Agronomic Update - Pioneer Agronomist Nate Peck
Week of September 26, 2022

In This Update:

- **Soybean Harvest**
- **Harvest Timing/Phantom Yield Loss**
- **Managing Harvest Loss**
- **Corn Dry Down Rates**

Soybean Harvest

Jim LaFrenz, another Pioneer Field agronomist sent this out, and it is worth sharing.

Yield Loss due to Moisture (does not include harvest losses that increase with dry soybeans)

Harvest Moisture	% Yield Loss	Yield Loss @ 50bu/A	Yield Loss @ 70bu/A
13%	0.00%	--	--
12%	1.13%	0.6 bu/A	0.8 bu/A
11%	2.25%	1.1 bu/A	1.6 bu/A
10%	3.33%	1.7 bu/A	2.3 bu/A
9%	4.40%	2.2 bu/A	3.1 bu/A
8%	5.43%	2.7 bu/A	3.8 bu/A

https://www.pioneer.com/us/agronomy/reducing_harvest_losses_in_soybeans.html

https://cropwatch.unl.edu/harvest-soybeans-13-moisture

Some folks are wanting to take moisture out of the soybeans and others will likely want to add some (be careful!) A grain equilibrium chart for soybeans is included below. Running the fans at 70% RH seems to be a sweet spot.

SOYBEAN EQUILIBRIUM MOISTURE CONTENT

	TEMPERATURE (°F)																
	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°
R.H.	MOISTURE CONTENT (% W.B.)																
5%	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0
10%	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.7
15%	3.1	3.1	3.0	3.0	2.9	2.9	2.8	2.8	2.8	2.7	2.7	2.6	2.6	2.6	2.5	2.5	2.5
20%	4.0	4.0	3.9	3.8	3.8	3.7	3.7	3.6	3.6	3.5	3.5	3.4	3.4	3.3	3.3	3.2	3.2
25%	4.9	4.8	4.8	4.7	4.6	4.5	4.5	4.4	4.3	4.3	4.2	4.2	4.1	4.0	4.0	3.9	3.9
30%	5.8	5.7	5.6	5.5	5.5	5.4	5.3	5.2	5.1	5.1	5.0	4.9	4.9	4.8	4.7	4.7	4.6
35%	6.7	6.6	6.5	6.4	6.3	6.2	6.1	6.0	5.9	5.9	5.8	5.7	5.6	5.6	5.5	5.4	5.3
40%	7.7	7.5	7.4	7.3	7.2	7.1	7.0	6.9	6.8	6.7	6.6	6.5	6.4	6.3	6.3	6.2	6.1
45%	8.6	8.5	8.4	8.2	8.1	8.0	7.9	7.8	7.6	7.5	7.4	7.3	7.2	7.1	7.1	7.0	6.9
50%	9.6	9.5	9.3	9.2	9.1	8.9	8.8	8.7	8.6	8.4	8.3	8.2	8.1	8.0	7.9	7.8	7.7
55%	10.7	10.5	10.4	10.2	10.1	9.9	9.8	9.6	9.5	9.4	9.3	9.1	9.0	8.9	8.7	8.7	8.6
60%	11.8	11.6	11.5	11.3	11.1	11.0	10.8	10.7	10.5	10.4	10.2	10.1	10.0	9.9	9.6	9.6	9.5
65%	13.1	12.9	12.7	12.5	12.3	12.1	11.9	11.8	11.6	11.5	11.3	11.2	11.0	10.9	10.6	10.6	10.5
70%	14.4	14.2	14.0	13.8	13.6	13.4	13.2	13.0	12.8	12.7	12.5	12.3	12.2	12.0	11.7	11.7	11.6
75%	15.9	15.6	15.4	15.2	15.0	14.8	14.6	14.4	14.2	14.0	13.8	13.7	13.5	13.3	13.0	13.0	12.9
80%	17.6	17.3	17.1	16.8	16.6	16.4	16.2	16.0	15.7	15.5	15.4	15.2	15.0	14.8	14.5	14.5	14.3
85%	19.6	19.3	19.1	18.8	18.6	18.3	18.1	17.8	17.6	17.4	17.2	17.0	16.8	16.6	16.2	16.2	16.0
90%	22.3	22.0	21.7	21.4	21.1	20.8	20.6	20.3	20.1	19.8	19.6	19.3	19.1	18.9	18.5	18.5	18.3
95%	26.2	25.9	25.5	25.2	24.9	24.6	24.3	24.0	23.7	23.5	23.2	23.0	22.7	22.5	22.0	22.0	21.7

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Source: ASAE D245.4 Modified Henderson Equation

