding:

Fallow use in the brown soil zone of Saskatchewan:
Allow soil to warm before seeding to reduce risk of injury to crop. Place seed 1.25 to 2.5 inches (3 to 6 cm) deep. If spring seedbed preparation is required, set cultivator 2 inches (5 cm) deep. To reduce the risk of wheat injury, use good quality seed and agronomic practices that will promote good growing conditions. Avoid deep seeding, loose seedbeds and seeding into cold soils. If extended dry periods were present after a fallow application, a 10 percent increase in seeding rate is recommended.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:

Prolonged drought conditions after a May-July application to fallow may result in higher levels of trifluralin in the soil at the time of seeding.

Injury to flax, barley, wheat or lentil may occur if soil and weather conditions are not conducive to rapid crop emergence (cold or dry soils at the time of seeding and crop emergence).

To minimize crop injury, seed into a firm, moist seed bed using a seeder with good depth control and on row packing. Plant barley no deeper than 2 inches (5 cm). Plant cereals, lentil and flax no deeper than 1.5 inches (4 cm). Less than acceptable weed control will result if dry conditions prevail at the time of weed emergence.

Rainfall has no direct effect on products’ activity. Flooding (3 to 5 days) will cause rapid breakdown of the product resulting in reduced weed control. Flooding for 3 weeks or more will result in total breakdown of the product resulting in loss of weed control.

Weed Control
Tank Mixes:

Herbicides:
- Soybeans:
  - Sencor (Treflan EC only).

Fertilizers: Liquid product may be applied with liquid fertilizer as a carrier. Before the herbicide is added to the tank, compatibility of the herbicide to liquid fertilizer should be tested following instructions on the herbicide container. Trifluralin liquids may be blended with dry bulk fertilizers (DO NOT mix with nitrate fertilizers). Check label for blending instructions.

Insecticides: None registered.

Fungicides: None registered.

Note: The above mixes are those listed on the Trifluralin labels only.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:

Rainfall: No restriction. Flooding may reduce weed control.

Re-entry: Wait at least 12 hours before entering treated fields.

Grazing: DO NOT graze the treated crops or cut for feed prior to crop maturity.

Re-cropping: Oat, canaryseed, and small-seeded grasses may be affected the year after treatment. Corn is sensitive at higher rates of application. Damage to wheat can occur if the crop is seeded into land that has been treated during the previous 21 months with trifluralin products and has received abnormally low amounts of precipitation. Damage is worse if conditions are not conducive to rapid emergence of the wheat (for example, if the crop is seeded deep or if soil conditions remain cool during emergence). Damage tends to be greater on fields treated with granular formulations.

Aerial Application: DO NOT apply by air.

Storage: Granular formulations must be stored in a cool, dry location, out of sunlight.

Rival EC: DO NOT store below 5°C.

Treflan EC: DO NOT freeze.

Bonanza 480 EC: DO NOT freeze.

Recommendations for liquid formulations: Crystallization of the active ingredient may occur at less than 5°C. To reconstitute, bring temperature to 15°C and shake well until no crystals are visible. This should be done before adding to the spray tank.

Buffer Zones: (liquid formulations only)

<table>
<thead>
<tr>
<th>CROP</th>
<th>Buffer Zones (metres†)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Field crops</td>
<td>80</td>
</tr>
<tr>
<td>Shelterbelts, woody crops</td>
<td>120</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats. * Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance is measured from the downwind edge of the boom to sensitive areas.

Sprayer Cleaning:

Refer to ’Method B’ in the general section on sprayer cleaning on page 15 to 16.

Hazard Rating:

Bonanza 480 EC:

⚠️ Warning – Poison
⚠️ Warning – Eye and Skin Irritant

All products:

Potential skin sensitizer.

For an explanation of the symbols used here see page 11.
**Triton C**

**Company:**
E. I. du Pont Canada (PCP#28622)

**Formulation:**
51.55% quinclorac + 10.30% thifensulfuron methyl + 5.15% tribenuron methyl formulated as a water dispersible granule.

Container size - 1.566 kg

**Crops and Staging:**
Spring barley, wheat (including durum, and spring) - 2 to 5 leaf stage.

When tank mixing, always check the tank mix partner recommendations for additional staging restrictions

**Weeds and Staging:**
Unless otherwise noted below, apply to young and actively growing weeds that are less than 4 inches (10 cm) in height or width.

**Weeds Controlled:**

- Annual smartweed (green, lady’s-thumb)
- Ball mustard
- Chickweed (1 to 6 leaf)
- Cleavers (1 to 4 whorls)
- Common groundsel
- Corn spurry
- Cow cockle
- Flixweed
- Hemp-nettle
- Lamb’s-quarters
- Narrow-leaved hawk’s-beard
- Redroot pigweed
- Round-leaf mallow (2 to 6 leaf)
- Russian thistle
- Shepherd’s-purse
- Sow-thistle, annual
- Stinkweed
- Stork’s-bill (2 to 6 leaves)
- Tartary buckwheat
- Volunteer canola (not CLEARFIELD varieties)
- Volunteer sunflowers
- Wild buckwheat (1 to 5 leaf)
- Wild mustard

**Weeds Suppressed:**
Canada thistle, perennial sow-thistle (less than 6 inches (15 cm) tall or across and prior to budding)
Scentless chamomile
Toadflax (less than 6 inches or 15 cm tall)
Volunteer flax

**Rate:**
39.25 g per acre. Limit to one application of this product or other products containing the same ingredients per year.

