March 2013
Prepared by
Jim Fawcett, field agronomist
John Sawyer, agronomist – soil fertility
Iowa State University Extension and Outreach

How to Estimate N Carryover for 2013

The drought of 2012 has likely increased the carryover of nitrate-nitrogen (nitrate-N) into the 2013 season. In addition to less N being used by last year's crop, the reduced rainfall in 2012 resulted in less nitrate leaving the soil through leaching and de-nitrification.

Although it is common for about 50 pounds per acre of nitrate-N to carryover from one season to the next, soil samples pulled in the fall of 2012 indicate we will likely have fields with more than 100 pounds per acre of carryover nitrate-N into the spring of 2013.

Take advantage of this carryover N

Pull soil samples this spring to estimate carryover N and reduce spring N rates accordingly for the 2013 corn crop. Failure to do so may result in increased nitrate losses into water systems in 2013 and future years.

To estimate nitrate-N carryover:

1. Pull 1-foot soil samples to at least a 2-foot depth (0-1 foot and 1-2 foot) before the spring N is applied. A 3-foot depth is preferable. Pull 15-30 cores per sample on an area of no more than 10 to 20 acres. Mix thoroughly and send a subsample (standard soil sample size) to the lab to test for nitrate. Multiple samples per field should be collected.
2. Take the soil test result (ppm nitrate-N) times 4 to calculate pounds per acre of N.
3. Add up the N in each foot and subtract the "normal" carryover N (40 pounds per acre for 2 foot depth and 50 pounds per acre for 3 foot depth).
4. Subtract the carryover N from your usual N rate.
5. Regardless of lab results, apply no less than 50 pounds per acre if no N has been applied, to account for field variability.

Example for estimating carryover Nitrate-N for 2-Foot sampling depth

Assume no N has been applied for 2013 season and 150 pounds per acre is the usual N rate. Assume lab results of 10 ppm nitrate-N for 0-1 foot and 15 ppm nitrate-N for 1-2 foot.

150 lb N/A – [(10 ppm x 4) + (15 ppm x 4) – 40 lb N/A] =
recommended rate of 90 lb N/A for 2013 corn
150 – [(40 + 60) – 40] = 90 lb N/A

If there is excess spring rainfall, the carryover N available for the 2013 season will be reduced.

One tool available to calculate nitrogen rates for corn is the corn nitrogen rate calculator found at http://extension.agron.iastate.edu/soilfertility/nrate.aspx. For more information, read a recent ICM News articles by John Sawyer http://www.extension.iastate.edu/CropNews/2013/0221sawyer.htm.