

## Manitoba Grasshopper Forecast for 2014

By: John Gavloski; Entomologist; Manitoba Agriculture, Food and Rural Development  
Box 1149, 65-3<sup>rd</sup> Ave. NE, Carman, Manitoba, Canada, R0G 0J0



Grasshopper surveys have been conducted in Manitoba in various degrees of detail since 1931. The current grasshopper forecast is based on counts of grasshopper populations in August (which estimates the egg-laying population), weather data (which helps estimate whether those female grasshoppers present are capable of laying their optimum level of eggs), and recent trends in grasshopper populations. In some years, natural enemy populations may significantly affect the number of grasshopper eggs that survive and hatch, and such data may be pertinent to the forecast as well. Counts are generally done in or alongside crop fields in Manitoba. The goal is to estimate levels of the 4 species of grasshoppers that have potential to be pests of crops in Manitoba.

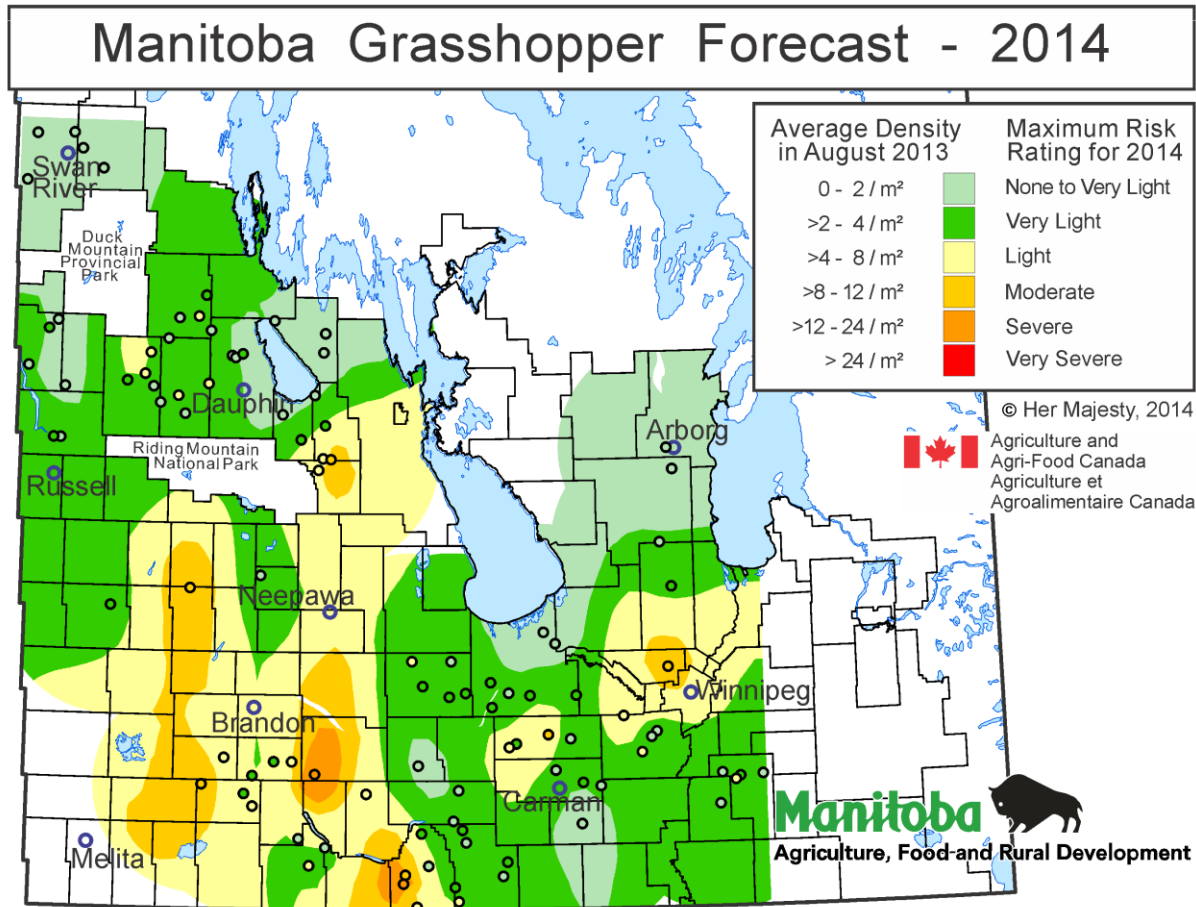
### **Purpose of a grasshopper forecast**

All stages of grasshoppers, except the egg stage, feed on plants. Some species will feed on crops, while other species do not, or rarely will. Older grasshoppers of these crop feeding species can do the most damage to crops, particularly later in the season as these grasshoppers can move greater distances. In annual cropping systems, the young stages of these species are often highly concentrated around field edges early in the season, particularly around fields that had sparse green vegetation late in the previous summer. If grasshopper populations get quite high, these younger, concentrated populations of grasshoppers are much easier to control than older and more dispersed populations later in the season.