(One 1.566 kg container treats 40 acres)

*Merge adjuvant (not included) must be added at 1.0 L per 100 L of spray solution.*

Refer to the product label for complete mixing instructions. A general guide to mixing can be found on page 14.

**Application Information:**

**Water Volume:** Minimum 22 L per acre.

**Nozzles and Pressure:** 30 to 40 psi (210 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of **ASABE medium** droplets. Use a 50 mesh or coarser screen and filter system.

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**
DO NOT apply to wheat, or barley that are stressed by severe weather conditions (frost, drought or water saturated soil) as crop injury may result. Under certain conditions (heavy rainfall, prolonged cool weather, frost conditions, wide fluctuations in day/night temperatures) lightening in crop colour and reduction in crop height may occur.

Group 2 susceptible kochia control may be reduced during stress conditions or if extremely heavy infestations exist.
Tank Mixes:

Herbicides: None registered.
Fertilizers: None registered. DO NOT mix with substances that contain boron or that release chlorine.

Note: The above mixes are those listed on the Triton C label only.

E.I.duPont also supports the following mixes that are not on the Refine SG label. Mixes must be applied according to the most restrictive use limitations for either product:
Herbicides: Axial BIA, Axial BIA + MCPA ester, Flucarbazone 2.0, Flucarbazone 2.0 + 2,4-D, Horizon NG, Puma Advance.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:

Rainfall: Within 6 hours may reduce control in general.
Re-entry: DO NOT enter treated fields for at least 12 hours.
Grazing: Must not be grazed or fed to livestock for 77 days after treatment.
Preharvest Interval: Leave 77 days between treatment and harvest for wheat and durum and 80 days for barley.
Re-cropping: Spring wheat (including durum) and spring barley may be reseeded immediately following application. Wheat, barley, oat, canola, field pea, flax, lentil and sunflower may be grown the year after application. On low organic matter soils or under dry conditions, flax and lentils should NOT be grown until the second year after application. DO NOT use Triton C on land where potato or vegetables are grown. A field bioassay (a test strip grown to maturity) must be conducted the year before growing any crops other than those listed above.

Aerial Application: DO NOT apply by air.

Sprayer Cleaning:

Triton C can cause severe injury to sensitive crops at very low concentrations. Sprayers should be flushed out immediately if application is to be stopped for an extended period. The manufacturer recommends a cleanout procedure similar to 'Method A' in the general sprayer cleaning section on page 15 to 16. See label for specific process.

Hazard Rating:

⚠️ Caution – Poison
⚠️ Warning – Eye and Skin Irritant
⚠️ Potential Skin Sensitizer

For an explanation of the symbols used here see page 11.

Herbicide Group
2 - tribenuron
4 - dicamba, 2,4-D
(Refer to page 45)

Formulation:

The Triton K package contains the following components:

DB-858 (PCP#28872); Triton Broadleaf (PCP# 29989):
58.45% dicamba sodium salt, and 8.25% tribenuron methyl formulated as a water dispersible granule.
Container size - 1.47 kg
2,4-D LV 700 (PCP#23192): 660 g/L 2,4-D ester formulated as an emulsifiable concentrate.
Crops and Staging:
Spring wheat (including durum), winter wheat and barley:
3 leaves fully expanded to 6 leaves plus 3 tillers. Application outside of this stage range can result in injury to the crop.
Fallow: Stage according to weeds.

Weeds and Staging:
Weeds controlled up to 10 cm tall or across:
Annual sunflower  Prickly lettuce
Ball mustard  Redroot pigweed
Canada thistle (top growth control)  Russian pigweed
Cow cockle  Russian thistle
Dandelion ***  Shepherd’s-purse**
Flixweed**  Stinkweed**
Hare’s-ear mustard  Sweet clover
Indian mustard  Thyme-leaved spurge
Kochia (2 to 10 leaf)†  Tumble mustard
Lamb’s-quarters  Wild buckwheat*
Narrow-leaved hawk’s-beard**  Wild mustard

† 1 to 4 leaf stage
** Fall rosettes and spring seedlings only.
*** Spring or fall rosettes up to 15 cm in diameter.

Rate:
DB-858/Triton Broadleaf: 36.8 g per acre
2,4-D 700 LV ester: 243 mL per acre
(One package treats 40 acres or 16 ha)
Apply this product or other products containing the same ingredients only once per season.
Triton K may degrade if left in the sprayer for an extended period of time. Apply within 24 hours of first mixing. Refer to the product label for complete mixing instructions.
A general guide to mixing can be found on page 14.

Application Information:
DO NOT apply if temperatures are greater than 30°C, if humidity is high, or wind is blowing toward non-target plants as injury from drift may result.
Water Volume: Minimum 22 L per acre.
Nozzles and Pressure: Maximum 40 psi (275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE coarse droplets. Use a 50 mesh or coarser screen and filter system

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
DO NOT apply to wheat, or barley that are stressed by severe weather conditions (frost, drought or water saturated soil) as crop injury may result. Under certain conditions (heavy rainfall, prolonged cool weather, frost conditions, wide fluctuations in day/night temperatures) lightening in crop colour and reduction in crop height may occur.
Kochia control may be reduced during stress conditions or if extremely heavy infestations exist.

