David Hallauer, Agent
Meadowlark Extension District
Crop and Soils, Horticulture

Managing Costs – N Fertilizer

A recent Kansas State University analysis compared farms based on returns over total costs, separating the returns in to the high one third, medium one third and low one third categories. What they found helps give a picture of where our focus needs to be if we are trying to manage costs when returns are reduced. One of those areas where differences were noted was in the fertilizer/lime budget line. Those producers in the top one third for returns have fertilizer/lime costs that were just two thirds that of the low one third of producers – an almost $40 difference! How can that be?! Two facets of a 'simple' nitrogen recommendation might help explain how some of those savings can be achieved.

Profile nitrogen samples – 0-24" deep, typically – are not easy to take. Their value, however, can be high! According to observations by KSU Professor Emeritus Dr. Dave Mengel, some profile N samples showed that as much as 60, and maybe even 90 pounds of N could be supplied from the profile. Have you accounted for that? KSU soil test recommendations assume a 30 pound N credit from the profile (in the absence of a test), but that may still be giving up N that could be used to meet the crop's nitrogen need. Is a 30 pound per acre N savings worth the time, effort, and cost of a profile N sample? It might be something to consider! There are other factors of a soil test recommendation that a soil sample could provide information on that might save you money as well. Bottom line: a soil test is a great investment!

A second facet of a nitrogen recommendation has to do with what we call Nitrogen Use Efficiency, or NUE. Worldwide, NUE is about 35%. In the U.S., it's about 45%. In Kansas, we assume 50% for recommendations, and have routinely measured NUE ranges of 40-70% in corn. If you assume a 50% NUE on a 130 pound per acre N recommendation, that's 65 pounds of N uptake. If you drop NUE to 40%, that same N recommendation increases to 163 pounds/acre to get the same 65 pounds of uptake the crop needs. Increase NUE to 60% and you drop the N recommendation to 108 pounds for the same 65 pounds of uptake. In other words, Nitrogen Use Efficiency is a big deal, and your management thereof can result in economic returns.

NUE can be accomplished in a number of different ways. Essentially, it means applying the right source of nitrogen at the right rate in the right place at the right time. The key to this 4R concept is to identify your likely loss problem (if one exists) and apply the right tool to fix it.

Similar efficiencies are more difficult to attain for phosphorous or potassium or any of the secondary or micronutrients. Lime, however, is another building block of the nutrient management foundation that should NOT be overlooked! If nutrient management is a place you were considering making adjustments, now is a great time to research how you can fine tune things. Always be cautious, however, to base changes on sound nutrient management principles. To request KSU research on those principles, feel free to drop me a line at dhallaue@ksu.edu or by contacting your District Office.