

## Harvest Considerations for Storm-Damaged Corn and Soybean

On September 20, fast-moving storms moved across southern Minnesota, resulting in damage to crops and property.

Claire LaCanne, Agriculture Extension Educator in Rice and Steele Counties provided the following report of recent storm damage in these counties:

*“The National Weather Service (NWS) reports ten tornadoes struck parts of southeastern Minnesota on September 20 and that preliminary information indicates Rice County was hit by six tornadoes. The storm zone included Waseca, Owatonna, Faribault, Northfield, and Cannon Falls, plus surrounding towns.*

*Soybeans are leaning, but look okay in general. They are lodged but holding onto their pods. Sweet corn in affected areas was completely lodged and lying on the ground. Field corn in the most severely impacted areas was mostly busted over, with ears hanging close to the ground.”*

Shane Bugeja, Agriculture Extension Educator in Blue Earth and Le Sueur Counties, provided the following report of recent storm damage in these counties:

*“Corn damage included breaking of stalks above the ear (20-30% of fields observed), with one field near Morristown flattened. Wet, low lying spots also had completely downed corn. Likely this was due to a combination of restricted root growth, pathogens, and internal weakening from translocation. Soybeans were relatively unscathed, but had a noticeable lean to them.”*

## Harvesting Severely Lodged Corn

Assessing corn yield losses prior to harvesting damaged fields is difficult because losses will be due to a combination of factors, including stage of kernel development, harvest losses associated with harvesting lodged corn, kernel molds, and premature sprouting of kernels.

Key issues with corn that lodges late in the growing season are listed below. While many of the consequences are unavoidable, earlier harvest of these fields reduces risk of further losses, once grain moisture is low enough to avoid mechanical injury during harvest (less than 25%).

Corn yield loss caused by severe stalk lodging late in the growing season depends primarily on the stage of kernel development when damage occurred. If kernels were physiologically mature (kernel black layer visible) when lodging occurred, then there was no reduction in physiological yield potential from stalk lodging. If kernels were not mature, then the magnitude of physiological yield loss depends on how close the grain was to maturity and the degree to which lodged were damaged.

Dry down of grain (mature or immature) will be slower for ears near the soil surface because they are less exposed to sun and wind. Less-severely lodged corn will dry at rates closer to normal.

### **Physiological maturity and potential for volunteer corn**

About 55 to 60 days after silking, kernel dry weight usually reaches its maximum and kernels are physiologically mature. Physiological maturity occurs soon after the kernel milk line disappears and just before the kernel black layer forms at the tip of kernels. Physiologically-mature corn has achieved maximum grain yield potential for the growing season, but is susceptible to yield losses associated with harvest losses and reductions in grain quality. Kernel moisture content at physiological maturity is around 32%. Corn kernels that remain in the field due to lodged corn situations increase the problem of viable kernels causing volunteer corn plants the next growing season resulting in potential corn rootworm infestations in two years for those growers following a corn-soybean rotation.

## **Harvest losses**

The challenges of harvesting severely lodged corn can be difficult and the risk of significant harvest losses can be great. Leaving whole ears on the ground increases harvest loss much greater than usual shelling losses with combine harvesting.

Harvesting severely lodged corn in only one direction may help the header pick up lodged stalks. Some growers advocate harvesting a full header width in the direction the stalks are broken and a partial header width in the opposite direction.

## **Grain quality**

Ear molds can develop from contact with fungi or bacteria through rain splash or direct contact, and ears located near the soil surface are at greater risk. This, along with greater potential kernel sprouting on wet or slow-drying ears near the soil surface, increase risk of reduced grain quality headaches in severely-lodged fields.

Grain harvested from severely-lodged fields exhibiting signs of poor grain quality may need to be stored separately from other corn to minimize potential for grain quality discounts.

## **Tips for keeping corn harvest losses low**

The best guide for correct combine adjustments is the operator's manual. Gathering head losses usually represent the greatest source of loss for the combine.

