

Integrated Pest & Crop Management

Nitrogen Loss: Again??!

By Peter Scharf

It's June 15. A big weather system has just swept through Missouri last night and this morning, dropping between one and three inches of rain.

Much of the Missouri corn crop had to be re-planted due to cool and wet early-season conditions. The cool is gone, but the wet has remained. With warm soils, potential for nitrogen loss is considerably higher than it was in April, particularly on soils that don't drain well.

My rule of thumb is that corn fields that receive a foot or more of precipitation in May and June are likely to experience yield loss due to N deficiency. Over the last 60 days, most of Missouri has received 10 or more inches. That puts nearly everyone in the 'danger' category. Barton, Vernon, Bates, Nodaway, Clark, Lewis, Marion, Ralls, Cooper, New Madrid, Pemiscot, and Dunklin are counties with the highest risk levels



Figure 1. Excess rainfall can lead to nitrogen loss that can severely limit corn yield, as in this Holt County aerial photo taken August 2008.

based on rainfall totals and row crop acreage. Although I will focus on corn, milo and cotton crops are also vulnerable to yield loss when N is lost.

Level of risk depends on nitrogen fertilizer management and soil properties as well as rainfall. The last two years, I've written a newsletter article with a Nitrogen Loss Scoresheet that gives some guidance as to risk levels associated with different N sources, timings, and soil textures. Here's a link to last year's version, which should still be useful this year:

<http://ppp.missouri.edu/newsletters/ipcm/archives/v17n10/ipmltr9.htm>

Last year, nitrogen deficiency cost corn producers in Missouri and across the Midwest a pile of money. Based on aerial photos and windshield surveys in August, I estimated about 70 million bushels of potential corn production lost in Missouri, and about 460 million bushels across the corn belt. Here's a pdf file (warning, 5 Mb) about nitrogen loss and yield loss across the Midwest last year: <http://plantsci.missouri.edu/nutrientmanagement/nitrogen/scharf%20N%20loss%202008.pdf>

This yield loss could have been prevented using rescue applications of nitrogen fertilizer. The acreage needing rescue N last year was so great that logistics of application equipment and fertilizer delivery would have created bottlenecks. However, the biggest limitation was the mindset of producers: Being unsure about the need for additional N and the potential for yield response.

My experience with N timing experiments and rescue N applications to production fields is that full or nearly full yield can be achieved if rescue N is applied by the time the corn tassels. Limited information suggests that

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even up to two weeks after tasseling, N-stressed corn will give a profitable yield response.

The question of whether more N is needed is tougher. My opinion is that aerial photos are the quickest and most accurate way to pinpoint where additional N is needed. We will be working with Agrivision to deliver a service called NVision to producers this year to acquire aerial photos and

turn them into maps of estimated yield loss due to N deficiency. In fields where estimated yield loss justifies a rescue treatment, we will also provide variable-rate N application maps to correct the deficiencies. Nitrogen loss is nearly always patchy in a field, depending on where water runs and sits, and variable-rate applications handle this much better than putting the same rate over the whole field. For more information

on this service, call David Hughes at (573) 682-7194 or Aubrey Martin at (660) 259-2020.

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