

## CROP REPORT \*Special Report – Early Fall Frost\*

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September 5, 2018

### September 5, 2018 Frost Summary

- Sub-zero temperatures recorded in Southwest, Northwest, Central and Interlake stations overnight.
- See [September 5, 2018 Frost Report](#)
- Sub-zero temperature and duration of temperature is important to consider for effect on immature crops
- Where frost occurred, crops susceptible at present maturity are canola, soybean and silage corn
- Frost on greenfeed and corn can increase [nitrates](#) in feed.
- First [Average Date of Fall Frost](#) in Areas Affected is September 6<sup>th</sup> – 11<sup>th</sup> and 12<sup>th</sup> – 16<sup>th</sup>

### Frost Locations, Category and Duration

Category	Southwest	Northwest	Central	Eastern	Interlake
Frost: 0C to -2C Duration: <4 hours	Argue, Deloraine, Hamiota, Kenton, McCauley, Neepawa, Newdale, Ninette Rivers, St Lazare	Alonsa, Minitonas	Baldur, Clearwater	N/A	Poplarfield, Narcisse
Frost: 0C to -2C Duration: >4 hours	N/A	Birch River, Pipe Lake, Ruthenia	N/A	N/A	N/A
Frost: -2C to -4C Duration: >4 hours	Birtle, Oakburn	Grandview, Inglis, San Clara, Swan Valley	N/A	N/A	N/A

### Crop Stage Based on September 4, 2018 Crop Report

Category	Southwest	Northwest	Central	Eastern	Interlake
Winter Wheat/Fall Rye	mature	mature	mature	mature	mature
Spring Wheat	mature	mature	mature	mature	mature
Barley	mature	mature	mature	mature	mature
Oat	mature	mature	mature	mature	mature
Field Pea	mature	mature	mature	mature	mature
Canola/Rapeseed	90% mature	75% mature	mature	mature	90% mature
Flax	mature	-	mature	-	mature
Soybean	R7 – R8	R6 – R8	R7 – R8	R7 – R8	R6 – R8
Dry Bean	-	-	50% mature	-	-
Sunflower	R7	-	R7 – R9	R8 – R9	R7 – R9
Corn	R4 – R5	R3 – R5	R4 - R5	R5	R4 - R5

**The extent of frost damage to a crop will depend on several factors.** The species, stage, and hardening of the crop, the soil type and soil moisture, the actual air temperature, the duration of freezing, and the rapidity with which freezing takes place are important. A drop in air temperature of short duration will cause less damage than a prolonged period the same low temperature.

Assessment of frost damage – The first signs of damage in canola can occur within the first 6 hours after the event as plant wilting (severe) or speckling seen on the pods. In soybeans, it may take longer to see damage and may be limited to killing upper leaves and have not had frost penetrate into the crop canopy. In corn, first signs of frost will appear in 1 to 2 days, appearing as water soaked lesions on leaves.

**Canola** – information from Canola Council of Canada. Seeds with greater than 20% moisture will be damaged by frost, as a reference, canola at 60% seed colour change is approximately 30% seed moisture.

If intention is to swath canola:

- Light frost (0C to -2 C) - Check in the afternoon and evening after the frost for wilting to assess frost damage, there may be speckling on the stem and pods, but this is of little concern as long as the plant is still alive and not wilting. If no wilting, leave the crop standing and check daily for seed colour change to indicate swath timing.
- Heavy frost (> -2 C) - Assess the damage in early afternoon. Check pods for a white, wilted appearance. Pod shatter and pod drop could begin within a day, especially with warm sunny afternoons. If pods are desiccating rapidly, swathing right away will preserve as much yield as possible. If the pods are severely damaged and are beginning to desiccate, swath during periods of dew or high humidity to reduce the amount of pod shelling and pod drop.

If intention is to straight cut, see Canola Council information on [Frost on Canola Left for Straight Combining](#)

**Soybean** – Using the Manitoba Pulse and Soybean Growers [soybean maturity guide](#) on their website, determine the growth stage of your crop using pictures and descriptions. In terms of yield loss, use the following as a guide:

- Frost during the R5 stage - reduce yield by 50%-70%.
- Frost at the R6 stage - reduce yield by 20%-30%.
- Frost at the R7 stage - reduce yield by only about 5%.
- Frost at R8 stage - no yield reductions expected.

Besides yield loss, there is also the increased concern of green seed issues. This occurs when there is rapid dry down in the plant and seed – e.g. when frost occurs or when hot/dry weather causes premature and fast ripening.

**Corn (Silage)** – A killing frost occurs when temperatures reach at or below 0C for 4+ hours. In terms of yield loss, use the following as a guide.

- Frost at R4 (dough) - kernel moisture of around 70% and too high of moisture to be ensiled successfully. This crop will need to dry in the field for several days and monitored closely for moisture content.
- Frost at R5 (dent), stage according to the progression of the milk line, i.e. ¼, ½, ¾. At ½ milk line (R5.5), moisture content of kernels is 35-40%. Frost occurring during the R5 stage in silage corn will require harvest right away before leaves start shedding or plant breakage occurs, to prevent yield loss

Table 1: Impact of frost damage on corn yield and moisture

Corn kernel stage	Leaves and stalk damaged by frost: Silage yield loss	Leaves and stalk damaged by frost: Grain yield loss	Only leaves damaged by frost: Grain yield loss	Test weight	Grain moisture	Whole plant moisture
R4 (dough)	30%	66%	41%	---	70%	76%
R5 (dent)	21%	55%	23%	47 lbs. per bushel	60%	73%
R5.25 (75% milk)	15%	35%	18%	50 lbs. per bushel	52%	68%
R5.5 (50% milk)	5%	10%	5%	53 lbs. per bushel	40%	66%
R5.75 (25% milk)	1%	3%	2%	54-55 lbs. per bushel	37%	63%
R6 (mature)	0%	0%	0%	56 lbs. per bushel	32%	60%

Source: University of Minnesota Extension: <https://extension.umn.edu/growing-corn/early-fall-frost>.