Tank Mixes:
None registered.
E.I. duPont Canada supports the following mixes that are not on the Triton K label. Apply mixes according to the most restrictive use limitations for either product:
Herbicides: Flucarbazone 2.0, Puma Advance (206 mL per acre).
Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:
Rainfall: Within 4 to 6 hours may reduce control.
Re-entry: DO NOT enter treated fields for at least 12 hours.
Grazing: Lactating dairy animals MUST NOT graze fields within 7 days of treatment.
Preharvest Interval: Leave 30 days between application and harvest.
Re-cropping: No restrictions the year following application.
Aerial Application: DO NOT apply by air.
Storage: Store in a cool, dry place. May be frozen.
Buffer Zones:

<table>
<thead>
<tr>
<th>CROP</th>
<th>Buffer Zones (metres†)</th>
<th>Aquatic Habitats of Depths</th>
<th>Terrestrial habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less than 1 m</td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td>Cereals</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Fallow</td>
<td>1</td>
<td>1</td>
<td>15</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance is measured from the downwind edge of the boom to sensitive areas.
Handheld or backpack sprayers do not require a buffer zone.
Sprayer Cleaning:
*Triton K* can cause severe injury to sensitive crops at very low concentrations. Sprayers used to spray this product should be flushed out immediately after use. The manufacturer recommends a process similar to ‘Method A’ in the general section on sprayer cleaning on page 15 to 16. See label for specific instructions.

Hazard Rating:

\[ \text{Caution – Poison} \]

\[ \text{Warning – Eye and Skin Irritant} \]

Potential Skin Sensitizer

For an explanation of the symbols used here see page 11.

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**Trophy** *(This referring text to be removed in the 2018 edition)*

See fluroxypyr + MCPA on page 187.

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**Tundra**

**Company:**
Bayer CropScience (PCP#29367)

**Formulation:**
46 g/L of fenoxaprop-p-ethyl, 87.5 g/L of bromoxynil and 15.5 g/L of pyrasulfotole formulated as an emulsifiable concentrate.
Container size - 8.1 L, 129.6 L, 405 L.

**Crops and Staging:**
Application beyond the maximum rates provided below may result in crop injury.

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley, Spring wheat</td>
<td>1 to 6 leaves on the main stem plus 3 tillers</td>
</tr>
</tbody>
</table>

**Weeds, Rates and Staging:**
Apply 0.81 L per acre (one 8.1 L container treats 10 acres) to control;
Grass weeds from the 1 to 6 leaf stage up to emergence of 3rd tiller:
Barnyard grass            Wild oat
Foxtail (green and yellow) Apply at the 3 to 4 leaf stage for optimum control. Optimum weed control and yield response occurs when weeds are removed before tillering.

**Herbicide Group**
1 - fenoxaprop
6 - bromoxynil
27 - pyrasulfotole
(Refer to page 45)
Weed Control

Broadleaf weeds from the 1 to 6 leaf stage unless otherwise indicated:

- Canada fleabane (up to 10 cm)*
- Canada thistle† (up to 30 cm)
- Chickweed
- Cleavers (1 to 3 whorls)
- Cleavers (4 to 6 whorls)*
- Dandelion†
  (up to 25 cm across††)
- Flixweed (up to 10 cm)
- Hemp-nettle
- Kochia (up to 10 cm)
- Lamb’s-quarters
- Narrow-leaved hawk’s-beard (up to 10 cm and before bolting)
- Pale smartweed
- Ragweed (Common)
- Redroot pigweed
- Round-leaved mallow†
- Russian thistle (up to 10 cm)
- Shepherd’s-purse
- Sow-thistle (annual, perennial)††
- Stinkweed
- Stork’s-bill (up to 8 leaf)***
- Volunteer canola**
- Wild buckwheat
- Wild mustard

† Suppression only
†† Spring seedlings and over-wintered rosettes.
* Add 200 g of active ammonium sulfate per acre (202 g per acre of 99% dry; 0.5 L/acre of 40% liquid; or 0.4 L per acre of 49% solution).
** Including all herbicide tolerant varieties.
*** Only when mixed with 2,4-D ester and ammonium sulphate.

DO NOT apply Tundra or other products containing fenoxaprop, pyrasulfotole or bromoxynil more than once in the same year.

Application Information:

Water Volume:
- **Ground:** 18.9 L per acre. Use higher water volumes for dense crop/weed canopies.
- **Aerial:** 11.4 L per acre.

Nozzles and Pressure: Use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE medium classification droplets. Low drift nozzles may require higher pressures for proper performance.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
Crop injury may result if applied to a crop that is stressed by severe weather conditions, frost, low fertility, drought, water-saturated soil, disease or insect damage. Weeds growing under adverse environmental conditions such as drought will be less susceptible to Tundra. Under stressed conditions and/or heavy crop canopy, early application will result in improved weed control.

