

INSIDE THIS ISSUE

PG. 2

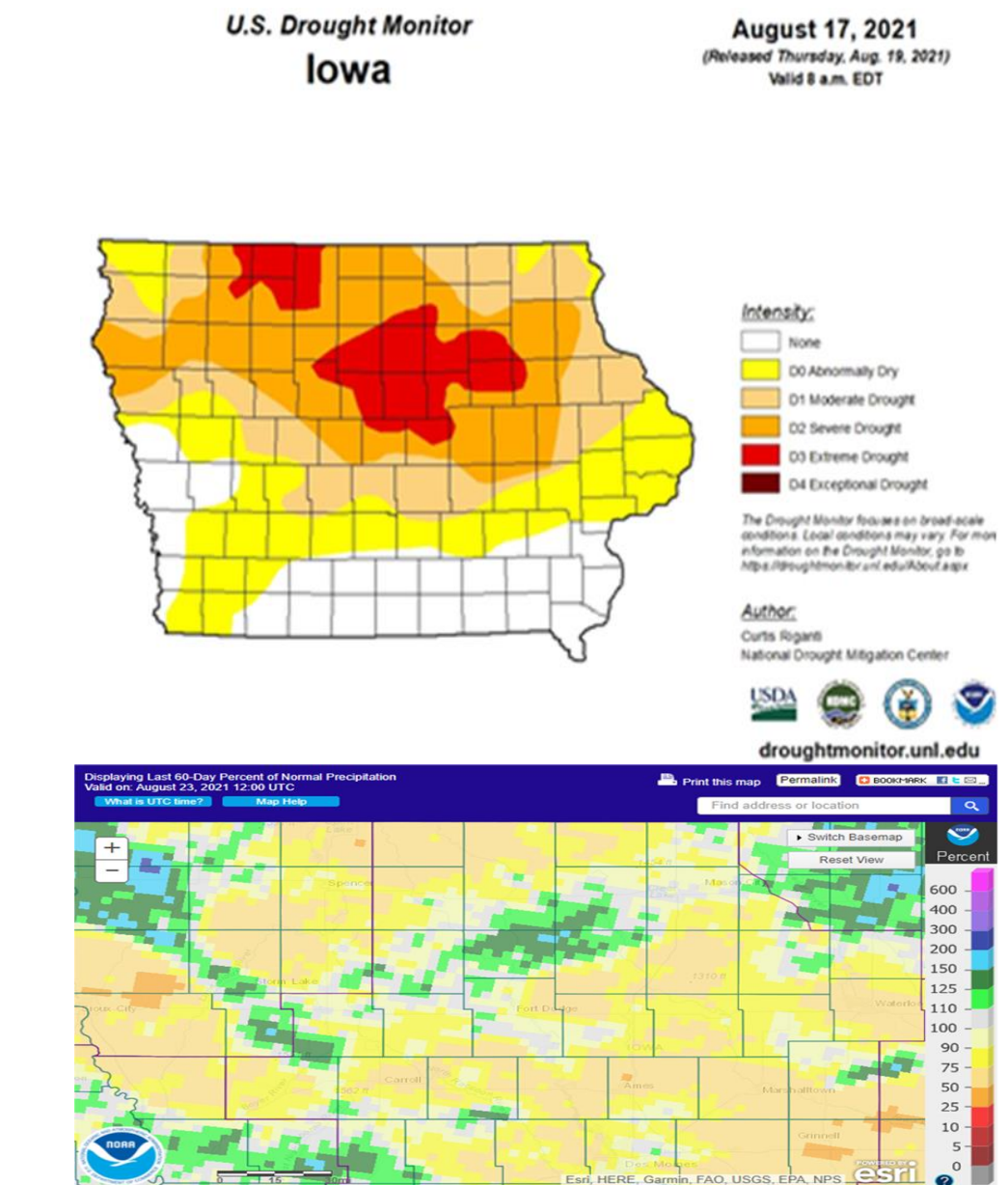
GDU Accumulation

PG. 3

August Wind Event

PG. 4

Phantom Yield Loss



SPOTTY RAINS

ARTICLES BY ALEX WOODALL AND THE PIONEER AGRONOMY TEAM

The rainfall patterns have been interesting of late which creates a lot of variability within short distances. Like last year, the rainfall patterns continue to repeat themselves over similar locations. Thankfully most of the area caught a widespread rain Friday night. **I included the most recent drought monitor map for Iowa along with the last 60 day % of normal precipitation map...they match up fairly close**

Hybrid	RM	GDU's to Black Layer
P9489	94	2270
P9492	94	2350
P9540	95	2350
P9823	98	2450
P9998	99	2350
P0075	100	2500
P0220	102	2470
P0339	103	2420
P0404	104	2450
P0421	104	2470
P0589	105	2600
P0595	105	2500
P0622	106	2550
P0688	106	2500
P0924	109	2680
P0953	109	2680
P1093	110	2700
P1197	111	2730
P1366	113	2760

