

University of Minnesota Nutrient Management Podcast Episode “Spring planting and crop conditions”

June 2019

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(Music)

Paul McDivitt: Welcome back to University of Minnesota Extension's Nutrient Management podcast. I'm your host, Paul McDivitt, Communication Specialist here at U of M Extension. Today on the podcast we're talking about spring planting in Minnesota. We have four members of Extension's Nutrient Management team: Dan Kaiser, Brad Carlson, Lindsay Pease, and Jeff Vetsch to cover the basics and beyond. Welcome. Why don't you each give us a quick introduction.

Dan Kaiser: This is Daniel Kaiser. I'm a State Nutrient Management Specialist with the University of Minnesota Extension, located in the St Paul campus.

Lindsay Pease: And I'm Lindsay Pease, Nutrient Management Specialist in northwest Minnesota. I'm stationed at Crookston.

Brad Carlson: Brad Carlson, Extension Educator out of the Extension Regional Office in Mankato. I work with nutrient management and water quality issues pretty much statewide.

Jeff Vetsch: Jeff Vetsch, I'm a Researcher and Soil Scientist at the Southern Research and Outreach Center in Waseca.

Paul McDivitt: All right. Can each of you give us a quick report on spring planting and crop conditions in your area of the state?

Jeff Vetsch: Well, in south central Minnesota, we're here at the end of May. We're looking at most of the corn that's going to be planted has been planted. There's fields that are notoriously wet. We have a couple of them at the Research and Outreach Center that may not get planted. Soybeans, it's very hit or miss. There's areas that it's probably 75-90% planted, and there's areas that look like it's about 50%. It's been a difficult spring as everyone knows, and people are listening to this podcast, and certainly one of the more difficult ones in my career out of the 26 years I've been doing this.

Brad Carlson: Yeah. And Jeff and I are located in the same general area, so I don't have a lot to add other than throughout my career, we've always seen some fields not get planted that probably had ... I always like to say have a story behind them, that somebody had an equipment breakdown, or who knows, but probably could

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have been planted. And so that's a lot of what we see. And we did see of course, with as challenging as the conditions are, a lot of guys just worked around the wet spots, and those areas won't be planted. And they've stayed wet, obviously, with the way the weather is.

Brad Carlson: As you get to Mankato and start moving west, it gets significantly wetter, and the amount of planting really drops off from there. I know hearing reports in southwest Minnesota, things are in pretty bad shape as far as planting progress. I think the far southwestern corner of the state, we're hearing is actually in pretty good shape, that are like Rock and Pipestone. But then when you go just a little bit northeast of there, like Murray and Nobles County, almost nothing's planted.

Dan Kaiser: Yeah, and I know that's one of the things, just being on some of the crops team conference calls towards the end of May, you get a lot of reports, particularly I think west-central, southwest. A lot of challenges there and really a short window where things were really fit. We were down at Morris around the 15th of May, and we were lucky enough to get some of our plots in down there. But just talking to some growers towards the end of May, still struggling to make decisions in what they want to do for corn. And I think one of the things that may be some benefit was, unfortunately, was the fall we had. Not a lot of nitrogen went on.

Dan Kaiser: So if there are situations where we see more prevent plant, that at least we're going into situations where there hopefully hasn't been a lot of inputs already been put into some of those fields. So it's looking at it, I've been surprised. I said about mid-May when we were planting a lot of our plots. Brad, I know you were talking about some areas, northern Rice County, where you couldn't believe that hadn't been planted in those areas. But we were planting, and it still wasn't any too dry around that point in time when ... So it's just amazing how cool it's been. I think where that frost has been, it seems like it's held the water up enough where just things haven't been draining the way they should have been this spring.

Brad Carlson: And a lot of the planting that's happened has been in tiny little windows, a day or a day and a half. And in a lot of cases, the big difference was maybe a half an inch of extra rain, that some places had a half an inch less and they suddenly dried up, and you got a day. Other places had a half an inch more, and they never got dry during that little window, and then it rained again. You'll see a lot of really big differences just going from neighborhood to neighborhood. And I know even this last week, the last rain we had, we had about 3/10, and by Sunday afternoon everybody was really running. But when you got to Mankato, they had 3/4 of an inch, and really not a lot got done over the last weekend.

Lindsay Pease: And in northwest Minnesota, we kind of had a different story. We're a bit of an outlier in the state in that, yeah, it's been cool, but it's been dry. So I think a lot of guys kind of got into the fields kind of between that second week of May going into Memorial Day. You saw a lot of guys out planting, hustling. We had

June podcast planting (Completed 05/31/19)

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some rain that was forecasted that didn't end up coming. So I think while things were probably a week delayed in northwest Minnesota, a lot of the small grains got in with plenty of time. And yeah, one of the big holdups was actually, I think, some guys planting sugar beets were waiting on fertilizer to be applied before they could plant. So that was kind of another sort of non-weather reason why some things were a bit delayed in northwest Minnesota.

