

Agronomy Weekly Update

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Field Update- Cool-Down and Moisture Loss

The region is expected to experience a steady decline in daily temperatures this week compared to the first 1/3 of October, which has been ~9-15°F above normal. In terms of GDU accumulation, central MN is projected to receive 33 GDUs this week, which is ~57 GDUs less than last week. This means that expected moisture loss in corn grain will be 1-1.5 pts of moisture loss, which is closer to “normal” for mid-late October. However, total GDU accumulation is still well ahead of normal for the season at 2959 total GDUs since April 26th, which is 561 ahead of the long-term average.

Location	GDUs Since April 26th	GDUs From Normal- 4/26	Projected GDUs- 7 Day
Wadena, MN	2665	+575	22
Little Falls, MN	2950	+667	31
Albany, MN	3017	+605	31
Buffalo, MN	3098	+479	41
Glenwood, MN	3087	+602	33
Cambridge, MN	2939	+435	42
Average	2959	561	33

*Data collected from Pioneer.com GDU Calculator 4/26 - 10/10



Soybean Shattering

The immediate challenge has been the suboptimal conditions for harvesting soybeans due to the sporadic rains and heavy morning dew. Delayed harvest increases the vulnerability of soybean plants to preharvest losses such as shattering. This can occur when the pod suture becomes weak from rewetting and drying, which ultimately results in lost seeds on the ground. Understandably, we cannot control the weather, making management difficult. Continue to prioritize early maturing or stressed fields that are most susceptible to losses via shattering. Corn grain does not have the same swing in grain moisture as soybean due to the physical structure of the kernel. However, moisture loss can be slowed in these environmental conditions due to ear position, pericarp thickness, and husk coverage. With that being said, there have been many reported grain moistures well within the acceptable harvest range. Therefore, as favorable field drying conditions decrease and susceptibility to harvest losses increases as stalk integrity continues to decline, I encourage moving immediately into corn once you are able.

Test Weight Debate

Test weight is a hot topic in the fall as harvest results begin to be reported. Test weight is important in grain when marketing because of the discounts that can occur with low test weight. A common question at this time is whether low test weight means low yield and vice versa? The answer is no, and there is little evidence in research that supports a relationship between the two. So, what is test weight and what can impact this?

- Test weight is a volumetric measurement (1.244 ft³ = 1 bu). Corn used to be sold based off this specified volume. However, corn today is sold based off bushel weight, which is a standard 56 lbs. for US No. 1 Yellow Corn. Therefore, higher TW can result in growers getting paid for more “bushels” (Rankin, M. 2009).
- **Factors that can influence test weight:**
 - **Hybrid Variability-** Kernel density, kernel size, kernel shape, and pericarp texture can lead to TW differences between hybrids.
 - **Grain Moisture-** Grain moisture and test weight are inversely related, meaning the higher the grain moisture, then the lower the test weight is at that point in time. As grain dries, test weight often increases because more kernels can pack into a volume bushel. This can be influenced by kernel damage, hybrid variability, and drying temperatures.
 - **Stress During Grain Fill-** Maybe one of the most important reasons! Drought, foliar leaf diseases, below average solar radiation, and premature death due to frost can all limit starch deposition and impact test weight.
 - **Ear Rots-** Fungal pathogens can infect kernels and result in low test weight as well as cause issues with feeding (mycotoxins) and storage.

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Table 1. Increase in test weight during drying for mature corn harvested between 18 and 28 percent kernel moisture

Harvest Moisture Content	Increase in Test Weight
%	lbs/bu
18	1.5
20	2.0
22	2.5
24	3.0
26	3.5
28	4.0

Table 1. (Right) Average expected increase in test weight as corn dries to 15% moisture. Rankin, M. 2009.


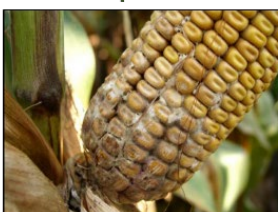
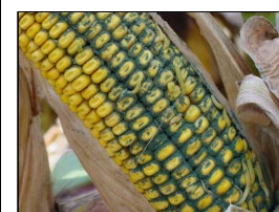







Photo: Bill Long

What Mold is This?

Ear molds in corn can be a common occurrence with favorable weather conditions during the season. Conditions that produce ear molds vary from cool and wet to "warm and dry." The presence of molds has not been as common in 2021, but are appearing sporadically throughout the region. Ear molds can be challenging for several reasons including:

- Storage complications.
- Reduced grain quality resulting in deductions when marketing.
- Mycotoxin accumulation.

<p>Aspergillus</p>  <ul style="list-style-type: none"> ➤ Mycotoxins may occur. ➤ Gray-green, olive, color can form anywhere on ear. ➤ Develops under drought-like conditions and high temperatures during grain fill. 	<p>Diplodia</p>  <ul style="list-style-type: none"> ➤ No mycotoxins. ➤ Mold growth from base of ear. ➤ Develops with wet weather and moderate temps during grain fill. 	<p>Trichoderma</p>  <ul style="list-style-type: none"> ➤ No mycotoxins. ➤ Dark green fungal growth over entire ear, between kernels. ➤ Typically on scattered plants throughout field due to injury or bird feeding. 	<p>Cladosporium</p>  <ul style="list-style-type: none"> ➤ No mycotoxins. ➤ Gray-black kernels scattered throughout ear. ➤ Develops with wet weather during maturation or delayed harvest.
<p>Gibberella</p>  <ul style="list-style-type: none"> ➤ Mycotoxins may occur. ➤ Pinkish-red or white color forming near tip. ➤ Develops with cool, wet weather following pollination. 	<p>Fusarium</p>  <ul style="list-style-type: none"> ➤ Produces mycotoxins. ➤ Scattered or groups of kernels affected with white or pink "starburst" pattern. ➤ Develops under warm and dry conditions. 	<p>Penicillium</p>  <ul style="list-style-type: none"> ➤ Mycotoxins may occur. ➤ Blue-green fungal growth develops near the tip. ➤ Often associated with damage from insects or injury. 	<p>Nigrospora</p>  <ul style="list-style-type: none"> ➤ No mycotoxins. ➤ Dark gray or black kernels from base of ear. ➤ Develops on plants experiencing frost, drought, injury, or nutrient stress.

Not all ear molds produce mycotoxins; therefore, correctly diagnosing and understanding the extent of infection will be critical as harvest continues. The best way to stop the growth of ear molds is to reduce kernel moisture below 15% through drying. Harvesting corn with ear molds as high-moisture grain and storing in a bunker or silo will slow or stop mold growth if properly packed to create an anaerobic and low pH environment. An important note to make is that heavy mold growth that produces mycotoxins may not be necessarily mean that mycotoxin levels are high and low levels may not necessarily mean low mycotoxin levels. Therefore, feed samples should be tested if ear molds were present.

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