	Mesonet			Pioneer			Average		
	GDU vs. AVG if planted 4/18	GDU vs. AVG if planted 4/25	GDU vs. AVG if planted 5/2	GDU vs. AVG if planted 4/18	GDU vs. AVG if planted 4/25	GDU vs. AVG if planted 5/2	GDU vs. AVG if planted 4/18	GDU vs. AVG if planted 4/25	GDU vs. AVG if planted 5/2
Date as of 8/22/21									
Hwy 9	2127	2104	2057	2323	2298	2232	2225	2201	2145
Hwy 18	2236	2199	2141	2371	2348	2276	2304	2274	2209
Hwy 3	2250	2228	2163	2425	2405	2320	2338	2317	2242
Hwy 20	2288	2264	2181	2476	2452	2359	2382	2358	2270

Table 3. Progression of milk line during R5 with approximate percent moisture, dry matter, growing degree day (GDD_f) and days for each substage.⁷⁰ Grain moisture and dry matter (DM) values are an average and variation of at least +/-2% is expected with all except for DM at R6, which is always 100%. Growing degree day and calendar day values are from Figure 6.⁴³

R Stage	% Moisture	Dry Matter (% of Total Dry Weight)	Average per Substage	
			GDD _f	Days
5.0	60%	45%	75	3
5.25 (¼ milk line)	52%	65%	120	6
5.5 (½ milk line)	40%	90%	175	10
5.75 (¾ milk line)	37%	97%	205	14
6.0 (Physiological Maturity)	35%	100%		
TOTAL (AVERAGE)			575	33

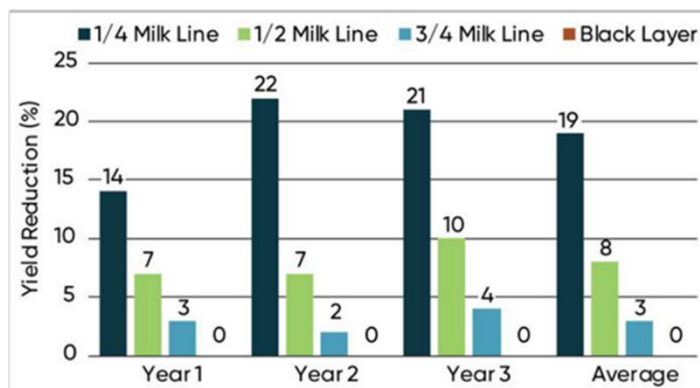
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GDU Accumulation

Our GDU's are moving along. I would rely more on the Mesonet figures since I feel that the data from Pioneer is inflated by 150+ GDU's. We should be getting close to some of our early planted, earliest maturing hybrids black layering around the first week of September. **I expect quite a bit of corn to be black layered by September 15.** The top chart on the left shows the typical GDU's to black layer for products in our lineup

What is the yield impact of premature plant death in corn?

A great article to help with conversations around plants shutting down before maturity. Most all of our corn is at the R5 stage and will be progressing to black layer in the coming weeks. Most corn I looked at last week had a ¼ milk line drop. The chart below shows dry matter progression from ¼ milkline to black layer. A lot of yield is left to be made.





Late August Wind Event

I would be remiss if I didn't at least mention the storm damage that rolled thru north of Goldfield almost 10 days ago on a Friday night. Luckily it was not a wide spread storm however where it did hit it did some significant damage. Most of the fields that were damaged suffered from what is called "green crimp" which is where the plant crimps over 4-12" above the ground. This is a very hard injury to understand as it is very hard to replicate and each storm seems to bring on different result. For instance, there has been more than a half a dozen cases of this happening throughout Iowa this past week and products that struggled here stood great in Eastern Iowa and vice versa. What I have gathered around here is that in the hardest hit stretch, every thing took pretty good damage, some varieties handled it better than others but nothing was real good, and corn on corn seemed to take it worse.

Part of the reason there was no Newsletter last week is along with surveying storm damage, I was also recovering from 4 days at the Iowa State Fair where my 2 boys showed 4 head of Red Angus down there. Between the Junior show and the Open show they were in the ring 12 times so needless to say they kept mom and dad busy.



Plot Day

Friday September 10th at 10 A.M. and also at 1 P.M. Come to which ever time suits your schedule.

Location: At my warehouse on the North side of Eagle Grove on Highway 17



Ear Size Variability

We picked 3 representative P1185 ears from each rep plot last week to show the moisture variability in kernel retention across the area. All the plots are on rotated fields except Voga's at Story City in the bottom right which is corn on corn. It is easy to see that Green's at Knierim in the bottom left have had more timely rains than others all season to drive better kernel retention on the ear.