Some customers who have the automatic bin fan control below seem to have had good success with it.
https://farmshopmfg.com/endzone/

Harvest Timing Effect on Corn Yield / Phantom Yield Loss (Alex Woodall)

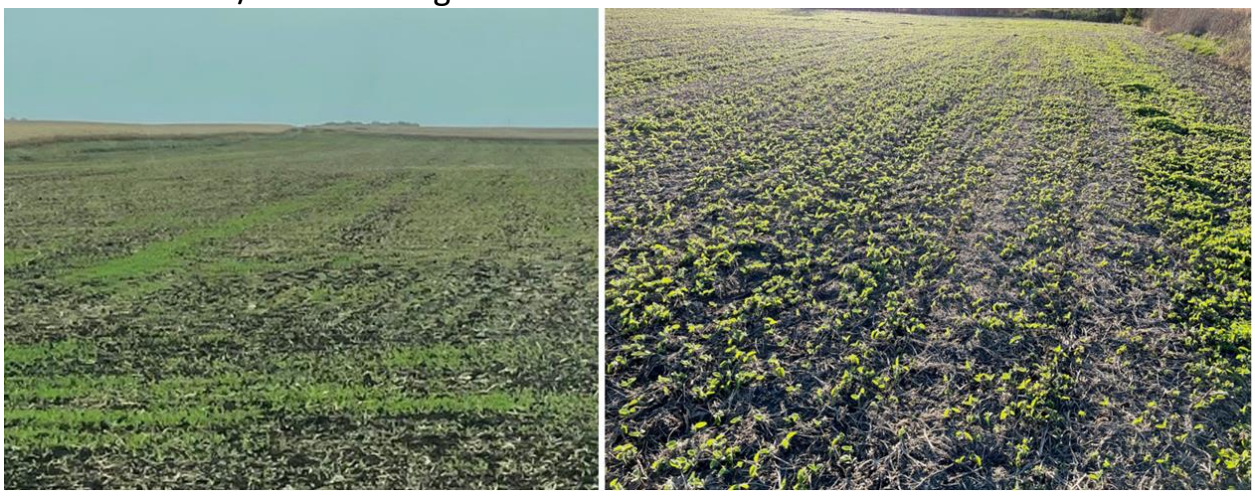
At some point of every harvest season, corn moistures RAPIDLY move lower. Most want to get those soybeans out before they reach 8-9% but don't forget about the corn. Losses can stack up in "over dried" corn as well as soybeans.

There are a number of possible reasons why yield may decline with later harvest, including ear drop, stalk lodging, insect feeding, ear rots, and greater harvest loss. Dry matter loss resulting from kernel respiration during grain dry down has also been hypothesized as an explanation for the lower yields with later harvest dates. **Customers often share comments on seeing what is known as "Phantom Yield Loss" each season between wet and dry harvested corn from the same field**. Some research has put it as high as 1% yield loss per point of moisture when drying from 25% to 15%. There are multiple causes of yield loss as corn dries out with each one playing a different role every year:

- Separator Loss – kernels that are infected with ear mold fungi have been compromised and have a high probability of breaking apart and blowing out the back of the combine when harvesting.
- Kernel Respiration – this has been studied extensively and could be a cause of yield loss but has been difficult to prove
- Header Loss – "head shelling" is a common issue. It is more significant as corn grain dries out.
- Ear Mold Deterioration – this is a significant factor at play right now in area fields. Every day corn is left in the field these pathogens further degrade corn kernels.

Managing Harvest Losses

One of the challenges of harvest is lost grain behind the combine. If harvest is early enough before a freeze, growth of the lost grain becomes very visual. All harvest losses cannot be eliminated, but they may be able to be reduced. Ideally, you want to leave no more than 1 bu/acre on the ground.



From Chris Doud (Agronomist SW IA)

Corn Dry-Down Rates

Corn dry-down rate is tightly linked to daily growing degree unit (GDU) accumulation, and is drying quickly thanks to warmer than normal temperatures.

- Drying corn from 30% down to 25% moisture requires about 30 GDUs per point.
- Drying from 25% to 20% requires about 45 GDUs per point.
- Here is a general dry-down chart based on the calendar.

Average daily corn dry-down rate for difference stages of the harvest season (Hicks, 2004).

Harvest Season Stage	Points of Moisture per Day
Sept. 15 – Sept. 25	¾ to 1
Sept. 26 – Oct. 5	½ to ¾
Oct. 6 – Oct. 15	¼ to ½
Oct. 16 – Oct. 31	0 to ⅓
Nov. 1 and later	~0

https://www.pioneer.com/us/agronomy/corn_maturity_drydown_northcentral_cropfocus.html