

Agronomy Newsletter: Summer 2019

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Topics: I will try to answer some of the most common questions of the last few weeks

- What is my yield potential?
- Growing Degree Units: Where are we at this season?
- Should I spray fungicide on my corn or beans?
- What should I do with my prevent plant acres?
- Product Spotlight: P1077AM

After another challenging spring, we are all starting to feel like we are caught up. Once again, thank you for choosing to work with us, and thank you for working through the struggles we all had this spring. We appreciate all of your business, and more importantly, we appreciate the friendships we have with each of you. Unfortunately, the challenges of this year will carry into the fall, but we hope we are able to help you through any that may come. We will be hosting our field day on September 10th, and invitations will be coming shortly. We hope to see you there!

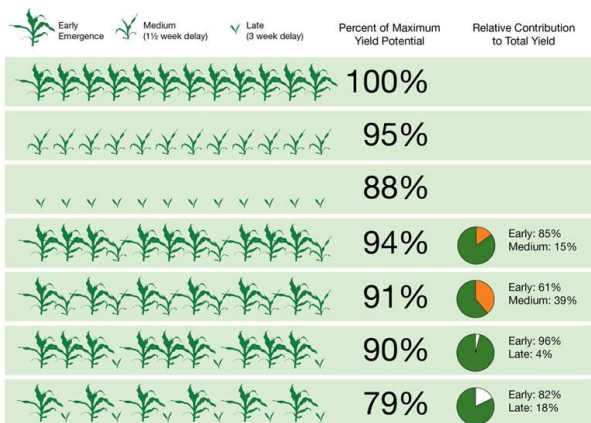
Thanks! - Max, Dane, Alex

What is my corn yield potential?

This is a question we have heard over and over again since planting started in early June for most in the area. Although many were especially worried about the yield loss due to delayed planting, many other factors can have a greater impact on yield potential.

Factors that influence yield potential:

- Compaction- many fields were planted into sub-par soil conditions. Sidewall compaction will cause uneven emergence and growth, poor root development, and limit water and nutrient uptake causing drought and deficiency symptoms to appear sooner than normal.
- Uneven Stands- Poor planting conditions led to uneven emergence in many corn fields this spring. As tassels emerge we are reminded of how uneven some stands are. There are many fields with plants several leaf stages behind as others are tasseling. This will lead to a large variance in ear size from plant to plant, and possibly poor pollination. The chart below shows the effects of uneven and late emergence on yield potential.



- **WEATHER:** In Season weather will almost always be the number 1 factor in final yield potential. After going through cool and wet periods, we are now in a warm dry spell during pollination. Rainfall and temperatures through August and September will be the biggest drivers of our final yields come harvest.

- A large portion of yield comes from kernel depth, and an early fall could severely limit kernel growth. As an example, 160 bu/A corn with a 90,000 kernel per bushel divider would jump to 180 bu/A corn with an 80,000 kernel per bushel divider. A roughly 10% increase in kernel size can increase yield by 20 bu/A at average yield levels.
- In conclusion, yields will be extremely variable this fall. I believe we will see a large range of yields due to the factors discussed above. If all goes right, there is still potential to see great yields, however, we could see poor yields due to any combination of the limiting factors. As pollination wraps up, we will have a good idea of what our kernel counts will be in the coming weeks. After that point, it will all be in the hands of mother nature.

Growing Degree Units

Another hot topic of discussion in the last several weeks has been where our area stands in terms of growing degree units (GDUs). As we all know, the corn plant matures based on heat accumulation during the growing season. This is referenced by many as GDUs. With late planted corn, it is a race to rack up the required number of GDUs to reach physical maturity before a killing frost occurs. With much of the corn planted in the area between June 1st and June 10th, this race is even more important this year.

For the time period of June 1st - August 6th, we have accumulated approximately 1535 GDUs, which is about 40 above the 20 year average. An average summer day will accumulate roughly 20-25 GDUs per day, which means at this time we are about 2 days ahead of schedule. Through our Encirca program, we are able to run a simulated growing season to predict the blacklayer date of our hybrids when planted on a certain date. At this time, the program shows that a 106 day hybrid planted around June 8th will mature by about October 15th.

The average date of the first killing frost (temperature below 28 degrees) for our area is roughly October 15th-October 20th. These dates may worry many of you with corn in the fields. However, there is still plenty of time for this crop to get ahead of schedule. The largest gains in crop maturity and GDU accumulation are usually made in September, and this year possibly October. An average mid-September day will accumulate roughly 12-14 GDUs, but above average temperatures can crank out 20-25 GDUs per day. The last several years we have seen this happen, and the end result is the corn plant maturing much faster than originally expected. We will be keeping a close eye on crop progress as we get close to these crucial dates.

Should I Spray Fungicide on my Corn or Beans?