Knowing the risk of grasshoppers being a problem the following season alerts farmers and agronomists to the importance of monitoring field edges and vegetation surrounding the fields in late-May and June for these younger grasshoppers. This information can also help farmers choose crops and plan seeding practices for the following year.

### **Interpreting the grasshopper population map**

The grasshopper population map for Manitoba is based on counts of adult grasshoppers per m<sup>2</sup> done by farm production advisors, agronomists, and entomologists in August 2013. Grasshopper counts from 101 locations in Manitoba were used to produce the map. The legend on the map shows the average grasshopper counts in an area, and relates these to risk for many of our crops. Factors affecting grasshopper development, survival and behaviour will determine whether these August populations are likely to increase, decrease, or remain fairly stable for the next year and are also important factors in the overall forecast for 2014. The small circles on the map show where data was collected. White areas on the map are areas where data was not collected.



**Figure 1. Average density of grasshoppers in Manitoba during August 2013.**

## The Grasshopper Forecast for Manitoba for 2014

### What the grasshopper population map shows

Most of the surveyed area (73 out of 101 counts) rated as very light risk, having counts from 0 to 4 grasshoppers /m<sup>2</sup>. Nineteen counts were in the light risk category (>4-8/m<sup>2</sup>). Six counts were in the moderate risk category (>8-12/m<sup>2</sup>). The only counts greater than 12/m<sup>2</sup> were a count of 18 grasshoppers per m<sup>2</sup> southwest of Crystal City, and a count of 22 grasshoppers per m<sup>2</sup> about 6 miles east of Wawanessa.

### Recent trends in grasshopper populations

Grasshopper outbreaks usually develop after a few years of conditions that are favourable for a steady increase in numbers of those species of grasshopper that can become pests of crops. Comparing the current August grasshopper counts with those of previous years can determine if the populations tend to be rising or falling.

The following table shows the percentage of area in the Manitoba survey map in each of the grasshopper population density categories for data collected from 2004 to 2013.

**Table 1. A 10 year comparison of grasshopper counts in Manitoba.**

Year	Very Light (0-4/m <sup>2</sup> )	Light (>4-8/m <sup>2</sup> )	Moderate (>8-12/m <sup>2</sup> )	Severe (>12-24/m <sup>2</sup> )	Very Severe (>24/m <sup>2</sup> )
2004	32.64	35.68	12.18	16.01	3.48
2005	96.15	3.85	0	0	0
2006	94.60	5.40	0	0	0
2007	56.30	38.26	5.21	0.23	0
2008	33.17	40.73	16.48	7.26	2.36
2009	47.19	24.84	16.86	10.67	0.44
2010	98.01	1.99	0	0	0
2011	99.97	0.03	0	0	0
2012	85.82	13.85	0.34	0	0
2013	62.63	28.78	7.71	0.88	0

Grasshopper risk was quite low in the surveys done in 2010 and 2011, with no areas in the moderate or severe categories, and most areas in the very light risk category. Grasshopper populations were slightly higher in 2012, with a higher percentage of the surveyed area in the light risk category, and a couple of small areas in the South-Central region of Manitoba in the moderate risk category. This trend towards higher grasshopper numbers continued in 2013, with a higher percentage of the surveyed area in the light and moderate risk categories, and a couple of locations in the severe risk category. So grasshopper populations have been increasing over the last 2 years.

#### Potential affects of weather from August and September 2013 on the grasshopper forecast

The weather data used to forecast grasshopper abundance for 2014 is shown in Table 2. This data is from 15 sites located across the agricultural region of Manitoba.

The daily maximum temperatures were higher than normal in August and September of 2013. In many of the locations there were more days with rain than normal, however there was generally less total rainfall than normal.

