

BETWEEN THE ROWS

April 28, 2011

GREEN SNAP IN CORN

ISSUE:

WHAT IS GREEN SNAP?

Green snap is a term to describe breakage of the stalk of the corn plant by high winds. This yield-robbing, weather-related, phenomenon occurs primarily in areas of the central and western Corn Belt where high winds are more prevalent.

Corn is most susceptible to green snap during the five to eight leaf stages of development and again from the twelfth leaf stage to approximately one week after silking. During these phases of growth, the plant is rapidly growing resulting in brittle cell walls. Brittleness occurs during this period because the deposition of lignin, a major structural component of cell walls, does not occur until after the end of the rapid growth phase.

Factors Affecting Green Snap

Several factors have been reported to influence the susceptibility of corn to green snap.

- Postemergence herbicides such as Banvel™ and 2, 4-D
- An increase in severe weather patterns caused by El Nino. El Nino has been shown to cause severe shifts in local weather such as temperature shifts, significant increases in rainfall, and severe thunderstorms.

Any condition that promotes high yield and rapid growth may also promote greater green snap damage. For example, conventional tillage tends to promote green snap damage during early plant development because it promotes rapid growth.

The application of high rates of nitrogen fertilizer also promotes green snap damage. Nitrogen increases the rate of vegetative growth through rapid cell division and elongation while at the same time producing weak cell walls.

Heavily manured fields tend to green snap more frequently. Manure, high in nitrogen, causes the same rapid vegetative growth as commercial nitrogen fertilizer.

Some hybrids are more prone to green snap than others. Selection of hybrids for more rigid stalks, as a means to increase standability, may also increase the hybrid's susceptibility to breakage.

Planting date can result in subtle differences in plant development. Even small differences in plant development can result in large differences in the susceptibility of stalk breakage. Likewise, planting date coupled with low levels of crop residue can influence the severity of green snap by promoting growth in warmer soils.

Determining Yield Loss

Immediate yield loss can be expected if the stalk is broken below the ear. If the damage occurs early in the growing season, the remaining plants may compensate. It is unlikely however, that total yield loss can be recovered.

If damage occurs late in the growing season, yield loss will be irreversible. Once the primary ear has developed, the only way a plant can compensate for lost stand is to initiate a secondary ear. However, the level of yield compensation will be dependent upon the hybrid's propensity to double-ear and the amount of growing season remaining.



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In cases where damage occurs below the ear, yield reduction can be estimated using the table below.

Yield Loss of Corn Due to Stalk Breakage Below the Primordial Ear

Stand Reduction	Expected Yield Loss
25%	10%
50%	26%
75%	43%

Source: University of Minnesota

Managing the Risk of Green Snap

Spread your risk by planting a package of hybrids.

This spreads out the physiological development of the plants and reduces the risk of wide-spread stalk damage. Plant hybrids with a 10-day range of maturity.

A good rule of thumb is as follows:

- 50 to 55% of your hybrid selection should fall into the mid-maturity range for your area
- 15 to 20% of your hybrids should fall into the early-maturity range
- The remaining 25 to 35% of your hybrids should fall into the full-season range.

Planting hybrids with a range of maturities not only reduces the risk of wide-spread green snap damage but reduces the risk of poor pollination caused by heat blast.

Manage herbicide application to minimize risk.

Application of growth regulator herbicides, either alone or as part of a tank mix combination, can increase the risk of injury. Apply growth regulators on hybrids with high green snap scores to reduce injury concerns.

Select hybrids with good green snap scores. When selecting hybrids, weigh the benefits of yield potential, disease resistance, and other agronomic traits against the frequency of green snap in your area.

The timing and intensity of the windstorm ultimately determine the severity of green snap damage. Selecting hybrids with a good green snap score does not eliminate the potential for green snap damage.

Severe stalk damage may occur if the plant is at a susceptible stage of development when the wind achieves a critical speed.

