

Frost damage

ASSESSMENT AND RECOVERY



THREAT

Parts of Ontario were hit by frost the last weekend in May, with some areas seeing temperatures plummet to below -4 °C. •



IDENTIFICATION OF FROST DAMAGE IN ONTARIO

Frost damaged across the province has affected the corn, soybean, winter wheat, and spring grains at varying intensity. The impact within fields and between field locations is extremely variable.

CORN

At this point of the year, the growing point of corn is still below the ground. If corn has been damaged by frost, it is the exposed plant tissue that would have been damaged. New plant tissue will continue to grow from the growing point beneath the soil surface. Dead tissue will be noticeable and does not look good; the roots, the growing point and nutrient flow from the remaining seed is still occurring.

In extreme conditions, new tissue may get tied up in the old tissue and not be able to break free of the dead leaves. In this

situation, farmers have tried mowing the crop in larger plants to help the growing point and new tissue emerge from the dead tissue tomb.

Mowing should wait until the plant recovers and new tissue can help push its way through. To double check that your corn is still alive, you can dig a plant up and slice the corn open to assess the growing point; it should be white/yellow, not brown, and soft.

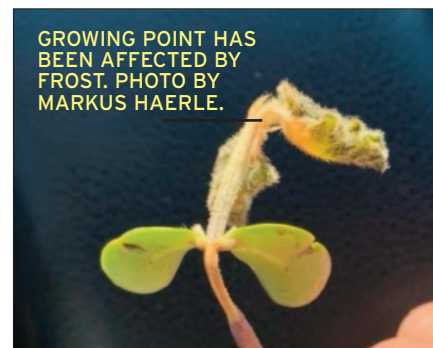
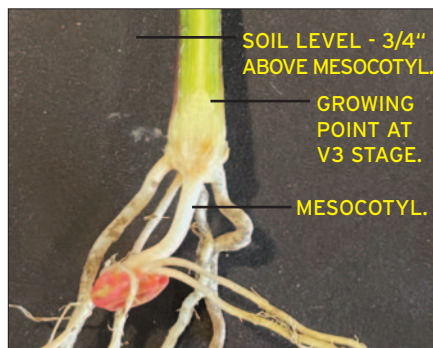
SOYBEANS

Emerged soybeans have an exposed growing point, which is the area where the new tissue and leaves are forming. Soybeans can tolerate some cold temperatures, but depends on duration of the freezing temperature. Parts of cotyledons may turn brown/black,

and the unifoliate may be damaged but the growing point may be spared. Look for new growth in the coming days. If the stem below the cotyledons is damaged (soft, brown, and squishy) the plant will not survive. It will vary by plant and by field as many variable conditions exist.

WHEAT

If wheat is in the boot stage it can be damaged if temperatures hit below -2 °C for two hours or longer. Head emergence may be affected, and florets may be damaged. Head snag may be seen in some situations. More leaf damage may be seen if a fungicide or herbicide was just applied recently. If wheat was heading or flowering, temperatures below -1 °C for two hours could cause sterility. Look for white heads in the coming days. ●



This information is provided by
Grain Farmers of Ontario's
agronomy team.



CONDITIONS

FAVOURABLE CONDITIONS

Damage to crop leaf tissue depends on how low the temperature drops and the duration of the low temperature. For example -2 °C for five hours will have more leaf tissue damage than -3 °C for one hour. It also depends on the actual temperature at the plant in the field. Temperatures at the house may register 2 °C but in the field at ground level it may be -1 °C as heat is radiating from the house giving inaccurate field temperatures.

In frost damaged areas, field variability may be seen based on:

- **Elevation** – Fields at higher elevation in the province received cooler temperatures. Lower elevation within the field may have had colder air settle in low lying areas.
- **Soil and field condition** – Soils that hold heat will slowly give off heat and protect the seedlings. Loose soils give off heat quickly and will reach colder temperatures quicker and will not be able to protect seedlings.
- **Wind breaks, shelter belts** – Wind breaks offer protection from wind, but also protect from heat loss. ●



CORN GROWING OUT
OF FROST DAMAGE

WHAT YOU CAN DO

- Scout your fields and identify areas of damage.
- Assess if the plants are truly dead or if they are recovering.
- Estimate the current population of live plants.
- If you have identified spots in your fields with unacceptable levels of dead plants or whole fields with damage, contact your seed supplier for seed supply availability or other crop solutions.
- If replanting, target re-seeding of the worst fields first.
- If you are planning an herbicide application onto a frosted crop; wait until the crop has had a chance to recover from the frost.
- **Soybeans** – check first as impact and ability to correct will have greatest impact. Replant where beans are dead.
- **Corn** – check fields to assess damage and growth stage, allow new growth to start before action is taken, if needed.
- **Winter wheat** – check fields, depending on growth stage, look for grain head viability and fertility.
- **Spring grains** – check fields for damage, due to earlier growth stage, they should be fine, colder temperatures further north would experience potential leaf damage, check growing point and head development. Damaged flag leaf will hurt yields.
- For those with crop insurance, make sure to contact Agricorp at 1-877-247-4999 to open a file.

Remember, patience is needed as it takes a minimum of 48 hours with warmer temperatures to see new growth. •

More information:

<https://fieldcropnews.com/2020/05/how-will-the-cold-temperatures-affect-cereal-crops/>

Visit www.gfo.ca/agronomy to download.

Version: 05-31-2021.