

FLEXIBLE NITROGEN MANAGEMENT

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Let's start with what happened in 2017. Lots of rain in Wisconsin April through June. Wet all along, and especially the last half of June in southern Wisconsin.

Did this cause nitrogen loss? Yes.

Was it huge? No.

Looking through August satellite images from Wisconsin, I see some fields with definite N deficiency where I would predict serious yield loss (Figure 1). But most fields looked fine or at least pretty good.



Figure 1. Planet Labs July 28 satellite image of two fields in southeastern Wisconsin. Nitrogen deficiency appears to be limiting yield in most parts of the eastern field.

Based on some phone calls that I made in June, it sounds like a fair amount of N was applied with high-clearance applicators this year. That may be part of why the corn looked pretty good even though it rained a lot. If so, that's a great example of flexible N management.

With N solution and urea, which dominate in Wisconsin, N goes down fast. There is probably not much conflict between N application and planting. But if it's the right day to plant, planting should take priority, regardless of where N application stands. Get the N applied later. Waiting to plant is far more likely to reduce profitability than waiting to fertilize. That's another great example of flexible N management.

I hear worry about early-season N stress. This is one reason why some farmers insist on finishing N application before starting to plant. I have lots of experience with later N application on N-stressed corn, and only rarely (2 of 90) has early N stress (lack of preplant N) caused a yield reduction. In those 2 cases, the first N application was when the corn was thigh-high. In many other cases when the first application

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was made to thigh-high corn, yields were the same as or better than with preplant N in the same field. This is for corn grain. I haven't done experiments with corn silage, but what I've read suggests that early N is more important for silage.

One concern with early-season N stress is reduced row number on the corn ears. In 2017, we counted rows in plots that had not received any N over 11 years of continuous no-till corn. Yields in the zero-N plot were 135 bushels below the best treatment, but only 0.3 rows below. If that level of N stress only reduces row number by 0.3, you're not likely to see row reductions in any of your fields, even with no pre-plant N.

With increasing availability of high-clearance N applicators has come programs that emphasize split N application. The lower pre-plant N rate gives the opportunity to flex down (for example in extreme drought, I know some Missouri farmers who did this in 2012). And the machine can easily let you flex up on total N if you know that some of your preplant N was lost.

Flexibility with N means getting your priorities right and adjusting to the weather as it comes. It means being prepared with a range of options that can work. Not every field has to be managed the same way, and not every year has to be managed the same way.