Tank Mixes:

- **Herbicides:** 2,4-D ester (113 g ae/acre) + ammonium sulphate (see Rates)
- **Fungicides:** None registered.
- **Insecticides:** None registered.
- **Fertilizers:** DO NOT mix with fertilizers other than those indicated above.

Bayer also supports the following mixes that are not on the Tundra label. Apply mixes according to the most restrictive use limitations for either product:
- **Herbicides:** Lontrel, MCPA Ester + ammonium sulphate.
- **Fungicides:** Tilt
- **Insecticides:** Decis, Sevin XLR.

Adding ingredients in the correct order is critical for optimum performance. Check labels of both products to be mixed for directions. General guidelines can be found on page 14.

Restrictions:

Rainfall: Within 1 hour may reduce control.

Re-Entry: DO NOT enter treated areas for 24 hours.

Grazing: DO NOT graze or cut cereal crops for hay, within 25 days of application.

Preharvest Interval: Leave 65 days from application to harvest.

Re-cropping: Alfalfa, barley, canaryseed, canola, corn (Manitoba only), flax, oat, potato, soybean (Manitoba only), sunflower, tomato (Manitoba only), and wheat (spring, and durum) may be planted the season following application. Field pea may be grown the following year in all black, grey-wooded and dark brown soil zones. DO NOT plant field pea the season following Tundra use in the brown soil zone where organic matter content is below 2.5 % and where soil pH is above 7.5. Lentil may be seeded the second season following application.

Aerial Application: May be applied by air.

Storage: Store in a dry controlled temperature facility. DO NOT freeze. Shake before using if stored for longer than one year.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres †) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground *</td>
<td>3</td>
</tr>
<tr>
<td>Fixed wing aircraft</td>
<td>20</td>
</tr>
<tr>
<td>Helicopter</td>
<td>20</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
Company:
E. I. duPont Canada (PCP#24736)

Formulation:
37.5% rimsulfuron and 37.5% nicosulfuron formulated as a water dispersible granule.
Container sizes - 134.8 g (4 x 33.7 g water soluble bags).

Crops and Staging*:
Field corn hybrids at the 1 to 4 leaf stage:
Note: Corn hybrids with ratings of less than 2500 corn heat units may be sensitive to Ultim. Check with seed supplier prior to applying to ensure the hybrid has known tolerance to Group 2 herbicides.
*NOTE - Since applications to corn in Manitoba has been registered under the User Requested Minor Use program, the manufacturer assumes no responsibility for herbicide performance. Application to corn is at the risk of the user.

Sprayer Cleaning:
Refer to 'Method A' in the general section on tank mixing on page 15 to 16.

Hazard Rating:

- Caution – Poison
- Danger – Corrosive to eyes and skin.
- Potential skin sensitizer.
- Warning – Eye Irritant.

For an explanation of the symbols used here see page 11.

Herbicide Group
2 - rimsulfuron & nicosulfuron
(Refer to page 45)

Weeds and Staging:

<table>
<thead>
<tr>
<th>CROP</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild oats</td>
<td>3 to 6 leaf</td>
</tr>
<tr>
<td>Foxtail (green and yellow*),</td>
<td>1 to 6 leaf (up to 2 tillers)</td>
</tr>
<tr>
<td>barnyard grass, volunteer cereals</td>
<td></td>
</tr>
<tr>
<td>Quackgrass</td>
<td>3 to 6 leaf stage (with extended leaf 4 to 8 inches long)</td>
</tr>
<tr>
<td>Redroot pigweed</td>
<td>2 to 6 leaf</td>
</tr>
<tr>
<td>Volunteer canola**</td>
<td>Emergence to 5 leaf stage</td>
</tr>
</tbody>
</table>

* Suppression only.
** Not Clearfield varieties.

Ultim* (For use in the Red River Valley of Manitoba only)
Rates:
13.5 g per acre.  
One water soluble bag of Ultim will treat 2.5 acres (10 acres per container).
Add a non-ionic surfactant (AgSurf II, Agral 90, Citowett Plus) at 0.2 L per 100 L of spray solution.  
Apply Ultim within 24 hours of mixing, as product degradation may occur resulting in reduced weed control. Refer to the product label for complete mixing instructions.

Application Information:
Water Volume: Minimum 40 L per acre; for best results apply 56 to 77 L per acre.
Nozzles and Pressure: No pressures listed on label when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage of ASABE medium droplets. Use a 50 mesh or coarser screen and filter system.

Effects of Growing Conditions:
Rapid fluctuations in temperature (greater than 20°C difference within 24 to 36 hours) will stress the corn crop. For maximum crop safety, allow 48 to 72 hours for the corn to acclimatize before applying Ultim.
Apply ONLY when the temperature in the 24 hours before AND after application is between 5°C and 28°C. Temperatures beyond this range increase the potential for crop injury. Separate applications of Ultim herbicide followed by a broadleaf herbicide (minimum 12 hours later) will reduce the potential for injury.
WARNING: Crop injury may result if application is made to corn that has been stressed by abnormally hot, humid or cold weather conditions, frost, low fertility, drought, water saturated soil, compacted soil, previous pesticide applications, disease or insect damage. If corn has been injured by frost, wait 48 to 72 hours before applying Ultim.

