

Assessing Corn Recovery From Early-Season Damage

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Corn fields are frequently exposed to damaging stresses that can cause extensive plant death or stunting. Your responses to crop damage, including replant and marketing decisions, often require an estimate of the yield loss that may result from the damage. An estimate of yield loss usually requires an assessment of the ability of the corn plants to recover from severe stress and produce harvestable grain.

Fortunately, corn has an amazing ability to recover from severe foliar damage early in the season, especially if the plant's growing point region is undamaged. The growing point region remains below ground until about growth stage V5 or V6 (five to six visible leaf collars); by which time stalk elongation begins and soon elevates the growing point region above the soil surface.

From VE (emergence) to about V5 or V6, the only plant tissue exposed above ground is the rolled up leaf tissue of the whorl. Damage to the whorl itself rarely results in plant death. As long as the growing point region is below ground, it is relatively well protected from aboveground damage by hail, wind, frost, aboveground insect feeding, and foliar fertilizer burn. Conversely, while the growing point region is below ground, it is vulnerable to belowground stresses, including saturated soils, soil-borne diseases, and belowground insect feeding.

Assessing the ability of young corn plants to recover from severe damage is very much dependent on the health of the growing point region. If the growing point is healthy and the injury is restricted to the aboveground whorl leaf tissue, the damaged plants will almost certainly recover with little, if any, yield loss at the end of the season. If the growing point itself is injured, then successful recovery is much less certain.

Occasionally, it is difficult to visually determine the health of the growing point region. Sometimes its appearance (yellowish-white and firm versus discolored and mushy) clearly indicates whether it is healthy or injured. Sometimes the apparent health of the growing point region is not obvious and only time will tell whether it has been truly damaged.

If belowground damage targets the kernel (disease, insects), mesocotyl (disease, insects), or seed roots (disease, insects, fertilizer burn) rather than the growing point itself, the prognosis is very much dependent on growth stage of the crop at the time the damage

occurred. At early leaf stages (VE to V3), young corn seedlings are very much dependent on the energy reserves in the kernel. From V3 onward, the developing nodal root system increasingly takes over the responsibility for nutrient and water uptake and the plants' dependence on the energy reserves of the kernels increasingly dwindles.

Consequently, damage to the kernel or mesocotyl from VE to V3 will usually kill or severely stunt plants. Damage to the same plant parts after V3 will primarily stunt plants, although decreasingly so with damage to progressively older plants.

Patience and time are two key factors that influence your ability to assess the recovery potential of a damaged field for the purposes of making a replant decision. The ghastly appearance of a hail-damaged field the day after the storm can be gut-wrenching. Similarly, the dead tan leaves of young corn plants damaged by frost offer no hope of recovery to many farmers. In times like these, it is prudent to remember what Yogi Berra once said, "It's not over until it's over."

Within three to five days following a damaging storm or other severe stress event, fresh leaf growth will be visible from within the whorl of surviving plants. Plants whose growing point regions have been mortally injured will show little evidence of recovery from the whorl. Warm weather during these three to five days following the damage will hasten both the recovery of the survivors and deterioration of the mortally wounded plants. Conversely, cool temperatures in the days following the damage will slow both the recovery and deterioration; and force you to wait a few more days before making an accurate assessment of the field.

Related References:

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Don't forget, this and other timely information about corn can be viewed at the Chat 'n Chew Café on the World Wide Web at <http://www.kingcorn.org/cafe> . For other information about corn, take a look at the Corn Growers' Guidebook on the World Wide Web at <http://www.kingcorn.org/>

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