

	<b>Bill Brink's Weekly Crop Report</b>	
<b>Solutions At Work</b> <b>M&amp;M Service Company</b>		September 27, 2011

## **Fall Nitrogen Management Recommendations**

Fabian Fernandez, University of Illinois Soil Fertility Specialist, recently wrote a good article on **fall nitrogen management recommendations**. He answered the what, when, where, and how to apply questions, but if you missed the article, here is a summary of his comments:

### **What to Apply?**

There are several inorganic sources of nitrogen (N) available, but for fall application, the only recommended sources are anhydrous ammonia and ammonium sulfate. Ammonia converts quickly to ammonium, and nitrogen in ammonium sulfate is already in the ammonium form. The significance of that is ammonium is attached onto the soil particle exchange sites and organic matter so the N is protected from leaching. In contrast, N sources containing nitrate, such as ammonium nitrate and UAN, should not be used in the fall because nitrate does not become adsorbed on the soil exchange sites and some will be easily lost by leaching or denitrification between the time of application and corn planting. Urea, another common source of N, should also not be used in the fall because it has a greater risk of loss compared to anhydrous ammonia before nutrient uptake next spring.



It is always a good idea to include a nitrification inhibitor, such as N-serve, to protect some fall N loss and increase the amount of N in the ammonium form next spring.

### **When to Apply?**

The start of fall N applications should be dictated by soil temperature and not by date. Application should not begin until soil temperatures consistently go below 50°F, because nitrifying bacteria greatly reduce their activity below that temperature. Also, the efficiency of nitrification inhibitors decreases with warm temperatures. So, the cooler the temperature, the greater the efficiency of the inhibitor, and the greater the chance that ammonium does not convert to nitrate.

Air temperatures can vary substantially in the early fall, but the chance they will continue to decline without significant bounce back to warmer levels are very rare before the third week of October.

## Where to Apply?

Because temperatures usually do not stay below 50°F long enough during the winter in all of the state, fall N application should not be done south of Route 16. If, however, you are close to that line, evaluate the soil characteristics to determine if fall application is appropriate. But regardless of location in the state, do not apply N in the fall to soils with a high potential for nitrate leaching or soils that are poorly drained.

## How to Apply?

If possible, wait until soil conditions are optimum for the anhydrous application. Soils that are too dry or too wet can result in ammonia loss to the atmosphere because the application knife tracks may not seal properly.

When soils are dry, increasing the depth of application or reducing application rates usually can minimize volatilization loss. When soils are wet, little can be done to minimize loss through volatilization.

If you are in doubt about the soil conditions, use the “sniff” test and see if you can detect the anhydrous odor over the knife track. If you can detect an odor, it may be too dry, too wet, or the application is too shallow.

## How Much to Apply?

To determine the economically optimal N rate at various corn and N prices, use the corn N rate calculator at the following Iowa State University website: [extension.agron.iastate.edu/soilfertility/nrate.aspx](http://extension.agron.iastate.edu/soilfertility/nrate.aspx). The charts at that website will show a rate range that will give a net return within \$1.00/acre of the specific Maximum Return to Nitrogen (MRTN) rate. For example, a range of 161-191 may be given, and the MRTN will be 175 pound of N per acre. But keep in mind the MRTN is a total actual N rate needed, which means you can credit or subtract from that total the amount of N applied from DAP or manure for the actual ammonia application.

Once you determine how much N is needed, you don't have to apply the entire amount in the fall. In fact, there is a rapid trend toward multiple applications of N for the growing season, where a percentage is applied in the fall and the remainder is put on in one or two applications in the spring closer to when the corn crop needs N. With a lower N application in the fall, nitrification inhibitor efficiency will increase also.

I have had several producers ask about **applying fall N (UAN) on the surface to enhance or help break down the corn residue**. The basic concept behind applying N to corn residue is that the N makes it possible to reduce the carbon to nitrogen ratio and allow microbes to decompose the material more quickly.

The concept makes sense, but research at the University of Wisconsin has shown no benefit for fall application of N to increase microbial decomposition of corn

residue. In fact, the researchers observed that applying N did not change the carbon to nitrogen ratio. Their conclusion was that the reason for the lack of response was not the N level but the lower temperatures, which reduced microbial decomposition of the residue. Therefore, maybe there is slightly more residue decomposition in our warmer temperatures because of increased microbial activity but not because of the N.

If you have questions about your fall N management program, talk to your M&M crop specialist.

### **Corn After Corn Yield Drag Continues to be a Mystery**

The **significant yield drag for corn following corn seems to be consistent** wherever I go. I talked to Emerson Nafziger, University of Illinois Corn Specialist, and he is somewhat confused about that situation also. But he has offered the following explanations:

- Almost all of the earliest planted corn was following soybeans because those fields tended to dry out faster and needed less tillage. Then it turned wet and cool, and planting was delayed until May. So planting, on average, was a bit late this year.
- Once planting began in May, many fields were probably planted in wetter conditions than would have been ideal. Corn following corn fields were probably planted into even wetter and cooler soils than those planted after soybeans. This probably caused some compaction, residue interference issues, and seed placement problems.
- Because of those problems, corn following corn looked bad from the start with uneven stands and poor color. Starter fertilizer and supplemental nitrogen helped make the stands look more uniform, but they did not totally solve the problem.
- When the rains stopped and the high temperatures began in July, the effects were more severe in most corn-on-corn fields compared to fields following soybeans. In the driest areas, corn following corn lost canopy color and died prematurely, which stopped kernel fill.

Nafziger is requesting more information about the problem and is asking producers to send him an email with the following information:

- description of the yield difference
- where the differences are the worst
- whether some corn-on-corn fields seemed to have escaped the problem.

His email address is [ednaf@illinois.edu](mailto:ednaf@illinois.edu).

## **Last Crop Update for the Year**

This is my last Weekly Crop Update for the growing season. 2011 will be a year we will probably remember because of the early wet weather and then the excessive heat and dry weather during July and August. As a result, corn yields have been somewhat disappointing.

I have enjoyed another summer with M&M Service Company and have had the pleasure of working with a great group of dedicated professionals. The crop specialists and other staff strive to always have the best interest of the producer in mind when giving advice and making crop recommendations.

The leadership of M&M Service Company, which includes Brad Klaus, General Manager; Mark Bauman, Manager of Agronomy Services; other department managers; and the Board of Directors are continuously working to move the company forward to better serve producers in Macoupin, Montgomery, Madison, and parts of the surrounding counties.

Have a safe harvest, and I hope to see many of you again during the 2012 growing season.