Tank Mixes:
Herbicides: None registered.
Insecticides: None registered. Ultim should NOT be applied to corn that has been treated with Lorsban. Leave 7 days between the application of Ultim and that of a foliar organophosphate insecticide.
Fungicides: None registered.
Note: The above mixes are those listed on the Ultim label only. E.I duPont also supports the following mixes that are not on the Ultim label. Apply mixes according to the most restrictive use limitations for either product:
Herbicides: Glyphosate at registered rates in glyphosate tolerant corn.

Restrictions:
Rainfall: Within 2 to 4 hours may reduce control.
Re-entry: DO NOT enter treated fields for at least 12 hours.
Grazing: DO NOT graze treated crops or cut for hay.
Preharvest: Leave 30 days from application to harvest.
Re-cropping: Field corn, winter wheat and spring barley may be planted the year following application. Perform a field bioassay before planting any other crops, or where Ultim is more persistent (sandy soils, with low organic matter and pH greater than 7).
Aerial Application: DO NOT apply by air.
Storage: Store product in original containers in a secure, dry area, away from other pesticides, food, or feed.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td>Ground only*</td>
<td>Less than 1 m</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.
* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:
The manufacturer recommends a cleanout process similar to 'Method A' in the general section on sprayer cleaning on page 15 to 16. See the label for specific instructions.
For additional information, Refer to page 15.

Hazard Rating:
⚠️ Warning – Eye Irritant.
⚠️ Caution – Skin Irritant.

For an explanation of the symbols used here see page 11.
Varro

Herbicide Group
2 - thiencarbazone
(Refer to page 45)

Company:
Bayer CropScience (PCP#29070)

Formulation:
10 g/L thiencarbazone-methyl formulated as a suspension concentrate.
Container size - 2 x 8 L.

Crops and Staging:
Spring wheat (including durum):
1 to 6 main stem leaf stage to a maximum of 3 tillers, and before the first node can be felt in the stem. DO NOT apply beyond 35 days of emergence.
Winter wheat:
Spring or fall application from 1 to 6 main stem leaf stage and before the first node can be felt in the stem. DO NOT apply after the presence of the first node as crop injury may occur.

Weeds and Staging:
Grass weeds controlled from 1 to 6 main stem leaves and prior to the emergence of the 3rd tiller unless otherwise indicated:
- Barnyard grass
- Foxtail (green and yellow†)
- Japanese brome† **
Persian darnel†
Volunteer Canaryseed *
Wild oats

Broadleaf weeds controlled at the 1 to 6 leaf stage unless otherwise indicated:
- Cleavers (1 to 6 whorls)
- Hemp-nettle
- Lamb’s-quarters†
- Pale smartweed
- Pigweed, redroot
- Round-leaved mallow†
- Russian thistle (up to 10 cm)†
Shepherd’s-purse
Stinkweed
Volunteer canola (except Clearfield varieties)
Wild buckwheat
Wild mustard
* Up to the emergence of the 2nd tiller.
** Prior to tillering.
† Suppression only.

Rates:
0.2 L per acre
(One 8 L container will treat 40 acres)
Add ammonium sulphate on spring wheat only for improved weed control. Add 200 g active ammonium sulphate per acre (202 g/ac of 99% dry; 0.5 L /ac of 40% liquid or 0.4 L/ac of 49% solution) to the tank before adding other components.
DO NOT add ammonium sulphate to applications on durum wheat.
For improved weed control in durum wheat add either Agril 90 or AgSurf at 0.2L per 100 L.

Application Information:
Water Volume:
Ground: 20 to 40 L per acre. Use higher water volumes for dense canopies.
Aerial: Minimum 11.3 L per acre.

Nozzles and Pressure:
Ground: For conventional flat fan nozzles use a pressure of 30 to 50 PSI (207 to 345 kPa). Angle nozzles forward 45 degrees for better coverage. Low drift nozzles may require higher pressures for proper performance.
Aerial: Minimum 43 PSI (300 kPa).
For either ground or aerial, use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE medium droplets.

How it Works:
Refer to Table 2 on page 47.

Effects of Growing Conditions:
DO NOT apply to crops or weeds that are stressed (frost, low fertility, drought or flooding, disease or insect damage) as crop injury or reduced weed control may result. Under drought conditions DO NOT apply to spring or durum wheat if the time from seeding to spraying exceeds 35 days or if temperatures will be 3°C or lower within 3 days of application (before or after).
Tank Mixes:
Add ammonium sulphate to the tank first then Varro then the tank mix partner.

Herbicides:
Wheat (including Spring, durum, winter):
Infinity (0.33 L/acre)
Thumper (0.4 L/acre)

Spring Wheat (including durum):
2,4-D ester (129 g ae/acre)
Buctril M (0.4 L/acre)
MCPA ester (0.23 L/acre – 600 g/L form)

Spring Wheat (NOT including durum):
Curtail M (0.61 L/acre)*
Refine SG (12 g/acre)
Refine SG + 2,4-D ester (rates above)
Refine SG + MCPA ester (rates above)

Fungicides: None registered.
Insecticides: None registered.
Fertilizers: None registered.

Note: The above mixes are those listed on the Varro label only.

Bayer CropScience also supports the following mixes on spring wheat and durum that are not on the Varro label.
Apply mixes according to the most restrictive use limitations for either product:

Herbicides: Attain XC, Barricade II, Momentum, OcTTain, Prestige XC*, Retain SG, Stellar

Fungicides: Tilt.