Warm and generally dry weather in late-summer will mean that there has been sufficient opportunity for the potential pest species of grasshoppers to lay their maximum amount of eggs.

**Table 2 – Temperature and Rainfall Data from August and September 2013.**

Location	Avg. Daily Maximum Temp.				Total Rainfall (mm)				Days with Rain			
	August		September		August		September		August		September	
	2013	Norm*	2013	Norm	2013	Norm	2013	Norm	2013	Norm	2013	Norm
<b>Northwest</b>												
Roblin	<b>24.2</b>	23.9	<b>20.9</b>	17.4	16.2	70.6	36.2	53.7	8	10.6	<b>14</b>	9.2
Grandview	<b>25.6</b>	23.8	<b>21.7</b>	17.5	17.0	71.6	43.6	60.1	7	12.4	8	10.8
Hamiota	<b>25.5</b>	24.5	<b>21.7</b>	17.6	<b>57.5</b>	52.9	<b>52.8</b>	48.5	6	8.0	<b>10</b>	7.1
<b>Southwest</b>												
Brandon	<b>25.4</b>	24.8	<b>22.0</b>	18.3	68.4	69.2	36.0	49.9	<b>10</b>	9.9	<b>10</b>	8.9
Carberry	<b>26.0</b>	24.8	<b>21.8</b>	18.3	<b>75.4</b>	69.2	<b>51.0</b>	49.9	<b>10</b>	9.9	<b>14</b>	8.9
Melita	25.9	26.2	<b>22.0</b>	19.5	24.0	51.8	<b>73.8</b>	46.7	<b>10</b>	8.6	<b>13</b>	7.7
Boissevain	<b>25.9</b>	24.7	<b>21.8</b>	18.0	18.4	66.8	41.5	47.2	6	9.2	<b>13</b>	8.6
<b>Central</b>												
Portage	<b>25.5</b>	24.5	<b>21.6</b>	18.2	66.2	71.1	36.3	57.2	<b>13</b>	11.0	<b>10</b>	11.2
Pilot	25.0	25.3	<b>21.7</b>	18.8	32.3	70.0	40.9	49.2	<b>15</b>	10.7	9	10.1

Mound												
Carman	<b>26.0</b>	25.1	<b>22.1</b>	18.5	59.7	70.0	31.0	56.7	<b>13</b>	10.5	<b>12</b>	10.5
Winkler	<b>26.9</b>	25.2	<b>22.4</b>	19.0	<b>78.5</b>	66.9	30.8	51.0	<b>11</b>	10.6	<b>10</b>	9.4
<b>East / Interlake</b>												
Eriksdale	<b>26.1</b>	23.0	<b>21.4</b>	16.5	33.6	69.1	19.4	56.5	9	10.0	10	10.5
Teulon	<b>26.2</b>	25.0	<b>21.9</b>	18.3	41.8	63.3	30.2	54.0	<b>12</b>	11.6	10	10.9
Winnipeg	<b>26.4</b>	25.0	<b>22.3</b>	18.5	41.2	75.1	33.0	51.9	9	10.4	10	10.9
St. Pierre	<b>27.1</b>	24.7	<b>22.3</b>	18.4	50.6	68.5	41.4	59.6	<b>12</b>	10.1	<b>10</b>	9.5

\*Normals are based on 1971-2000.

Values in **Bold** type indicate the 2013 reading was higher than the 30 year normal.

### Summary

The grasshopper populations were generally very-light to light across most of Manitoba during the August survey, although there were some areas that were in the moderate or severe risk categories. Weather in August and September was quite favorable for the grasshopper populations that were present to lay eggs. The risk of economical populations of grasshoppers developing in 2014 is quite variable, depending on location, with some areas in western Manitoba and north of Winnipeg having higher risks. If weather is favourable for grasshopper survival and development there may be localized areas where grasshoppers are a concern to crops.

When they have the opportunity, farmers and agronomists are encouraged to monitor grasshopper populations along roadsides, field edges, and other areas where populations tend to be concentrated or at high levels early in the season. This monitoring should begin in late-May or June. Given that there were good conditions for egg laying last year, warm and dry conditions next year could result in grasshopper populations continuing to build.

For more information on the grasshopper forecast or monitoring for grasshoppers, please contact John Gavloski at (204) 745-5668. The protocol for doing the grasshopper counts for this survey can be found at: <http://www.gov.mb.ca/agriculture/crops/insects/mb-grasshopper-survey.html>