



**The Chem Gro Crop Watch, Issue #10, 5/28/19**

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**Growing Season Woe's**

It's been a wet year, there is no way around it and no amount of tile or trenches will make it dry any faster. Good news is we are not alone in our suffering and as of May 19<sup>th</sup> only 24% of Corn and 9% of Soybeans have been planted in the state of Illinois according to the USDA. Just for comparison we were at 95% of Corn and 79% of Soybeans at this time last year. With this in mind the question has come up several times as to what needs to be done this year for replant decisions or whether we should be considering changing crops and what can we expect when we get back into the field if we haven't applied our herbicide yet. After those topics, I would like to touch on some nitrogen management questions I have been receiving lately.

**Replant and Cropping Decision**

Every replant decision we will ever face has unique qualities about it so there is no set-in stone answer for each situation. That being said, we can use research from the University of Illinois to guide us in our replant decisions. The chart below is one of those resources which can be utilized to make your corn replant decision.

Impact of Planting Date and Population on Corn Yield Potential  
University of Illinois

Planting Date	Plant Population Per Acre						
	10,000	15,000	20,000	25,000	30,000	35,000	40,000
	% of maximum yield expected						
April, 1	54	68	78	88	95	99	99
April, 10	57	70	81	91	97	100	100
April, 20	58	71	81	91	97	100	99
April, 30	58	70	80	89	95	97	96
May, 9	55	68	77	86	91	93	91
May, 19	50	63	72	80	85	86	84
May, 29	44	56	65	73	77	78	75
June, 8	35	47	56	63	67	67	64

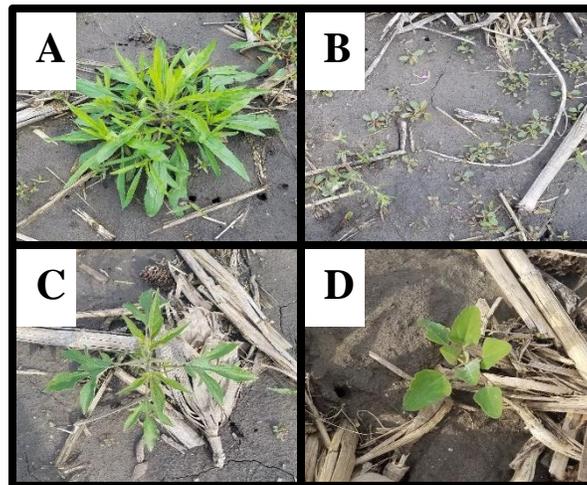
To use it, simply take your current plant population and when you planted it, and follow along the chart to see your current yield potential. For example, a stand of 25,000 corn plants per acre that was planted on April 20<sup>th</sup> still has a 91% yield potential. Now compare this to the yield potential of corn that was planted at the earliest available replant date and compare the numbers. For our example, we can just assume June 8<sup>th</sup>, we might get back out in the field and plant at a population of 35,000 plants per acre. In this example, the replacement stand will yield less than the current stand by 24%. In any circumstance, check with you seed dealer to

see what the replant policy of that hybrid is. Soybean replant decisions are a little bit easier and just as long as the stand is around 80,000 plants per acre, in most instances you should be just fine. If it is desired to thicken up a stand that is also possible with soybeans, unlike with corn where the entire existing stand must be removed first.

The decision to change crops or even take prevent planting is another decision growers make with crops being planted this late in the year. For most growers, the question is whether corn needs to be switched out for soybeans at this time. For this, The University of Illinois has a handy spreadsheet titled "Planting Decision Model" available to growers free of charge. This can be found if you type in the link: [farmdoc.illinois.edu/fast-tools/planting-decision-model](http://farmdoc.illinois.edu/fast-tools/planting-decision-model). This handy spreadsheet takes into account everything from fertilizer to chemical and even insurance and machinery cost to analyze which crop is more profitable to a grower. Just like anything else, this tool should be used as a guide and not the absolute law of the land when making decisions. This tool can also help in prevent plant decisions as well, for those who feel like that might be a real possibility for this year.

### What to expect for Weeds?

Looking back at pictures from this week last year, I recently realized I was at the tail end of 2<sup>nd</sup> pass herbicide spraying on corn and in the early stages of soybean second pass. This year is a different story as I am not done with 1<sup>st</sup> pass on either corn or soybeans. This means winter annuals in the county are as big as they are ever going to be and more than likely have already gone to seed. The exception to this is Maretail (see picture A) and in many fields it has grown to a healthy height of 6 inches or more. Unlike most years, our Waterhemp, Giant Ragweed, and Lambsquarter weeds have already emerged and look like they do in picture B, C, and D. This means we not only need our residual herbicide, which will prevent any weeds from coming up, but we also have to kill any emerged summer annuals out there.



This is critical because if we miss any weeds with our first pass chemical, we will either have to go right back around and spend more money on a respray or wait for our crops to get up and do a second pass on weeds that are too tall to spray. With the dicamba application deadline for Illinois set for June 30<sup>th</sup> that adds yet another factor to take into consideration when planning our first pass as there might not be an effective 2<sup>nd</sup> pass available at that late of a period for Xtend soybean growers. So, what does this mean for first pass chemicals to our crops?

