

Agronomy Weekly Update

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CORTEVA
BRAND VALUES



Field Update- Recent Rains and Harvest Update

Unseasonably high temperatures round out the month of September with highs in the 80's through mid-week. However, the forecasted temps are projected to drop closer to normal once October kicks off at the end of the week. Total GDU accumulation in central MN has averaged 2764 since April 26th, which is ~434 ahead of normal. The next seven days will be excellent conditions to drop moisture in corn, which will be anywhere from 3.5-5 pts depending on initial grain moistures.

Location	GDUs Since April 26th	GDUs From Normal- 4/26	Projected GDUs- 7 Day
Wadena, MN	2502	+467	101
Little Falls, MN	2755	+534	106
Albany, MN	2814	+474	107
Buffalo, MN	2887	+343	119
Glenwood, MN	2886	+471	112
Cambridge, MN	2741	+313	109
Average	2764	+434	109

*Data collected from Pioneer.com GDU Calculator 4/26 - 9/28

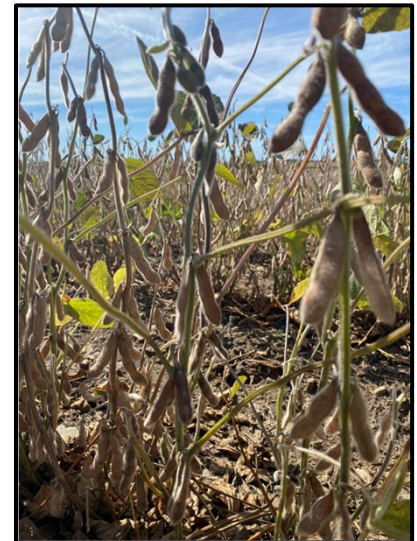
Item	This week (days) (percent)	Last week (days) (percent)	Last year (days) (percent)
Days suitable	5.4 (percent)	5.4 (percent)	5.9 (percent)
Topsoil moisture			
Very short	9	11	3
Short	24	24	12
Adequate	65	61	79
Surplus	2	4	6
Subsoil moisture			
Very short	17	19	3
Short	37	37	10
Adequate	45	43	80
Surplus	1	1	7

The consistent rains over the last several weeks have definitely been a change for the better. We will need these rains to continue through the fall to replenish subsoil moistures. Currently, 54% of MN subsoils are classified as very short or short, compared to 13% at this time last year (USDA-NASS, 2021). Harvest continues to ramp up for corn and soybean throughout the area and “variable” is the word to describe harvest thus far. Reported soybean yields have ranged from 10-80 bu/ac, while corn has ranged from 80-250 bu/ac. However, overall reported yields have been better than originally anticipated despite the extremely dry conditions this growing season. There have been several harvest challenges thus far and a couple of them are detailed below.

Green Stems in Soybeans

Soybean harvest will hit its peak over the next two weeks as more fields reach ideal moistures. While walking fields, I have noticed certain fields or pockets within the field have maintained green stems even though grain moisture has been at or below 13%. Of course, this creates challenges including delayed harvest/slow cutting, reduced yield, and reduced seed quality. So, what is the cause and how can it be managed?

- “Green Stem Syndrome” has several known causes including viruses (bean-pod mottle virus or soybean mosaic virus), insect feeding, or environmental stresses.
- The common cause this season is likely due to the recent moisture trend following the dry conditions throughout the growing season. Soybean plants started to accumulate nutrients, sugars, and carbohydrates in the stem. However, aborted pods/seeds from earlier drought stress resulted in no “sink” to translocate these resources; therefore, keeping stems and petioles green.



Management:

- Do not delay harvest. Even though stems may remain green, the pods/grain moisture may be matured and delaying harvest can increase shattering.
- Combining these patches may be slow and not ideal but will minimize losses. Slow ground speeds, harvest at 20-25 degree angle, and maintain reel speed 10-25% faster than ground speed.
- Future management includes: controlling insects that cause green stem syndrome or desiccation with paraquat at R6.5 - R7.0.

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Projecting Corn Profitability- Drying Costs and Shrink

Corn moistures are dropping quickly and a common question has been: what is the optimum moisture to start harvest? Of course, this will depend on your storage facilities, drying capability, and logistics; however, optimum starting harvest moisture is between 22-25%. Grain that is too wet can increase damage, while waiting until grain drops below 20% can increase the potential for stalk lodging, ear drop, or harvest losses.

The follow-up question may be: how much higher do yields need to be in order to offset drying costs?

- About 0.02 gallons of propane are used to remove one point of moisture per bushel of corn on average.
- *Calculation drying cost/acre: bu/ac x pts of moisture to remove x 0.02 x propane cost (\$/gal) = \$/acre*
- The balance comes between delivering grain too dry vs. too wet. Overly dry grain (below 15.5%) results in loss of total lbs sold due to removing the water weight, while overly wet grain incurs drying costs and shrink.
- Consider differences in grain moisture between hybrids. The table below shows the yield required to offset energy costs.
- Allowable storage time will also depend on grain moisture.

Yield required to offset energy costs					
Yield (bu/ac)	Points of Moisture Difference				
	1	2	3	4	5
	-----bu/ac to pay energy costs-----				
75	0.7	1.4	2.1	2.8	3.5
100	0.9	1.8	2.8	3.7	4.6
125	1.2	2.3	3.5	4.6	5.8
150	1.4	2.8	4.2	5.5	6.9
175	1.6	3.2	4.8	6.5	8.1
200	1.8	3.7	5.5	7.4	9.2
225	2.1	4.2	6.2	8.3	10.4
250	2.3	4.6	6.9	9.2	11.5

Propane Cost = \$1.50/gal; Corn Price = \$3.25/bu

Maximum storage time (months); corn and soybeans*							
Temperature ° F	Corn, soybeans moisture content						
	13%, 11%	14%, 12%	15%, 13%	16%, 14%	17%, 15%	18%, 16%	24% N/A
40	150	61	29.0	15.0	9.4	6.1	1.3
50	84	34	16.0	8.9	5.3	3.4	0.5
60	47	19	9.2	5.0	3.0	1.9	0.3
70	26	11	5.2	2.8	1.7	1.1	0.2
80	15	6	2.9	1.6	0.9	0.9	0.06

*Based on 0.5% maximum dry matter loss—calculated on the basis of USDA research at Iowa State University. Corresponds to one grade number loss; 2-3% pts of Total Damaged seeds

So where does shrink factor in?

- Moisture shrink is the weight reduction as grain is dried.
- *Calculation: 100/(100 – final moisture). Ex: Grain intended to dry to 15.5% results in a shrink factor of 100/(100-15.5) = 1.1834. Therefore, moisture shrink when drying grain from 25.5% to 15.5% is 10 x 1.1834 = 11.83% loss in grain weight due to water removed.*
- Shrink in marketed grain is often higher than moisture shrink because handling losses are included, which typically range between 0.22 – 1.71%.

Understandably, allowing corn to field dry to reduce drying costs is ideal. However, the drought conditions this season have caused a number of corn fields to lose stalk integrity. Therefore, weigh the drying costs per acre vs. yield needed to preserve to offset these drying costs.