

7-2-2014

Assessing Crop Damage from Wind, Hail and Flooding

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Recommended Citation

Licht, Mark A., "Assessing Crop Damage from Wind, Hail and Flooding" (2014). *Integrated Crop Management News*. 850.
<http://lib.dr.iastate.edu/cropnews/850>

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Assessing Crop Damage from Wind, Hail and Flooding

Abstract

Storms this past week have resulted in hail, wind and flooding damage across the state. Damage to both corn and soybean crops range from extensive defoliation to root lodging. In the coming week or two damaged crops should be assessed to determine how extensive the damage is.

Keywords

Agronomy

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences

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Assessing Crop Damage from Wind, Hail and Flooding ICM News

July 2, 2014

By Mark Licht, Department of Agronomy

Storms this past week have resulted in hail, wind and flooding damage across the state. Damage to both corn and soybean crops range from extensive defoliation to root lodging. In the coming week or two damaged crops should be assessed to determine how extensive the damage is.

Flooding to corn and soybean

Corn survival can be expected with flooding up to four days under air temperature less than mid-60 degrees F; about two days when temperatures are in the mid-70 degrees F; and one day when temperatures exceed 80 degrees F. Soybean may be slightly more

tolerant of flooding with little stand reduction if flooding recedes within two days through significant stand losses when flooding exceeds six to seven days.

Flooded crops are more susceptible to diseases such as physoderma or crazy top in corn or pythium and phytophthora in soybean. Additionally, sediment buildup or 'caking' on leaf tissue can limit leaf function causing diminished growth and development.

Wind damage to corn

High winds during mid-vegetative growth results in root lodging rather than green snap. During mid-vegetative growth, plant growth and internode elongation is rapid. During this rapid growth development of lignins in the stalk are out-paced by plant growth. Once lignin reinforced stalks are achieved in the late vegetative stages, the risk of green snap is increased. A second reason root lodging may be more severe this year is due to soils being saturated and limited root growth.

Plants with minor leaning will straighten with subsequent growth. Root lodged plants will become upright by 'goose necking.' In both cases, if plants have regained upright posture by pollination, pollination should occur with minimal loss of yield potential. Plants that have not regained upright posture by pollination could have diminished pollination due to neighboring plant leaves covering exposed ear silks.

Plants that have 'green snapped' will not recover unless stalk breakage occurred above the ear. Where stalk breakage is above the ear, pollination and grain fill will occur. In this case, grain production will be limited due to lost biomass and assimilate production from the upper stalk. Yield loss from 'green snapped' plants will be similar to the percentage of plants lost.



Goose necking in corn. 2012 photo by Mark Licht; western Iowa.

Assessing corn hail damage

Hail damage during mid- to late vegetative stages cannot be adequately assessed until seven to ten days following the hail event. This timeframe allows some plant regrowth to occur making it easier to determine percent stand loss and percent leaf defoliation. Yield loss from defoliation is greatest at tasselling and is least during early vegetative growth.

Stand loss and defoliation yield loss estimates are fairly straight forward. However, severe hail damage during mid- to late vegetative growth can also result in stalk bruising and breakage. Stalk bruising is more problematic after corn has reached the 10-leaf stage. The extent of yield loss from bruising often cannot be fully realized because stalk bruising can lead to infection sites for disease pathogens.



Hail stripped corn near Jewell. Photo by Angie Rieck-Hinz; June 30, 2014.

Assessing soybean hail damage

Hail damage to soybean during vegetative growth is minimal because the soybean plant can initiate new growth from axillary buds if the apical meristem is damaged. Additionally, indeterminant soybean continues vegetative growth into the early reproductive stages. Like corn, soybean damage assessment from hail should be made seven to ten days following the hail event.

Soybean hail damage assessments should begin with stand loss assessments and leaf defoliation estimates. Yield loss from stand reduction and defoliation increase as growth and development progress. In addition to stand reduction and defoliation, stem bruising effects on yield cannot be adequately determined until yield determination at harvest. Like corn, bruised soybean stems are more susceptible to stem rots.

Management following wind, hail and flood damage

Following flooding, wind and hail damage, crop scouting is critical to assessing disease development due to crop damage and additional weed pressure from prolonged open canopy caused by defoliation. Fungicide applications, regardless of plant injury, should be

made based on disease presence, conducive environmental conditions and genetic predisposition for disease susceptibility. Damaged crops will likely have a greater risk of root and stalk/stem rots. Scouting should be used to identify rots. Afflicted fields should be considered for priority harvesting to minimize lodging and harvest losses. Crops around the margin of flooded areas may have delayed growth and development resulting in the possibility slightly wetter grain moisture at harvest.

Mark Licht is an Extension cropping systems agronomist with responsibilities in corn and soybean management and production. He can be reached at lichtma@iastate.edu or 515-294-0877.

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