http://www.MSCNews.net/news/index.cfm?nk=67387

Nitrogen Loss Concerns

Arguably the most important nutrient in corn production is nitrogen. If not the most important, it certainly is the nutrient we apply in the greatest quantity – and one of the reasons so many are so concerned about how much this spring's weather may have reduced its availability.

Nitrogen is lost during wet springs by way of two mechanisms: leaching or denitrification. Both involve the nitrate form of nitrogen and are affected by numerous factors like soil temperature and oxygen content, pH, and the type of product applied. Leaching is typically an issue on coarse (sandy) soils where lots of rain has moved through the soil profile. Denitrification is worst on medium or fine textured soils under warm and wet conditions.

This spring's rainfall has been well above normal, leading many to wonder just how much nitrogen we might have lost – and whether supplemental nitrogen may be a necessity. The answers are not 'one size fits all', but we can make a few generalizations that may help as you make a decision about how much additional N might be needed – and where it should be applied.

First, N loss depends a lot on the N form in the soil, with nitrate N being subject to the most loss. If N is in the ammonium form, losses should be small. Second, saturated soils will have the most potential for denitrification loss, since oxygen limited conditions are where the microbes responsible for denitrification thrive. Third, the potential N loss from denitrification increases as soil temperatures warm. According to University of Nebraska research, a 60-degree temperature soil can be saturated for five days resulting in a10 percent nitrate nitrogen loss. If we increase soil temperatures to the mid 70's, a saturated soil might see 60 percent nitrate N loss in just *three* days. The average two-inch soil temperature at Hiawatha: 66. Silver Lake is at 71.

Bottom line: cooler soils have likely limited N loss to some degree so far this spring. Those applications most at risk to loss are those done early last fall, with late fall and early spring applications likely seeing limited loss. That's the good news. The bad news is that we are likely going to see soil temperatures continue to warm with the potential for more moisture in the forecast, leading to the potential for more N loss. In many cases, farms that received anhydrous early last fall should probably be in a position to apply supplemental N as the opportunity arises. Others may not have lost much yet, but June weather will be a big factor in continued N losses.

As you consider supplemental N, keep these factors in mind as well: First, we have a big window for application. Recent work has shown that N applied close to tasseling can still be effectively used by the corn crop. Second, not all yellow corn is N deficient. In some cases, it's likely just due to wet feed that may be causing other issues as well. Much of our corn right now is uneven and off color. Some of this will correct itself as weather permits the corn to better 'take off'. Third, monitoring might be a good option this year. Reference strips where 50-75 pounds per acre of supplemental N are applied can be good tools to help you determine whether N loss is the culprit, or something else is going one. Two years of work with reference strips in NEK showed mixed results to added N because N *loss* wasn't always the issue. For assistance with reference strips, feel free to drop me a line.

For a more thorough explanation of the potential for N loss, see the most recent KSU Agronomy eUpdate article available at: https://webapp.agron.ksu.edu/agr_social/article/wet-soils-and-n-loss-how-much-of-the-applied-nitrogen-has-undergone-nitrification-337-1 .s.

eh ally an issue on coarse (sandy) soils. Denitrificaiton is worst on medium or fine tex