- Slowing combine travel speed may reduce the amount of missed ears. Harvesting in the opposite direction of that which stalks are leaning may also reduce losses.
- Close the stripper plates enough to prevent ears from passing through.
- Place stripper plates closer together if the base of some ears are shelled on the snapping rolls.
- Gathering chains may need to be more aggressive.

- Chain flights over stripper plates should extend beyond the edge of the plates by about 1/4 inch.
- Ears should be snapped near the upper third of the snapping roll.
- Keep gathering snouts as low as feasible to pick up low-hanging ears.
- Have gathering snouts float on the ground, and gathering chains should be just above the ground.
- Use dividers mounted on both side of the head to reduce ear loss.
- Measure losses and make corrective adjustments at the start of harvest and as crop conditions change.

### **Add-on snouts and reels**

Plastic snouts and reels can help pick up lodged corn and move it off the corn head and into the combine. Some manufactures and dealers of these include:

#### **Patriot Corn Reels and Sweepers**

1302 K Road

Minden, NE 68959

Phone: 1-800-264-6587

[patriotequip.com/products/down-corn-reels](http://patriotequip.com/products/down-corn-reels)

#### **Bish Enterprises – Corn Reels**

508 S. D Road,

Giltner, NE 68841

Phone: 1-844-225-5903

[bishenterprise.com/corn-reels](http://bishenterprise.com/corn-reels)

### **Soybean Lodging Status**

While many area soybean fields are now in the Reproductive Stage-R8 (all pods have reached a mature color of brown, tan or tawny) or Physiological Maturity. There are some soybean fields in the Reproductive Stage-R7 (One mature-colored pod anywhere on the stem) and a high moisture content of 50-60%. Many of the R8 stage soybeans which were affected by the high winds ended up with moderate to severe “leaning/lodging” in the direction of the wind. Other fields at the R7 stage did not always suffer the “leaning” aspect but were either twisted or flattened depending on wind direction and intensity. Many of these soybean fields can be harvested but with some difficulty as outlined below.

## **Keeping Soybean Combine Losses Low:**

In a recent article published by Michigan State University Extension, Michael Staton, Extension Educator, specific recommendations were listed for reducing losses and improving efficiency when harvesting lodged soybeans:

- Decrease your ground speed to 2.5 to 3 mph.
- Position the cutter bar as close to the ground as possible.
- Angle the pickup fingers on the reel back slightly to more aggressively pull the lodged plants to the cutter bar. Reduce the angle of the fingers if the plants are riding over the top of the reel.
- Move the reel axle forward so that it is 9-12 inches ahead of the cutter bar.
- Contact the manufacturer for specific recommendations if using an air-assisted reel in lodged soybeans. When the reel is moved forward to pick up lodged plants, the performance of air-assisted reels decreases. Consider pivoting the down tubes above the crop if this option is available or removing the entire air manifold.
- Operate the reel as low as necessary to pick up lodged plants without causing them to ride over the top of the reel. Raise the reel if this happens.
- Consider installing vine lifters on the cutter bar if the plants are severely lodged.

If the plants are badly lodged in one direction, try adding vine lifters to the cutter bar and harvesting at a 30 degree angle to the direction of the lodging. If this doesn't work, harvest all the lodged plants in the direction opposite to way they are leaning or at an angle.

Try increasing the reel speed in relation to the ground speed. This sounds easy, but it can be challenging to find the correct ground speed and reel speed combination in lodged beans with brittle pods. If the ground speed is too fast in relation to the speed of the reel, the cutter bar will ride over some of the plants. If the reel speed is set too fast in relation to the ground speed, the reel can beat the beans out of the pods. The reel should run 10 to 20 percent faster than the ground speed under ideal conditions. However, if the beans are lodged, increase the reel speed incrementally up to a maximum of 50 percent faster than the ground speed if necessary. If the

reel is causing shattering, decrease the speed of the reel just to the point that the shattering stops. If the cutter bar begins riding over lodged plants, you will need to decrease your ground speed.

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*Sources: Dave Nicolai, Extension Educator, Crops; Jeff Coulter, Extension Corn Agronomist; and Seth Naeve, Extension Agronomist.*

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