* When tank-mixing Varro with Prestige XC or Curtail M in spring wheat (NOT durum) always add ammonium sulphate.

Adding ingredients in the correct order is critical for optimum performance. Check labels of products to be mixed for directions. General guidelines can be found on page 14.

Preharvest Interval: DO NOT harvest grain or straw within 60 days of application for spring and durum wheat or within 72 days of application to winter wheat.

Re-cropping: Alfalfa, barley, canaryseed, canola, chickpea, dry bean, field corn, flax, lentil, mustard, oat, pea, soybean, sunflower, timothy, and wheat (durum, spring) may be seeded the year following application.

Aerial Application: May be applied by air.
Storage: Store in a cool, dry place. Keep from freezing. Shake well before using.

Buffer Zones:

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground *</td>
<td>1</td>
</tr>
<tr>
<td>Fixed wing aircraft</td>
<td>1</td>
</tr>
<tr>
<td>Helicopter</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.
† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Sprayer Cleaning:
Refer to ‘Method A’ in the general section on sprayer cleaning on page 15. If mixing with other pesticides, combine this method with the method indicated for the tank mix partner.

Hazard Rating:

⚠️ Warning – Eye and Skin Irritant.

For an explanation of the symbols used here see page 11.
Company:
Bayer CropScience (PCP#29584)

Formulation:
5 g/L thiencarbazone-methyl, 31.3 g/L pyrasulfotole and 175 g/L bromoxynil formulated as a suspension concentrate
Container size - 8.1 L and 129.6 L.

Crops and Staging:
Spring wheat (including durum):
1 to 6 main stem leaf stage to a maximum of 3 tillers, and before the first node can be felt in the stem. DO NOT apply beyond 35 days of emergence.
Winter wheat:
Spring or fall from 1 to 6 leaf stage and before the first node can be felt in the stem.
DO NOT apply after the first node is detectable in the stem as crop injury may occur.

Weeds and Staging:
Grass weeds controlled from 1 to 6 main stem leaves and prior to the emergence of the 3rd tiller:
Barnyard grass
Foxtail (green and yellow†)
Canaryseed
Persian darnel†
Wild oat
Japanese brome†

Herbicide Group
2 - thiencarbazone
6 - bromoxynil
27 - pyrasulfotole
(Refer to page 45)

Broadleaf weeds controlled at the 1 to 6 leaf stage unless otherwise indicated:
Canada fleabane (seedlings 1 to 10 cm)*
Canada thistle (up to 30 cm)†
Common chickweed
Cleavers (1 to 3 whorls)
Cleavers (4 to 6 whorls)†
Dandelion (up to 25 cm diameter)†
Flixweed (up to 10 cm)
Hemp-nettle
Kochia (up to 10 cm)
Lamb's-quarters
Narrow-leaved hawk's-beard (up to 10 cm and prior to bolting)
Pale smartweed
† Suppression only.
* Add ammonium sulphate as per the "Rates": section below.
** Only when mixed with 2,4-D ester + ammonium sulphate (see Tank Mixes).

Rates:
0.405 L per acre
(One 8.1 L container treats 20 acres, 129.6 L drum will treat 320 acres)
Add ammonium sulphate on spring wheat only for improved weed control or when tank mixing with 2,4-D or MCPA. Add 200 g active ammonium sulphate (202 g/acre of 99% dry; 0.5 L/acre of 40% liquid or 0.4 L/acre of 49% liquid). If using an ammonium sulphate product with a different concentration, adjust the rate accordingly.
DO NOT add ammonium sulphate to applications on durum wheat.
DO NOT apply Velocity m3 or other products containing thiencarbazone, pyrasulfotole or bromoxynil more than once in the same year.
**Application Information:**

**Water Volume:**
- **Ground:** 20 to 40 L per acre. Use higher water volumes for dense canopies.
- **Aerial:** Minimum 11.4 L per acre.

**Nozzles and Pressure:**
- **Ground:** For conventional flat fan nozzles use a pressure of 30 to 50 PSI (207 to 345 kPa). Angle nozzles forward 45 degrees for better coverage. Low drift nozzles may require higher pressures for proper performance. **Aerial:** Minimum 43 PSI (300 kPa).

For either ground or aerial, use a combination of nozzles and pressure designed to deliver thorough, even coverage with ASABE medium droplets.

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**

DO NOT apply to crops or weeds that are stressed (frost, low fertility, drought or flooding, disease or insect damage) as crop injury or reduced weed control may result.

DO NOT apply to spring or durum wheat under conditions where the time from seeding to spraying exceeds 35 days or if temperatures will be 3°C or lower within 3 days of application (before or after).

**Tank Mixes:**

*Herbicides:* 2,4-D ester (113 g ae/acre) + ammonium sulphate* (see Rates).

*add ammonium sulphate on spring wheat (NOT durum) only.

*Bayer supports the following mixes that are not on the Velocity m3 label. Apply mixes according to the most restrictive use limitations for either product:

*Herbicides:* Lontrel, MCPA Ester* (94.5 to 189 mL - 600 g/L forms).