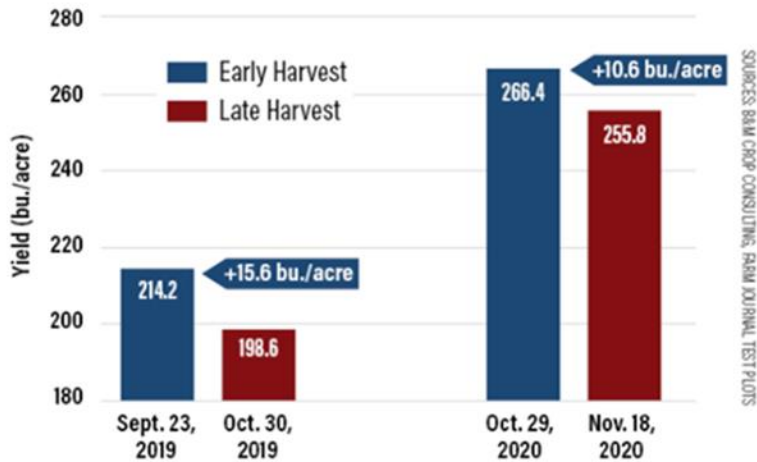
P1185 Ears

Picked August 25

- Lined up from west on the left to east on the right.
- North on the top and south on the bottom.
- Variability based on drought conditions, corn on corn, and nitrogen



EARLY HARVEST REAPS MORE BUSHELS



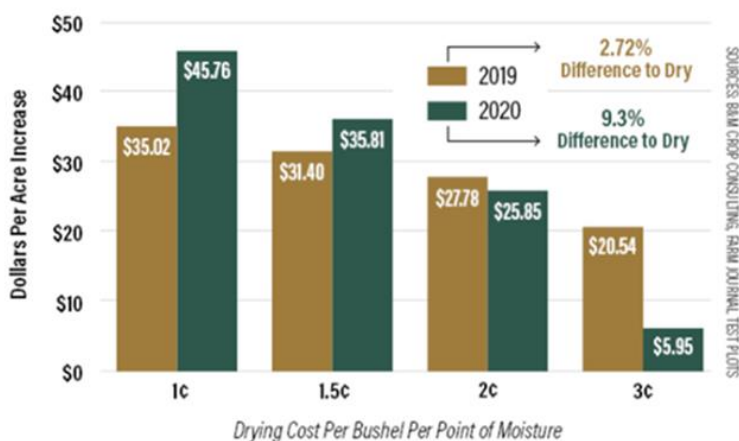
Missy Bauer and her team monitored harvest loss counts and found very few kernels shattered and shelled at the head. The yield difference came from phantom yield loss.

Phantom Yield Loss

As we prepare for harvest, growers question when the best time is to pull the combine into corn fields to maximize yield. Many have experienced combining a field at a higher moisture and then coming back to that field a couple of weeks later when it is dryer only to find the yield monitor reading less than what was previously seen. Phantom yield loss has been difficult to prove over the years. Farm Journal recently published a Phantom Yield Loss summary from a 2 year trial they conducted. The summary concluded:

- Early harvested corn had a 15.6 bu/ac better yield in 2019 and a 10.6 bu/ac better yield in 2020
- Even with the additional harvest moisture, with drying cost figured in there was still value seen by early harvesting

DRYING DIDN'T DRY UP PROFITS



At a \$4.20 commodity price, the corn harvested earlier in both 2019 and 2020 put more money in the farmer's pocket even after paying various drying costs.

Missy Bauer provided the following explanation as to why Phantom Yield Loss occurs.

*Even though the crop is at the black layer stage, the kernel is still alive, and that kernel is going to continue to go through respiration, which can result in the loss of kernel weight," she explains. "Basically, the weight loss is a result of the metabolic activity within the kernel. "That kernel is going to remain alive until we kill it with heat. When you dry it down in your dryer to 15%, then we're basically killing it at that point," Bauer adds. **When the crop remains in the field it's burning itself up, so to speak, with respiration. That's the concept of phantom yield loss.***

Field Drydown Rates for Corn	
Time Period	Moisture Loss Per Day
Mid to Late September	$\frac{3}{4}$ to 1 %
Early to Mid-October	$\frac{1}{2}$ to $\frac{3}{4}$ %
Late October to Early November	$\frac{1}{4}$ to $\frac{1}{2}$ %
Mid November	$< \frac{1}{4}$ %

Estimating Corn Drydown Rates – Cost to Dry One Pager

Most corn hybrids are 30-35% grain moisture when they reach physiological maturity (black layer).

- 30 GDUs are needed to lower the grain moisture each point from 30% to 25%
- 45 GDUs per moisture point are needed from 25% to 20%.
- Air temperature, humidity, sunshine, and rainfall can all influence the rate of drydown.

The table above indicates the approximate moisture loss at various times during fall. Keep in mind, it is more difficult to remove moisture (either in the field or in the grain dryer) as we get later into the fall season when our air temperatures begin to drop

