What is green snap?

Green snap is a term to describe breakage of the stalk of the corn plant by high winds. This yield-robining, 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 fifth to eighth leaf stages of development and again from the 12th 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.

- Post emergence herbicides such as growth regulator types can increase the risk of green snap.

- An increase in severe weather patterns that can significantly affect temperature shifts which can impact rainfall amounts and severe storms with high wind potential.

- High yield corn production practices (higher yielding genetics, increasing populations, improved fertility management, and the trend to narrower rows) may contribute to increasing green snap risk.

- Any hybrid has the potential to green snap at economic levels even if it is highly rated against just such an occurrence. Even the most stable hybrid may have a small window when green snap can occur.

- Improved root strength in hybrids can cause green snap instead of root lodging. It all depends on timing, soil conditions, and many other growth factors.

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 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.

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**

<table>
<thead>
<tr>
<th>Stand Reduction</th>
<th>Expected Yield Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>10%</td>
</tr>
<tr>
<td>50%</td>
<td>26%</td>
</tr>
<tr>
<td>75%</td>
<td>43%</td>
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</tbody>
</table>

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 greater resistance to green snap 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.

**Summary**

- Corn at the V5 to V8 stage of development is most susceptible to green snap. The plant is also susceptible at the V12 through the silking stage.
- Stage of plant development and timing and severity of wind are the most important factors affecting green snap.
- Management practices that promote rapid early growth may increase the severity of damage.
- Early planting coupled with low soil residue levels can increase the severity of damage.
- Application of high rates of nitrogen fertilizer or animal manure promotes green snap damage.
- Selecting hybrids with good green snap scores does not eliminate green snap damage.