Brad Carlson: And one of the other phenomenons we were talking a little bit here before we started recording is now with the more recent rains, we're starting to see a lot of water ponding in places we don't normally see it ponding. That being, a lot of our feeling is because of as challenging as the spring was, the ground got worked a little bit wet, and now we're seeing some things sealing off. I know Jeff you were talking about the probability we had a fair amount of compaction last fall, related to harvest as wet as it got, particularly later in the season.

Brad Carlson: And so we're also dealing with that as a challenge. It's one of these areas where sometimes the whole soil health issue isn't quite as tangible, but in situations where we're seeing a lot of water standing in fields where we've got good drainage systems and and normally don't see it, we probably are dealing with some issues related to soil structure and water infiltration right now.

Dan Kaiser: Well, and when you look at it too, it's been two years, I think, in a row when you look at struggling to get things in. And even with some of these later plantings, I don't think we've accumulated a lot of growing degree days, particularly in May here as cool as it's been. So it's kind of interesting because you look at it in terms of some of the early planted and the late planted. While we look at towards the end of May seeing a lot of fields starting to emerge now, there just really hasn't been much movement.

Dan Kaiser: And time will tell what June and July will bring. Hopefully we don't see kind of what I've seemingly always worry about, is where we get all this rain now and then it completely shuts off at points when we really need it. So it's one of the things looking at these weathering patterns, it's just been strange in terms of not having the time in the spring. And then all of a sudden when you do have time, it's too late to do anything.

Jeff Vetsch: Yeah. We're sitting at about 40% below our normal GDUs for this time of year. And actually, we're over about 50% of where we were last year.

Brad Carlson: And you guys start actually tracking that on May 1st, right?

Jeff Vetsch: Yeah. The climatological day is May 1st.

Brad Carlson: Right, which normally though, if we had corn being planted on the 15th of April or the 20th of April, we actually usually accumulate some heat units that don't even show up on the record. And partially because crop wasn't planted at all, and then also with the way the year was, we don't have that. So from a practical sense, we're tracking even farther behind.

June podcast planting (Completed 05/31/19)

Transcript by Rev.com

Paul McDivitt: What should farmers be thinking about going into early summer related to nutrient availability?

Dan Kaiser: Well, I think right now, a lot of questions we see swirling in terms of any of the nitrogen that did go on, is it still there? Is it converted? And we look at most of May being as cool as it's been, I wouldn't really expect a lot of conversion. Maybe that middle of May we had a week in there where it was warm enough to see some conversion, but I don't know what the soil temps have been doing. I'm assuming they're above 50, so we'd have some likelihood. But it's still been really cold compared to what we normally have. I think that the main thing going into summer really be, we need to start our mindset, I think, over to this denitrification issue.

Dan Kaiser: And as what kind of Brad was talking about before, some of those areas with ponding, we start to get warmer temperatures, we could start seeing some significant denitrification. I remember last year going into Memorial Day, we were cold, and all of a sudden it seemed like a switch turned, and then it was really hot. We haven't seen that quite yet. At least it seems like we may have some spring this year before it turns to summer, but that's one of the things that I know we need to start looking at, some of these less than optimal conditions, looking at some of these fields and maybe targeting those for scouting, and looking at some assessment of supplemental N applications as we start getting into June. Hopefully we can actually get some of those applications on. That's been the challenge with the last two years as well.

Brad Carlson: Yeah. We had a research project that Jeff and I had, one related to the pre-sidedress nitrate test back in 2014, which was a year that was extraordinarily wet. Planting got done in general on time. There wasn't a lot of prevent planting that year, but it was very, very wet in June. And because of the nature of this project, we had soil test data to go along with it. And I know, Jeff, we were looking at, in a lot of circumstances, even though we'd applied 1/2 or 2/3 of a rate of nitrogen, we were down to almost background levels of nitrogen in those studies, indicating we had pretty much lost everything that we had applied by then.

Brad Carlson: It's worth mentioning that the process of denitrification, because it's microbial in nature, is heat dependent. And so the the rate of that will start picking up as it gets warmer, which we assume it'll get warmer. It hasn't really happened much yet, but particularly when those soils stay saturated in June, and we start getting soil temperatures in the 70s and and approaching 80, which we will have because the plant growth is such that there's no obviously not going to be canopy closure, so the sun will be shining on that soil surface. That's where we really start seeing the rates of denitrification increase significantly.

