Potential Injury to Corn from Cold Temperatures

KEY POINTS

- The severity of cold damage to corn plants is highly dependent on actual temperature and the stage of growth.
- Temperatures above 28 °F may damage seedling leaf tissue without injuring the growing point.
- Temperatures below 28 °F may damage the growing point even if the growing point is below the soil surface.
- Growers should wait a minimum of 3 to 5 days after a cold temperature event to accurately assess plant damage.

The severity of cold damage to corn plants is highly dependent on actual temperature and the stage of growth. The growing point remains belowground until the plant is close to the V5 growth stage. If corn plants are smaller than V5 and a frost occurs without significant periods of lethal cold temperatures (colder than 28º F for a few hours or more), generally only leaf tissue is affected as the growing point is somewhat protected by the surrounding soil. When plants are larger than V5 and the growing point is above the ground, the plants are more susceptible to being killed by lethal cold temperatures.

Temperatures Above 28 °F

- Frost with temperatures above 28 °F can damage leaf tissues but the growing point may survive if still below the soil.
- Damaged leaf tissue may turn yellow, silver, or brown, wilt, and then decay (Figure 1).
- Regrowth will generally occur within 3-4 days with warmer temperatures.
- Sometimes the decaying leaf tissue can slightly inhibit growth from the whorl, giving the corn seedling a twisted appearance.
- In this situation, no action is needed except patience and scouting for future potential problems. Cloudy or cool days may slow recovery.

Figure 1. Cold damage on corn seedlings two days after a frost event (1 & 2); regrowth in the whorl is evidence of recovery (3).

Temperatures Below 28 °F

- Temperatures colder than 28°F can injure or kill the growing point of a young corn plant even if it is still below the soil surface.
- When corn plants have been exposed to lethal temperatures, careful observation of the growing point is required. Growers should wait a minimum of 3 to 5 days after a weather event to accurately assess plant damage.
- A white or cream-colored growing point that is still firm is an indication that the plant is recovering. Growing points that are darkening and soft are likely beginning to die.
- Situations that might make the growing point more susceptible to lethal temperatures include shallow planting and coarse soils where the plant is more exposed to the air temperature.

Sources: Frost or Freeze Damage to Corn. North Carolina Cooperative Extension. https://Craven.ces.ncsu.edu/frost-or-freeze-damage-to-corn/. R.L. Nielsen. 2010. Frosty corn, toasted plants. Purdue University Extension. http:// www.agry.purdue.edu. Sources verified 2/15/2018 140318070110