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Abstract

Straight-line winds as high as 60 mph caused considerable greensnap in corn across north-central and northeast Iowa last Saturday evening, July 1. Damage was more frequent and most severe in a narrow, long band running from eastern Cerro Gordo County generally along county road B60 and across several counties to the east and northeast and included the Iowa State University Northeast Research and Demonstration Farm at Nashua.

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Crop Production

Greensnap in Iowa

by Roger Elmore and Lori Abendroth, Department of Agronomy, and George Cummins, Iowa State University Extension

Straight-line winds as high as 60 mph caused considerable greensnap in corn across north-central and northeast Iowa last Saturday evening, July 1. Damage was more frequent and most severe in a narrow, long band running from eastern Cerro Gordo County generally along county road B60 and across several counties to the east and northeast and included the Iowa State University Northeast Research and Demonstration Farm at Nashua.

Damage assessments are incomplete, but large areas of 20 to 80 percent breakage are reported in some fields. The last experience with a major greensnap event in northern Iowa was during 1998. Producers should immediately notify their crop insurance providers of the damage and see what compensation or coverage is available to them.

Corn is most susceptible to greensnap prior to tasseling, when it is rapidly growing. Corn in the damaged areas ranged from the 10th to 12th leaf stage (V10 to V12). These stages are the beginning of “prime time” for greensnap. Most of the broken plants were broken at the node just below the primary ear. A few plants were broken below the ear in the internode. Broken plants may produce a nubbin, a small nonproductive ear.

Pinching (in contrast to clean breaks) of stalks was more common at Nashua than we have seen before (see photos). Pinching is the crushing of stalk tissue on one side of the stalk causing the plant to lean over but still remain attached and intact. In fields where the soil was wet at the time of the storm or where rootworm feeding has occurred, root lodging occurred. This is where the whole stalk is leaning at an angle. Pinched and root-lodged plants will try to reorient into a vertical position and produce an ear. Yield reduction will occur from both pinched and root-lodged plants. Yield loss for damage like this is difficult to predict since it is dependent on the remaining growing conditions. Expect harvesting to be more difficult in some areas.

We’ve learned from previous greensnap events in Iowa and Nebraska that yield loss is directly related to the amount of stalk breakage that occurred. In other words, yield loss from broken plants is directly related to stand loss (i.e., 10 percent broken plants will result in a 10 percent yield reduction). This is because at this time of year, corn plants are not able to compensate for



Greensnap damage at the Iowa State University Northeast Research and Demonstration Farm at Nashua, July 6, 2006. The photos show a plant broken at the node in the foreground and a pinched plant in the background. (Roger Elmore)

reduced plant competition very much. Ear parameters have been largely determined (see previous ICM article at <http://www.ipm.iastate.edu/ipm/icm/2006/5-30/kernels.html>).

Hybrids vary dramatically in their tolerance to greensnap. Several companies provide growers with greensnap ratings that may prove useful in selecting less susceptible hybrids. Stage of growth affects breakage too. Factors that increase early season growth tend to increase breakage susceptibility, such as high N, P, and K rates; spring-applied N; tillage; and high organic matter.

Plant orientation and plant populations also are important factors in understanding greensnap. With high plant densities, leaves tend to orient perpendicular to the row rather than parallel. Plants whose leaves are oriented perpendicular to the row are more likely to break than other plants when strong winds come in perpendicular to the rows. This is likely why we seldom have greensnap events (from straight-line winds) that affect both north-south and east-west rows. Greensnap will typically occur in one row orientation or the other but not both.

Further research is needed to understand the causes of greensnap and how to avert it. The Iowa State University Northeast Research and Demonstration Farm at Nashua has ongoing trials comparing hybrids, dates of planting, nutrient levels, and tillage systems. Considerable variation exists in the amount of greensnap within these trials. Field data from Nashua will complement greenhouse studies planned to begin soon and help us to develop recommendations to reduce greensnap in the future across the Midwest.

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July 26 at the Field Extension Education Laboratory



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