Brad Carlson: I know one of the pieces of data that we show in the Nitrogen Smart program, was a study looking at rates of loss. And when the soil temperature was 80, you could lose roughly ... What was it, Dan? 65% of your nitrogen in 10 days? And so

June podcast planting (Completed 05/31/19)

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obviously you can't really nail that exact number down ever, but do realize that if we're at field capacity, and the soil's saturated in June for more than a week, the amount of nitrogen loss through denitrification is going to be fairly significant. And based on what I already said about the fact that we've got water standing in a lot of places we don't normally expect it, the conditions are going to be right for that, not just in the low spots and the ponded areas. We could see that widespread across fields just because they're staying saturated.

Dan Kaiser: Yeah, I think just looking at options right now in terms of assessment, I think, are going to be key. That's one of the questions we have with all the options that are out there, what data behind it we have that really supports using it. I know Jeff and Brad, you've looked a lot at that pre-sidedress nitrate test. We don't really have a firm recommendation for it other than we know that if you're above about 25-26 part per million, probably not much of an issue in those fields. Below that, then it becomes more of a guessing game then, in terms of how much you have to apply. And that's one of the problems with that one.

Dan Kaiser: So it's looking at options right now, sensors in that. We don't really have, I think, a good feel for those in terms of what to do with those. But we really have to wait at this point. We can't really do things right now until we know kind of what that crop's going to look like, because a lot of our stuff right now is visual-based, except for some of those soil test parameters. So it's some things maybe to start thinking about, some of the things that were brought up here. And some of those fields that were planted in less than optimal conditions would be likely good ones to target for some scouting.

Dan Kaiser: And the other thing, looking at nitrogen applications. And this is probably one of the first winters that I've gotten reports about applications that are in less than optimal times, particularly frozen ground. And maybe in situations where we have urea applied to very saturated soils, we may be able to maybe see some movement of that offsite this spring. So some things to think about with that.

Brad Carlson: Yeah, I was hearing some reports this spring of guys running out and doing some urea applications early in the morning when the ground was frozen, when it otherwise would be the thinking like, "Well, it's going to un-thaw later in the day, and then that urea will stick, and it's going to be fine. It'll still be there." The problem is it was so wet this spring that a lot of that stayed right close to the surface. And so when it rained, instead of it going into the soil, in a lot of cases it ran off, because the water ran off. There wasn't capacity to accept more water in the soil. That's not a widespread problem.

Brad Carlson: But if that applies to you, if you had urea applied this spring, and you think there's a chance that it was close to the surface, and the soil was pretty much at field capacity, and then we had big enough rainfall events to see water runoff, there's a pretty good chance that you lost a significant amount of that nitrogen. Extraordinarily difficult to actually assess that situation in a real specific way, because it's going to be quite variable on the landscape. I guess the key to that is to just realize if that's your circumstance, know that that's probably a problem

and it'll need to be addressed. And from there you're going to have to just kind of use the best guesses, educated guesses, you can on what probably was lost and what still needs to be made up for it.

Jeff Vetsch: It's not only been fertilizer that's been challenging. I think that manure applications, both last fall and this spring, have went on and with some less than ideal conditions. And certainly those are for our situations where we may have losses from volatilization if there wasn't good sealing, or they're surface applications. Many of them didn't get incorporated. The broadcast manures didn't get incorporated very timely. And those are situations where the N availability of that manure is probably going to be reduced.

Brad Carlson: Yeah, Jeff, and you and I were talking on the way up here. With as challenging as the fall was, I think we realized that a lot of manure didn't get out because of how wet it was in the fall. There was some application while the ground was still frozen, and cases where there just were really some issues with storage and whether there was going to continue to be capacity. In addition to that, a lot of guys tried to push that application season this spring, again going out in the morning when the ground was frozen, hauling a few loads until it started to loosen up, and they couldn't get back out in the field.

Brad Carlson: Obviously in those situations, the hope was that we would end up still having a normal spring. Things would dry out. You'd get out there as a field cultivator. You'd work it in. A lot of cases that didn't get worked in, so now the question becomes how do you actually credit that? That's a difficult thing to get at. It's actually almost on an individual basis, or a site by site basis, based on what it was, and when it was applied, and a lot of those factors. I guess the key there is again to understand whether you had a risky situation for a lot of nitrogen loss, and get some assistance with trying to figure out just what you still have left out there, and then what you need to supplement afterwards.

