

BETWEEN THE ROWS

August 23, 2016

HARVEST TIMING

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Now is the time to be thinking about your harvest schedule for this year's crop. Above average temperatures during the last half of July and first half of August have accelerated grain fill in many areas. It's tempting to let grain field-dry to cut costs on commercial drying, but many times that will cost more in lost bushels than you save. *The risk of field drying is that the longer the crop is left in the field, the greater the risk of lodging and ear droppage.*

Given the yield potential of this crop, it pays to protect it from lodging and harvest loss. Corn standability is better at moistures in the twenties versus the teens. Don't delay your start to harvest. Scout fields to determine stalk quality, yield potential, and maturity progression to help decide which fields need to be harvested first, and which fields can be left till the end.

Grain Drydown

Black layer defines the time when a crop is physiologically mature, which means kernel fill is complete. Kernel moisture at black layer is 30-35% and grain drydown to harvest moisture occurs primarily through the kernel sides and cap. Hybrids with a lot of husks, long husks, or tight husks dry at a slower rate than those with loose, short, or fewer husks.

A crop that black layers earlier than normal typically dries down at faster rates, simply because it will be going through drydown in September instead of October or November. September days are longer and hotter on average than October and November days. With faster drydown it's more important to plan out harvest to ensure corn doesn't dry too fast before harvest. As corn dries in the field it becomes more susceptible to harvest loss and stalk lodging.



Harvest Loss

Research shows that the highest profit is generally achieved when harvesting corn between 20-25% moisture. A few points to consider when deciding whether to let corn dry in the field:

1. Harvest loss of stalk lodged corn can be high, and will increase the longer the corn is in the field. Plan to harvest fields with high potential of lodging first.
2. Each 3/4 pound ear in 1/100th of an acre represents loss of 1 bu/A. Ear droppage risk increases as the plant dries down.
3. Two lost kernels per square foot equals loss of 1 bu/A. Take care to properly adjust the combine to prevent kernel loss.
4. An Iowa State study indicated that the average mechanical harvest loss was 5.8%.¹
5. Mechanical harvest loss increases as corn dries. One study demonstrated harvest losses increased from 3.6% for 25% moisture corn to 12.3% loss for 17% moisture corn.²

Stalk Quality

Once a kernel reaches the late milk stage it's at less risk of being aborted by the plant, and the plant "doubles down" on fulfilling its obligation to fill those kernels, even at the expense of plant integrity. The more kernels there are, the greater the obligation.

If the demand of the kernels outpaces what the plant can provide via photosynthesis, it will begin to remobilize sugars and nutrients from root, leaf and stalk tissue to the kernels. A process referred to as cannibalization. Cannibalization lessens stalk integrity and makes the stalks prone to stalk rot pathogens, ultimately resulting in lodged plants. Fields with cannibalization occurring should be harvested even if grain moisture is in the mid to high twenties.

Kernel numbers are generally high this year, and late season stalk quality needs to be monitored in fields that are showing the following symptoms:

Nitrogen deficiency – Expressed as pale green, yellow to brown dried leaves. The lower canopy is affected first. Above average rainfall caused more N loss than many expected and these shortages are beginning to show. N deficiency is especially apparent in areas that have experienced standing water and prolonged saturated soils.

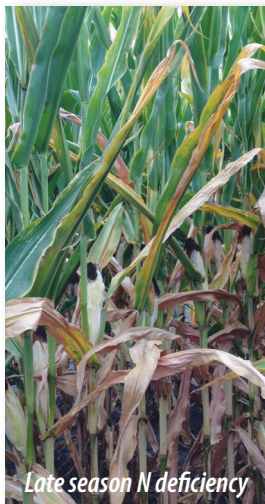
¹ http://extension.agron.iastate.edu/soybean/production_combineset.html

² <http://cornandsoybeandigest.com/corn/harvest-corn-higher-moisture-reduce-phantom-yield-loss?page=1>

Higher kernel sets mean greater N demand. Roughly 30-35% of the total N accumulation in corn occurs after pollination. If N isn't available from the soil, the plant will begin to remobilize it from other tissues, especially leaves. N deficient leaves aren't able to photosynthesize and produce sugars, resulting in cannibalization of the stalks.

Stress During Grainfill – Parts of our marketing geography were short on rainfall leading up to pollination, but many areas have seen excessive rainfall and heat following pollination. All of these conditions create stress on the plant and result in ear tip die back and shallow kernel development. Although stress during grain fill will clip top end yield potential, the demand of the kernels will still be high on the plant. Excessive rainfall will lead to nitrogen loss, as well as deprive the roots and soil of oxygen.

Leaf diseases – The most common disease this year has been Gray Leaf Spot (GLS). The spread of this disease has been variable, but if you have fields that are showing symptoms of GLS in the upper canopy, then you need to monitor their progression. Southern Rust has also been found throughout our marketing area this year, and can spread fast in infected fields. Disease covered leaves aren't able to photosynthesize, thus leading to stalk cannibalization and poor stalk quality.



Late season N deficiency



Gray leaf spot lesions



Southern rust

Early Season Root Lodged Plants – Heavy winds caused significant root lodging prior to pollination in some areas. Most plants recovered by goosenecking and have decent ear development, although not as long-eared or well filled as non-root lodged plants. The primary roots were torn during lodging and likely allowed soil-borne stalk rots to enter the plant. These stalk rot pathogens are held at bay as long as sugar levels remain high in root and lower stalk tissue. If the stalk is cannibalized to fill the developing ear, the stalk rot pathogens spread and compromise stalk integrity. It also doesn't help stalk integrity

when the stalks are curved due to goosenecking. Extra attention and harvest planning needs to be given to these fields.

Stalk Inspection

Inspecting stalks for integrity can be done any time. If the stalk and leaves are still green, then dig up the plant and carefully split the stalk lengthwise down through the crown. Look for discolored tissue. Healthy stalk tissue will be white and a healthy crown might be off-white to tan but still firm. After black layer the plant will begin to naturally degrade. If the stalk is straw colored, simply pinch the stalk 6 inches above the soil. If the rind crushes easily then stalk strength is weak and the field should be harvested sooner rather than later.



Fusarium rot in the crown

Late Harvest Options

When planted in their zone of adapted maturity, the hybrid families listed below have characteristics that favor late season integrity, but that doesn't exempt them from needing to be scouted for any of the issues mentioned above. If these hybrids look good after scouting, consider placing them later on your harvest schedule.

HYBRID	RM	HYBRID	RM
W1698RIB	97	W4796RIB	105
W1818RIB	97	W5448RIB	108
W1846RIB	97	W7108RIB	111
W2086RIB	98	W7246RIB	111
W2198RIB	100	W7456RIB	112
W2276RIB	100	W7888RIB	114
W3078RIB	106	W8268RIB	116
W3228RIB	103	W8376RIB	115
W3998RIB	105	W8918RIB	116

Conclusion

As we reach the end of the growing season it's important to have a plan for which fields should be top priority for harvest. Stalk lodging and mechanical harvest loss can eat into yield and profits. Having a better understanding of the potential losses and the condition of your crop will help you prioritize harvest and maximize profit.

From the desk of



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