* When adding MCPA Ester to Velocity m3 tank-mix, ammonium sulphate must be added for application to spring wheat only. (see Rates section above).

*Fungicides: Tilt

*Insecticides: Decis, Sevin XLR.

**Restrictions:**

**Rainfall:** Within 1 hour may reduce control.

**Re-Entry:** DO NOT enter treated field for 24 hours.

**Preharvest:** DO NOT harvest grain or straw within 60 days of application to spring and durum wheat or within 72 days of application to winter wheat.

**Grazing:** Must not be cut for livestock feed within 30 days or grazed by livestock within 25 days of treating the crop.

**Re-cropping:** Alfalfa, barley, canaryseed, canola, field corn (Manitoba only), flax, soybean (Manitoba only), tame oat, and wheat (durum, spring) may be seeded the year following application. Field pea may be grown the following year in all black, grey-wooded and dark brown soil zones. DO NOT plant field pea the season following Velocity m3 use in the brown soil zone where organic matter content is below 2.5 % and where soil pH is above 7.5. Lentil may be seeded the second season after application.

**Aerial Application:** May be applied by air.

**Storage:** Store in a cool, dry place. Keep from freezing. This product is combustible. DO NOT store near heat or open flame.

**Buffer Zones:**

<table>
<thead>
<tr>
<th>Application method</th>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic Habitats of Depths</td>
</tr>
<tr>
<td></td>
<td>Less than 1 m</td>
</tr>
<tr>
<td>Ground *</td>
<td>1</td>
</tr>
<tr>
<td>Fixed wing airplane</td>
<td>10</td>
</tr>
<tr>
<td>Helicopter</td>
<td>10</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

**Sprayer Cleaning:**
Refer to ‘Method A’ in the general sprayer cleaning section on page 15 to 16.

**Hazard Rating:**

**Velocity m3 All-In-One:**

⚠️ Warning – Poison

⚠️ Danger – Corrosive to eyes.

Skin Irritant

Potential Skin Sensitizer

For an explanation of the symbols used here see page 11.
**Velpar DF CU**

**Company:**
Tessenderlo Kerley Inc. (PCP#25225)

**Formulation:**
75% hexazinone formulated as a water dispersible granule
Container size - 2 kg.

**Crops and Staging:**
Established alfalfa for forage and seed. Apply in late fall prior to freeze-up when alfalfa is dormant or in early spring before alfalfa growth resumes. Apply only on alfalfa that has been established for 18 months or longer. If burning or irrigation is to be carried out, do not apply until these operations have been completed.

**NOTE:** DO NOT apply to frozen ground. DO NOT apply to soils with less than 1% organic matter. DO NOT apply to gravelly or rocky soils, exposed subsoils or sand. Crop injury may occur in fields where alfalfa root growth has been restricted by hard pans or other physical barriers to root growth.

**Weeds, Rates and Staging:**
Application stage is dictated by the crop above.

**Apply a minimum of 0.272 kg per acre to control:**
- Dandelion
- Quackgrass
- Sow-thistle

**Apply 0.544 kg per acre to control:**
The weeds above plus:
- Narrow-leaved hawk’s-beard
- Scentless chamomile

Use the lower rate on medium-textured soils with low organic matter.

**Application Information:**
**Water Volume:** 81 L per acre.
**Nozzles and Pressure:** 30 to 40 psi (200 to 275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage with **ASABE medium** droplets.

**How it Works:**
Refer to Table 2 on page 47.

**Effects of Growing Conditions:**
Adequate soil moisture is required for activation of the product.

**Tank Mixes:**
None registered.

**Restrictions:**
**Rainfall:** Rainfall is beneficial for activation of the product.
**Re-Entry:** DO NOT re-enter treated fields for 48 hours.
**Grazing:** Leave 30 days between application and grazing harvesting for feed (hay or greenfeed).
**Re-cropping:** Leave 2 years of between treating alfalfa and the seeding of a crop. A field bioassay is required after 2 years to determine which crops are safe to grow.
**Aerial Application:** DO NOT apply by air.
**Storage:** May be frozen.

<table>
<thead>
<tr>
<th>Buffer Zones (metres†) Required for the Protection of:</th>
<th>Aquatic Habitats of Depths</th>
<th>Terrestrial habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application method</td>
<td>Less than 1 m</td>
<td>Greater than 1 m</td>
</tr>
<tr>
<td>Ground *</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

See page 36 for an explanation of the different habitats.

* Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

† Distance measured as metres from the downwind edge of the spray boom to sensitive habitat.

Handheld or backpack sprayers do not require a buffer zone.

**Sprayer Cleaning:**
No specific cleaning procedures are indicated on the label. Based on products with similar chemistry, Method B’ found in the general sprayer cleaning section on page 15 to 16 or a commercial spray sprayer cleaning product, may provide adequate cleaning. Contact the manufacturer for more information.

**Hazard Rating:**
- **Danger – Corrosive to eyes.**
- **Caution – Poison**
- **Caution – Skin Irritant**

For an explanation of the symbols used here see page 11.
**Viper ADV**

**Company:**
BASF Canada (PCP#30626)

**Formulation:**
20 g/L imazamox and 429 g/L bentazon formulated as a solution.
Container size - 2 x 8.1 L, 129 L.
Requires the addition of:
BASF 28% UAN (28-0-0) is required, but sold separately.
Container size - 2 x (2 x 8 Liters); 128 L drums.