Dan Kaiser: Well, and we talked a lot about nitrogen too, and I would suspect we may see some more striping come in. We've seen that with sulfur. Looking at it in terms of whether or not it's an issue, it really just depends on how long it sticks around, and whether you applied it or not. We know that ... We've seen it up in the Red River valley a few years ago, widespread across the entire valley. And having some studies up there, we really didn't see much yield response, although we still could see a little bit of remnants of that towards mid-season in some of the lower parts. We know it was pretty severe.

Dan Kaiser: So I would suspect we'd see some of that, maybe some phosphorous in some of the higher pH areas, maybe some purpling in there. Potassium is probably the one that I guess I would be less worried about of all of them, but I would suspect to see some of that. And so some of the nutrients were applied, those are kind of wait and see, meaning if we start seeing some warm up, we might see some of that kind of work its way out of it. But it's kind of hard to see, because we've seen some pretty sizeable sulfur deficiencies, or yield increases from some of

our fields the last couple of years. I think a lot of that has to do with these wet springs.

Paul McDivitt: What takeaways can we make from these two challenging springs we've had in a row?

Brad Carlson: Well, I think one of the things we really need to take a look at, it's an area we've been discussing a lot. We're going to continue to focus on it with our Advanced Nitrogen Smart session that we're putting together for next year is related to what you're really getting when you decide to do sidedress applications, that if you're simply splitting your nitrogen for the sake of splitting it, there are circumstances where that's going to pay off, and then there's a lot of circumstances where it's really no better than just simply applying a flat rate pre-plant when you can get it applied.

Brad Carlson: And I think while we've traditionally looked at, by the time we get to June, when we normally would be applying that sidedress, it's obviously usually a lot warmer, dryer. We're into a situation where our rainfall tends to be more related to thunderstorms, and so you get an event. Then you get a couple of really nice days in between, versus these all day rain events like we see in the springtime. Well, we've been seeing the all day rain events. Last year we did, and now this year it's at least setting up that way, which has made it really challenging to get back in the field to apply that sidedress application.

Brad Carlson: I think a lot of guys are going to have to kind of take a look at whether they really have those circumstances that warrant just simply a planned sidedress, or whether they might just be better off getting a nitrogen applied pre-plant, and then not having to worry about getting back in the field.

Dan Kaiser: Well, and I think one of the things looking at ... Where I really focus on looking at the last two springs is looking at options, because you look at what's your better option for spring? Is it better to get the seed in the ground or get the fertilizer on? I know that's ... Lindsay, you were talking before, there were some issues with slow planting just from growers waiting to get fertilizer applied to fields. And when we have these short windows, it's probably better to get the seed in the ground, because if there's nothing to take up that nitrogen, is it really worth putting it on later if you know you're not going to be able to plant?

Dan Kaiser: So I think looking at options, and we talk about planned sidedress and splits, and we don't always see advantages for some areas. But it does at least, with some of the inhibitors that are out there, give us some options, particularly with just spitting urea on over the top after planting, you know, looking at Agrotain or some of the other inhibitors. There are options out there, particularly, I think, in corn and soybeans situations, corn following soybean, where we know there's more buffering with the nitrogen availability.

Dan Kaiser: With corn, corn I know we're a little more limited. And some of ... Jeff, some of your work with that 28% surface dribble band, I think there's some good options

June podcast planting (Completed 05/31/19)

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there that would allow growers to at least get the seed in the ground, get a little nitrogen on, and then come back. And hopefully we have that window where we can come back and apply it. Last year there were some areas that I know they were really struggling to get back and doing the planned sidedress. But if you're going to do something like that, it's really you need to ... If that window's there to sidedress, if it's planted, you need to get out there and get it on. There's no really reason to lay it too late in the growing season.

Brad Carlson: The other angle on that, Dan, with it as wet as it is, while I think we usually look at you putting a urease inhibitor on urea when it's just topdressed on top, because there's not the opportunity to work it in. Normally we look at doing that, although if we've got capacity in the soil and it's been raining every few days, it may not actually be worth the investment in buying that product this year, with the economics being a little bit shaky. I know corn prices have come up a little bit the last couple days, but still, most guys are looking at places they can cut some corners. I would suggest if you're doing that topdress application, take a look at the weather forecast and make an informed decision on whether you really need to spend that extra money per acre to put the urease inhibitor on. In a wet year like this, you really might not see an advantage to that.

Paul McDivitt: All right, that about does it for the podcast this week. We'd like to thank the Minnesota Agricultural Fertilizer Research and Education Council, AFREC, for supporting this podcast. For the latest information on nutrient management, you can follow us on Facebook and Twitter, @umnnutrientmgmt, where you can also send us your questions for future podcast episodes. Thanks for listening.

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