



Fall Nitrogen Management

As of today we are behind our average harvest progress, and the calendar keeps turning pages so it may seem like the right time to start applying ammonia, however there are a few variables we need to consider before making that decision.

Application Timing: Anhydrous Ammonia is unstable in the soil at 50 degrees and above. The bacteria that convert ammonia to nitrate are active at soil temperatures above 50 degrees, when the soil temperatures drop below 50 the bacteria become less active but are not totally dormant until 40 degrees. So it is best to wait until the soil temps are below 50 degrees before starting applications.

If an application is made today with the soil temperatures at 55 degrees, considerable loss will take place, usually the soil will only hold the ammonium form of N for 5 days under warm temps. If a nitrogen stabilizer is added to warmer than 50 degree soils the window of protection is shortened.

In my opinion, the best decision is to wait until soil temps are below 50 degrees to apply nitrogen and to still add a stabilizer such as N serve in the fall. That stabilizer can give up to 2 weeks of protection in the spring from nitrogen losses. If the spring turns warm and wet the bacteria will start converting that ammonia to nitrate form which moves through the soil profile very quickly which results in nitrogen loss through leaching.

Nitrogen Holding Capacity Theories: I would like to address another theory that is floating around the Ag industry about nitrogen holding capacity of soils. The theory is for each CEC, 10 pounds of nitrogen can be held, so therefore a soil with a CEC (cation exchange capacity) of 12 can hold 120 pounds of nitrogen. That is a false claim, please do not let this theory be the deciding factor for application rates. Soil texture and temperature is the deciding factor for nitrogen holding capacity in any soil. The soil has a negative charge, and ammonia has a positive charge which allows them to attract and the soil will hold the ammonium form of nitrogen, **at low soil temperatures**. So a soil with low CEC is usually light textured with less clay content, therefore water moves through the soil quicker and with less clay content there is a weaker charge to hold nutrients, which results to leaching of nitrogen.

Of course the best nitrogen management system is when the application is made as close as possible to when the plant needs it, such as spring application and side dressing. Since that does not fit every farm operation there is still a place for some fall nitrogen.

Visit the link below to view the current 6" soil temps in your areas.

<https://www.mda.state.mn.us/soiltemp/>

Dale Viktora | Legend Sales Agronomist | Hollandale, Minnesota