



October 23, 2015

## WAITING PREVENTS LOSS OF FERTILIZER

The fall colors right now are really starting to show and with harvest starting to wind down it won't be long before we meet the white "bullets" on the road. The white anhydrous ammonia tanks will soon be here if Mother Nature cooperates with some moisture for our topsoil and soil temperatures begin to fall further than what they are right now.

Nebraska Extension recommendations are to delay anhydrous ammonia applications until soil temperatures fall below 50 degrees on silty clay loam soils. Producers would be wise to wait until those soil temperatures are below 50 degrees for an entire week, before beginning ammonia applications. This is the only form of nitrogen that should be used in the fall, other forms are too subject for leaching. Soil temperature maps and data can be found every day at [cropwatch.unl.edu/cropwatchsoiltemperature](http://cropwatch.unl.edu/cropwatchsoiltemperature) and I routinely update soil temperatures now on our website at: [saline.unl.edu](http://saline.unl.edu)

Anhydrous ammonia needs to be converted from the ammonium form to the nitrate form via soil bacteria activity in order to be available to plants. But nitrates are the same form which is leachable with water movement in the soil. There still is conversion from microbial down below 50 degrees, but at a slower pace. Farmers know that nitrogen fertilizer efficiency with corn is increased when applications are made closer to the maximum uptake months of June and July. Farmers can really control the situation fully with a pivot set up for fertigation where the crop is spoon fed to achieve the highest efficiency improvements. Split applications of nitrogen (N) are generally more efficient than single large doses (especially on sandy soils) due to N loss potential.

Iowa State University research done by Dr. Al Blackmer and his graduate students showed that bacterial activity is not quite as low as was previously thought. A good report on this is at <http://ow.ly/TLdka> The 50-degree rule for fall application ignores the soil pH factor and ignores the fact that some nitrification continues even after soil temperatures drop below 50 degrees. And there's a long period in the spring as soils warm, but before plant uptake begins, when nitrification occurs and N can be lost. The probability of loss is higher than with spring-applied anhydrous.

Natural Resource Districts have responded with nitrogen application rules in areas where high nitrates have shown up in groundwater and triggered regulations. No anhydrous can be applied before November 1, essentially in the northwest part of Richardson County which is a Phase II area; the Phase II area in parts of Dewitt, Grant and Blakely townships in Saline and Gage County; District wide in the Upper Big Blue NRD and in Zone 5 (Phase III area in Central York County) the fall application must also include N-serve a nitrification inhibitor; and District wide in the Little Blue NRD. In parts of a four square mile area or Phase III area on the west edge of Elmwood, fall fertilization was suspended until after March 1 and soil sampling is used to determine residual nitrogen in the soil.

So what about homeowners and fertilizing turfgrass? We used to recommend a heavy dormant application to lawns of nitrogen fertilizer in November at the end of the growing season. This isn't in the anhydrous form. The rationale was the cool weather stunted shoot growth of the grass and the nitrogen was still taken up by the plant for winter.



Research at three universities have shown mass flow N uptake by the turf was not as good as initially thought due to low transpiration rates of the plants. Nebraska Extension recommendations for bluegrass lawns are to apply slow release granular products in mid-September at 1.0 lbs/1000 ft<sup>2</sup> (which is 44 lbs per acre). Only if the turf needs it, an application of quick release nitrogen is recommended no later than mid-to-late-October. November applications are less likely to be taken up by the turf, linger in the soil, subject to leaching and promote excessive spring growth which depletes reserves for the summer.

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