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## Field Update – Saturated Soils, Maintain the Course

Last week produced a hectic stretch of severe thunderstorms which brought heavy rain, hail, and wind throughout central MN. Hopefully most were able to slide by with minimal damage. However, a large concern still lies with the impact of saturated soils that pushed many out of the field. Planters have started to roll again on coarse textured soils, while the “heavier” ground is anticipated to be ready to go by mid-week. Many conversations over the last several days have been around maturity changes in corn and seed survival in saturated conditions.

Location	GDUs Since May 1st	GDUs From Normal- 5/1	Projected GDUs- 7 Day
Albany, MN	151	+47	40
Wadena, MN	108	+21	28
Little Falls, MN	152	+47	41
Buffalo, MN	176	+63	53
Belgrade, MN	150	+35	42
Cambridge, MN	169	+55	45
<b>Average</b>	<b>151</b>	<b>+45</b>	<b>41</b>

\*Data collected from Pioneer.com GDU Calculator

So, when should we start dropping maturities? The short answer is to hold full-season corn maturities through May 20<sup>th</sup>-25<sup>th</sup>, while maintaining soybean maturity through June 10<sup>th</sup>. The reasons are 2-fold: 1) corn and soybean are able to compensate by reducing the time it takes to safely reach physiological maturity. 2) The tradeoff comes between maximizing yield and profit, without over-compensating by dropping maturity and sacrificing yield. The profit gain from higher yields in full-maturity products starts to be offset after the 20<sup>th</sup>-25<sup>th</sup> window due to rapidly increasing moistures at harvest. The general rule of thumb is to drop maturity by no more than 5 CRM through June 1<sup>st</sup>. I know time is of the essence as we currently sit mid-May, but a good planting window can allow for a lot of time to be made up that was missed over the last 2 weeks.

## Saturated Soils- Can the Crop Survive?

The excessive rainfall over a 2-3 day period resulted in saturated soils and large areas of ponding in pockets of the region. Challenges with seed survival may arise with fields that had been planted. The expectations for survival are summarized below:

- In flooded fields, oxygen supply is reduced to zero after a few days and ultimately stops plant functions.
- Nearly all the crop is yet to emerge or just emerging and ponding will likely engulf the entire plant. Completely submerged plants can typically survive 2-4 days depending on conditions.
- Cool and cloudy conditions extend seed viability, while high temperatures cause plants and microbes to respire at high rates and deplete oxygen faster.
- Flooded soils also increase the plants susceptibility to seedling diseases or create soil crusting that can hinder emergence.

After the water recedes it is recommended to wait several days to assess the damage. Dig up plants and examine the growing point. If the tissue is soft and darkened then it is dying, where if it is cream-colored and firm then the plant is still viable. A replant decision can then be made depending on number of plants survived and size of area affected.

Stage	Condition	Potential for Survival
Corn	Germinating	Genetic differences among inbreds (and we assume hybrids) exist for responses to flooding. Will survive for four days. Longer flooding results in lower yields, especially at lower nitrogen levels.
Corn Prior to 6th Leaf Stage	Underwater (6 inches of water on surface); air temperature less than 77F.	Will survive for four days. Longer flooding results in lower yields, especially at lower nitrogen levels.
Corn Prior to 6th Leaf Stage	Underwater (6 inches of water on surface); air temperature greater than 77F.	May not survive more than 24 hours.
Corn Prior to 6th Leaf Stage	Saturated, cold soils, flooding.	Seed rots, seedling blights, various other pathogens, crazy top.

*Survival of flooded corn plants. Adapted from CropWatch Newsletter (University of Nebraska), 20 May 2005.*

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## Management in Late-Planted Scenarios

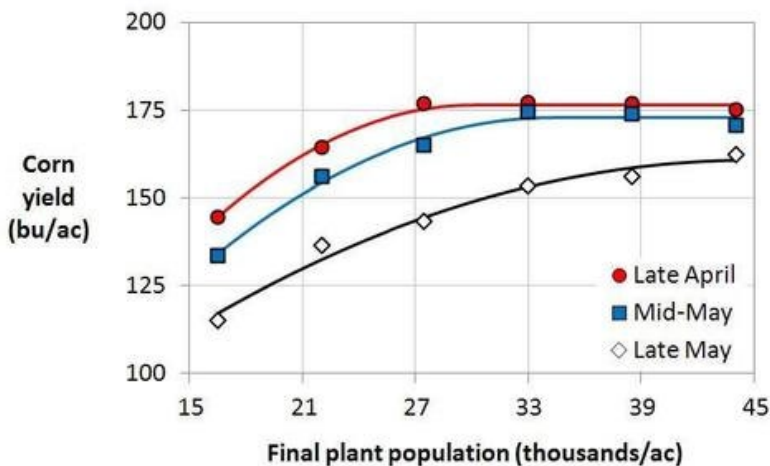
A hot topic this Spring has surrounded switching maturities and avoiding drastic maturity changes. However, there are also a few management considerations that can be taken to increase success with late planting!

### Soybean:

- **Narrow row spacing.** This isn't always possible depending on management practices and equipment capabilities. However, decreasing row spacing from 30" to 15" promotes faster row closure and increases light interception. Faster row closure will improve weed control and increased light interception allows for more energy to be captured and transferred to yield.
- **Increase seeding rate.** A shorter growing season means there will be less main stem and branch nodes, which is where soybean pods are formed. Increasing population by 10% will allow more plants per area and increase the potential nodes = more potential for pod set.
- **Continue to utilize fungicide seed treatment and inoculants.** Certain fungal pathogens such as Phytophthora and Rhizoctonia thrive in warm soil conditions. Also, saturated soils can decrease biological and microbial activity so utilize an inoculant to ensure good nodulation.
- **Do not drastically change maturities!** If planting gets pushed past the first week of June do not jump by more than 0.5 RM until late June. Soybean shorten their growing season based on photoperiod. The general rule of thumb is: for every 3 days delayed planted, harvest is delayed 1 day. So a 30 day delay in planting only delays harvest by 10 days!

### Corn:

- **Maintain seeding rates.** Corn will respond similarly to seeding rates no matter the planting date. There is slightly less concern for losing stand with late planting; however, maintaining planned seeding rates will help capture yield potential.



How corn responds to planting date and plant population in Lamberton, Morris, and Waseca from 2009 to 2010. Coulter, J. UMN.

- **Increase in disease and insect pressure.** Delayed planting can make corn fields more vulnerable to certain diseases and insects because corn plants are at a younger growth stage during periods when the pathogen is more likely to be present. Utilize hybrids with improved disease resistance against rusts and NCLB, which can infect plants at an earlier growth stage than would have typically. Also, insects such as Black Cutworm may have a greater impact in 2022 because delayed planting will cause plants to be smaller around time of infestation. The use of an insecticide seed treatment and transgenic traits can help reduce the impact of some insects, but scouting will be needed.