

## Nitrogen Loss Not Likely, Yet

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Farmers that applied anhydrous ammonia (AA) in the fall for corn in northern Indiana are wondering how much nitrogen (N) they may have lost due to the heavy rains and flooding that occurred during the late fall and so far this winter. Nitrogen loss from fall-applied AA occurs most years, but the loss usually occurs in the spring, not in the winter. Before the ammonium ( $\text{NH}_4^+$ ) applied as AA can be lost from the soil it has to be converted to nitrate ( $\text{NO}_3^-$ ). Fortunately for the majority of situations to date, most of the fall-applied AA likely still remains in the  $\text{NH}_4^+$  form, so little N would have been lost despite the excessive rainfall.

The most important factors to consider when determining the amount of  $\text{NH}_4^+$  applied as AA that has been converted to  $\text{NO}_3^-$  are the time since application, whether the nitrification inhibitor N-Serve® had been applied, and the soil temperature and moisture conditions since application. Fortunately northern Indiana soil temperatures were cold this fall and winter, unlike last year. Soil temperatures were generally below 50F at the beginning of the second week of November and then were consistently cold (< 40F) after the third week of November. Anhydrous ammonia delays the formation of  $\text{NO}_3^-$  for about 2 weeks after application without N-Serve® and for about 4 weeks after application with N-Serve®. Therefore, little formation of  $\text{NO}_3^-$  likely occurred with mid- to late-October AA applications and loss of N should be minimal. Significantly earlier applications, unfortunately, may have resulted in some N loss.

Although the news is good now, it is too early to celebrate. Typically N loss occurs in the spring when soils warm and rains promote denitrification and leaching from saturated soils (<http://www.ces.purdue.edu/extmedia/AY/AY-318-W.pdf>). Spring N loss can be substantial. Previous research has shown that N loss from fall-applied AA averaged about 30% without N-Serve® and 10% with N-Serve® on a poorly drained Crosby silt loam.

As the spring unfolds, we will keep you posted on our estimation of potential N loss.

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Don't forget, this and other timely information about corn can be viewed at the Chat 'n Chew Café on the Web at <http://www.kingcorn.org/cafe>. For other information about corn, take a look at the Corn Growers' Guidebook on the Web at <http://www.kingcorn.org>.

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