For corn, this means moving to our “bleacher” chemistries which earn that nickname for their ability to turn weeds a white color from an absence of green chlorophyll in the plants. Chemicals like Callisto, Laudis, or Balance can be used on a burndown in addition to the Roundup we already have in the plans. Using atrazine in these programs is also encouraged as it will act to improve the performance of those “bleacher” chemistries. These chemicals also allow for immediate planting to occur. Gramoxone is another alternative burndown chemical which can be used to replace Roundup in the tank and works fast in the fields. So fast that activity can be seen within a few hours on a hot and sunny day. Like our bleacher chemistries, it is wise to have an atrazine-containing product in the tank to heat up the mixture. Field cultivation or 2,4D are the last options for weed control and both of them are time consuming. Field cultivation might require the usage of valuable equipment that might be better used for planting. 2,4D on the other hand, carries a plant back restriction of 1 week on corn. The amount of 2,4D in the soil and how fast the microbes in the soil break down the chemical governs this plant back restriction. This means in warmer, darker soils 2,4D breaks down quicker and with plenty of foliage to intercept the chemical the plant back restrictions may be lessened.

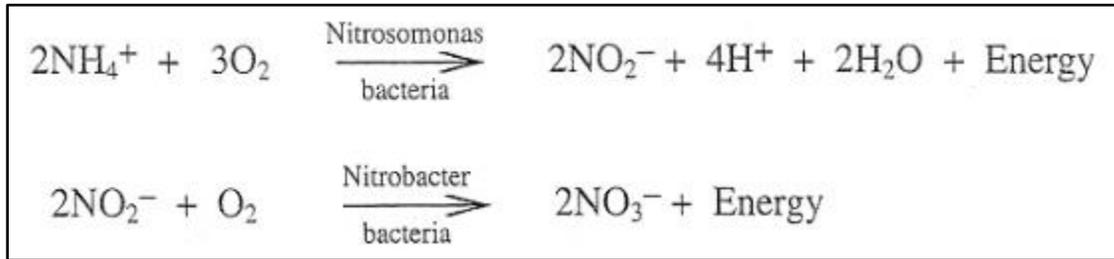
Soybean burndown options are more limited than corn and depend on what traits your soybeans carry. In the case of Xtend soybeans, a labeled dicamba burndown can be used with an approved tank mix residual to kill both emerged winter and summer annuals. In Liberty, Roundup ready 2, Conventional, and even Xtend soybean traited programs, Liberty herbicide can be used as a burndown for quick effective activity. The addition of Metribuzin or even a burner chemistry like Sharpen might speed up the activity of Liberty. Gramoxone can still be used as a soybean burndown, but without the ability to use atrazine as tank mix partner, the activity on Marestalk is reduced. Using Metribuzin containing products in place of atrazine can help but as previously stated, it is not as effective on fields where Marestalk is the issue. Like corn, 2,4D or field cultivation is the last alternative but can lead to the same time-consuming issues as stated before on corn. Notice I never mentioned upping the rate of Roundup as a solution. This is simply because we have too many Roundup resistant Marestalk and Waterhemp plants in the county to consider Roundup alone as an effective management tool.

### **Nitrogen Loss in a Wet Spring**

It's the ultimate question this spring, does my corn have enough nitrogen to get through the season? This is a complex issue and anybody who tells you they know exactly what is going on is usually lying. The only thing we can do is take into account a few variables which might ultimately help us make our decision.

The first possible question is whether or not the nitrogen you have out there has been stabilized or not. In the case of N-Serve, stabilization can extend the life of your nitrogen by 6-8 weeks. This is important because our corn crop's peak nitrogen needs happen in later vegetative stages right before the corn puts out a tassel. Once conversion from ammonium to nitrate forms has occurred, the nitrogen will move easily in the soil. In the case of the silt loam soils, which dominate much of this landscape, nitrate can move as far as 6 inches in the soil profile with every inch of rain it receives. Our corn roots, on the other hand, only grow about 0.29 inches per day if they can even breath in the saturated layers deeper in the soil. Now those last two points seem bad but here is the catch, yes nitrate can move as far as 6 inches with 1 inch of rain but that doesn't necessarily mean it will move straight down. Soil water moves every direction in the soil with heavier soils, causing greater horizontal movement than sandier

soils which tend to let the nitrogen go straight down. Another factor to consider is the rate which our nitrogen is converting to a nitrate form. Like many soil processes, nitrification occurs quicker under soils which are warmer. This means that during much of April and May of this year, the conversion from ammonium to nitrate was slower than usual. Below is the chemical equation showing Nitrosomonas and Nitrobacter, the microbes responsible for nitrification, conversion process from ammonium in the soil to nitrate. Notice in the first equation that oxygen is required in order to convert  $2\text{NH}_4^+$  to  $2\text{NO}_2^-$ . Currently, our soils are in an oxygen deprived state which again, leads to slower nitrification rates. I am not saying it is impossible for nitrogen to be converted under these conditions, but the process is much slower.



This is all good and well but it doesn't yet answer the question of "Do I have enough nitrogen for my corn?" My answer is for those who planted their corn crop early, you might consider putting on additional units of nitrogen. I say this purely because our yield potential is high and so is our risk of nitrogen loss. This also follows the trends from Iowa State University's economic nitrogen rate studies which call for around 160lbs of actual nitrogen per acre the majority of years. The exception to this rule of course, is when there is an excess of precipitation which will lead to an increase in nitrogen loss. For those of you who planted late or still have not planted yet, you might just keep the nitrogen you have right now, just as long as it has been stabilized, because our yield potentials are lower at this time of the year and as a result, less nitrogen will be required to get us to our full potential. In any case, its not be a bad idea to take soil and tissue tests on your crops to ensure they have an adequate amount of nitrogen getting into the plant.

### Final Thoughts

This year has been a real test of not only our patience but our willpower to succeed in the field. Be sure to check your stand and see if population you have will be adequate enough to get you the maximum yield your field can make. Be sure to check your fields for any of the above-mentioned weeds as this might require a change of plans. Lastly, take into consideration the various factors that might affect the availability of the nitrogen to your crop. Like always, my job is to give you the best advice possible, what you do with it is up to you.