

# AGRONOMIC ALERT



## Recovery & Damage Assessment of Hail Damaged Corn

Recently, severe storms marched across the region bringing along hail that damaged corn in localized areas. After the initial shock of viewing a severely damaged corn field has diminished, the stages of determining the extent of the damage begin.

Yield loss in corn due to hail damage results from:

1. Leaf area reduction caused by hail-damaged leaves and plant bruising
2. Stand loss caused by plant death

The severity of each of these factors is important to accurately assess the extent of hail damage and how yield potential may be affected. Evaluating the health of the growing point can be done soon after the storm, but making a decision regarding the yield potential of the field is premature because the plants have not been given enough time to recover. To accurately assess potential yield loss from hail, corn plants should be evaluated 7 to 10 days after the storm. At that time, it should be easier to more accurately distinguish between living plants and plants unable to withstand the hail damage itself or subsequent disease infection.

### Leaf Defoliation and Bruising Effects

Because much of the corn in the area was in the V2 to V6 (2 to 6 leaf or collar) stages when the hail storms hit, potential yield loss is greatly influenced by whether or not the growing point was above ground. The growing point is near the soil surface at



**Figure 2.** Hail damaged corn at V3 stage.

**Table 1. Estimated potential yield loss in corn from plant defoliation.**

Source: D.R. Hicks et. al. 1999. *The corn growers field guide for evaluating crop damage and replant options.* [Online] [www.soybeans.umn.edu](http://www.soybeans.umn.edu) (verified 2 June 2010).

Corn Growth Stage	Percent Leaf Area Destroyed				
	20	40	60	80	100
	— %Yield Loss —				
V7	0	1	4	6	9
V8	0	1	5	7	11
V9	0	2	6	9	13
V10	0	4	8	11	16

V6 stage, making the seedlings more susceptible to hail damage. When the growing point is below the soil surface or in the leaf whorl, plant damage due to hail rarely results in significant loss of stand or yield potential. Keep in mind that leaf damage usually looks worse than it really is, especially in the first few days after a storm. Shredded leaves that remain green and attached to the plant will continue often to produce photosynthates for the plant (Table 1).

Assessing the extent of stem and whorl bruising and how it affects the health and productivity of the plant is difficult. Bruising may allow an avenue for infection, which can increase the risk for stalk lodging later in the season. Fields that contain severely bruised plants may need to be evaluated at the end of the season.

### Stand Losses

After V10, potential yield loss and stand reductions are on nearly a one-to-one ratio (for example: 80% stand = 80% yield

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potential) and are in addition to losses shown in the defoliation table (Table 1). Stand loss at this stage will likely result in considerably greater loss of yield potential compared to leaf defoliation.

### Estimating Total Yield Loss

Many factors are involved in estimating total loss of yield potential, including effects from defoliation, stand loss, plant bruising, possible disease infection of damaged plants, stalk lodging later in the season, and environmental conditions during the remainder of the growing season. Growers should scout for and monitor for stalk rot and lodging, increased nitrate levels in fields intended for animal feed, and late-season weed flushes due to increased light penetration in defoliated areas. Potential yield loss figures due to damaged or missing plants are only estimates. True yield loss from a hail storm cannot be fully determined until harvest.

Sources: J. Lauer. 1994. *Assessing Hail Damage in Corn*. Univ. of Wisconsin Coop Ext. <http://corn.agronomy.wisc.edu>

R. Nielsen. 2001. *Hail Damage in Corn: Moving Beyond Grief to Damage Assessment*. Purdue Univ. Coop. Ext. [www.agry.purdue.edu](http://www.agry.purdue.edu)



**Figure 2.** Corn with leaves damaged by hail.

**Individual results may vary**, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible.

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