This may be the most common question we have had over the last several weeks, and also one of the hardest to answer. Fungicide applications to corn and beans have shown considerable returns over the last several years, so many are wondering if it will pay again this year. Late planted crops throw a big question mark into whether or not it is a good investment.

In a 10 year Pioneer study that included over 1400 on farm trials, the average yield response to fungicide was 8.3 bu/A in corn. At current crop prices, it would take roughly 7 bu/A to break even at a \$30 cost for the application. In their study, at a break-even of 8 bu/A the probability of a positive return on investment was 48%. I am giving these numbers to show that spraying fungicide is not a guaranteed profit maker year in and year out. Many factors such as yield potential, disease pressure, weather, and hybrid susceptibility have a great effect on the probability of a profitable response.

With late planted corn, our yield potential is inherently lower. Also, fields with uneven emergence and compaction will reduce yields. At lower yield levels, the likelihood of a profit is lower. At this time, disease levels are near zero, with only low levels of Grey Leaf Spot showing up in the lower canopy. However, as the crop progresses later into September, the likelihood of Northern Corn Leaf Blight setting in gets higher with cooler temperatures and high humidity. Disease pressure at critical times of ear development would lead to a higher chance of success. It is also worth keeping in mind that a fungicide application will likely delay maturity by several days, thus risking the chance of a frost before maturity.

In soybeans, the average yield response was 3-5 bu/A. With an application cost of \$30/A it would take about 3.5 bu/A to break even. As with corn, late planted soybeans have inherently lower yield potential, meaning it is more likely to have yield responses on the lower end of the spectrum in the absence of disease pressure. If you are planning to make a fungicide application on beans, the ideal timing is R3. A soybean plant is at R3 when there is a 3/16" pod on one of the top four nodes.

At this time, our recommendation is to take a field by field approach with both corn and soybean fungicide applications. We will be monitoring disease pressure in the coming weeks, and if we see a threat we believe warrants an application we will take it case by case with each grower. For now, keep a close eye on those fields with the highest yield potential, as those are the best candidates for an application.

What should I do with my prevent plant acres?

With a large number of our acres in prevent plant this summer, we thought it would be good to address our thoughts on how those should be managed to put you in a good position for next year. There are several things to consider, such as, weed control, tillage, and cover crops. First and foremost, make sure to keep weeds from going to seed, marestail and waterhemp plants can produce more than 500,000 seeds on a large plant. Leaving weeds go to seed will set you back for many years to come. Do everything you can to have the fields ready for planting come next spring, now is the perfect time to do any tillage you may have been planning.

Our area Pioneer agronomist, Lance Shepherd, had a great piece on the effects of prevent plant, and how a cover crop can help alleviate that.

Fallow Syndrome - The Added Cost to Prevent Planting

While it is not widely talked about nor greatly published, Fallow Syndrome is a phenomenon that occurs when no crop has been planted the previous year, mainly in corn. In brief, Mycorrhizae (VAM) are fungi that grow along corn roots and actively bring in nutrients like Phosphorus and Zinc in exchange for carbon from the plant (essentially increasing root surface area to aid in nutrient uptake).

When a field is left fallow, or remains dormant, there is no host for VAM to form this symbiotic relationship with. These fungi then die off from lack of a host and are either not present, or at very low levels, in the soil the following year. As a consequence, plants will show stunting and/or nutrient deficiencies (even in soils with very high P and Zn levels) because of the lack of mycorrhizae fungi. Research documented the lower levels of VAM following flooded and fallow soils and correlated it with the following yield loss.

Table 1. VAM colonization and grain yield of corn in 1994 following flooding during 1993. Data are an average of four sites in Iowa and Missouri. Adapted from Ellis (1998).

	VAM Colonization (%)		Grain Yield (Bu/ac)
	May	July	
Flooded	17	31	179
Nonflooded	49	60	191

Fallow Syndrome equated to a 12 bu/ac (~\$40/ac) loss the following year. If the weather has nominated some of your farms for preventative plant it may feel like a good option to cut your losses and stop spending money. While that decision is understandable it may come at the expense of next year's crop. In other words, there

may be more value to planting a cover crop of some sorts, even if its soybeans, for the productivity of next year's crop. – Lance Shepherd

Product Spotlight:

- **NEW!** Hybrid for 2020 Growing Season
- High yielding companion for P1197AM on highly productive acres
- Shorter plant height than P1197AM with better drought tolerance and late season standability
- Brings in next generation of high yielding hybrids with diverse genetic background compared to our current lineup
- Showed a **6 bu/A** yield advantage over P1197AM in 2018 testing with nearly a 70% win rate across the corn belt. The yield advantage rose to **10 bu/A** in Northern Indiana



Key Traits	P1077AM™
Roots	5
Stalks	7
Drought	7
Staygreen	4
Brittle Stalk	6
Test Weight	6
Stress Emerge	5
Plant Height	5
GLS	5
FUSER	3
NLB	5
Goss's Wilt	5
Diplodia	5