**Crops and Staging:**
**Field pea:** 3 to 6 above-ground nodes (3 to 6 true leaves).
**Dry bean (black, cranberry, great northern, navy, pinto, pink, red Mexican):** Viper ADV plus additional Basagran Forte (see tank mix section) from the fully expanded first trifoliate leaf to the second trifoliate fully expanded.
Even though Viper ADV is registered for all the dry bean types above, tolerance may vary between varieties (esp. navy). Test new varieties on a small area for tolerance before widespread use.
**Soybean:** Emergence to 3 expanded trifoliate leaves.
**Established clover (alsike, red) for seed production only:** Apply prior to flowering but before the crop canopy closes.
*Note: Applications under hot, humid conditions may result in temporary leaf yellowing, leaf flecking, bronzing or burning. The crop usually outgrows this condition within 10 days and new tissues will not be affected.

**Weeds and Staging:**
**Grasses - 1 to 4 main stem leaves or until early tillering:**
Barryard grass
Green foxtail
Japanese brome*
Persian darnel
Volunteer barley
Volunteer canaryseed

Tame oat
Volunteer wheat (including durum, not CLEARFIELD varieties)
Wild oat
Yellow foxtail

**Broadleaf Weeds - cotyledon to 4 leaf stage:**
Cleavers†
Cow cockle
Green smartweed
Kochia†
Lamb’s-quarters
Pigweed (prostrate††, redroot)
Pigweed (prostrate††, redroot)
Round-leaved mallow*
Russian thistle
Shepherd’s-purse
Stinkweed
Sow-thistle (spiny annual)††
Stork’s-bill††
Volunteer canola (including CLEARFIELD varieties)
Volunteer lentils (including CLEARFIELD lentils)
Wild buckwheat*
Wild mustard†

* Suppression only.
† Including Group 2 resistant biotypes.
†† Viper ADV + Basagran Forte in dry beans only.

**Rates:**
400 mL per acre
(One case of Viper ADV treats 40 acres)
Add 28 % BASF UAN (sold separately) at 0.81 L per acre.
Failure to include UAN will result in significantly reduced product performance.
DO NOT use any other adjuvants as injury may result.
DO NOT apply Viper ADV more than once or follow Viper ADV with any related products (Basagran, Odyssey, Solo) in the same year.
DO NOT apply to any crop other than those registered as severe injury will result.
Refer to the product label for complete mixing instructions for this product.
A general guide to mixing can be found on page 14.

**Application Information:**
**Water Volume:** Apply in 40 L per acre.
High water volumes are required for adequate coverage, particularly when weed densities are high or weed staging is large.

**Nozzles and Pressure:** Use 40 psi (275 kPa) when using conventional flat fan nozzles. Low drift nozzles may require higher pressures for proper performance. Use a combination of nozzles and pressure designed to deliver thorough, even coverage a of ASABE medium droplets. Use 50 mesh (or coarser) filter screens.

**Herbicide Group**
2 - imazamox
6 - bentazon
(Refer to page 45)
Effects of Growing Conditions:
DO NOT spray if temperatures of +5°C or less are forecast within 3 days of application. Under cool or dry conditions, control of some weeds may be severely reduced. DO NOT apply to crops stressed from hail damage, flooding, drought, hot, humid weather, widely fluctuating temperatures, prolonged cold or injury from previous herbicides, as crop injury may result.

Tank Mixes:
Dry bean (types above):
Basagran Forte (145 mL/acre) plus UAN as above.

Restrictions:
Rainfall: Rain within 6 hours may reduce control.
Re-Entry: DO NOT enter treated fields for at least 12 hours.
Grazing: DO NOT graze or cut for feed.
Preharvest Interval: DO NOT apply within 60 days of harvest.
Re-cropping: Winter wheat may be seeded 3 months after application. Barley, canaryseed, canola, chickpea, field corn, field pea, flax, lentil, oat, sunflower, and spring wheat (including durum) may be seeded the first season after application and tame mustard (condiment types only) the second season after application. The company recommends that a field bioassay (a test strip grown to maturity) be conducted the year before growing any crops other than those listed above.

Contact manufacturer for additional information on recropping intervals.

Aerial Application: DO NOT apply by air.

Storage: DO NOT freeze. Store in a cool, dry place above 5°C.

Buffer Zones: Avoid spraying in situations where drift may occur. Leave at least 11 metres between the outside edge of the sprayed area and sensitive non-target areas such as shelterbelts, hedgerows, wetlands, woodlots, vegetated ditch banks, ponds, streams, and sloughs. Buffer zones can be reduced by 70% when using shrouds and by 30% when using cones mounted less than 12 inches from the crop canopy.

Sprayer Cleaning:
Refer to ‘Method B’ in the general sprayer cleaning section on page 15.

Hazard Rating:
\[\blacktriangleleft\] Warning – Poison
\[\blacksquare\] Danger – Corrosive to eyes (Viper B only).
\[\blackdia\] Warning – Contains the allergen soy.
\[\blackdia\] Warning – Eye and Skin Irritant.

For an explanation of the symbols used here see page 11.