

5/11/2004, Kevin Kuehner

STUDY REVEALS LESS MAY BE MORE WHEN IT COMES TO NITROGEN FERTILIZER

St. Peter, MN – How much nitrogen should be applied to a corn crop while at the same time balancing profit and water quality? Over 15 farmers around St. Peter attempted to answer that question through a unique three-year study.

Choosing the right nitrogen rate is always an important decision for area corn farmers, especially this year when commercial nitrogen (N) prices have doubled in price compared to last year. Increased environmental concern over N losses from leaching and water quality makes nitrogen management even more critical.



“The N-rate plots have proven to me that we can get by with less N when compared to what we were applying before. Because of the plot work we have reduced our rates by 20-30 pounds.”-Dave Mogensen, St. Peter Area Farmer

Thanks to new tools, techniques, and local watershed programs, many producers can now determine their own nitrogen rates instead of relying on general recommendations. “The use of yield monitors and GPS has added a whole new dimension to nitrogen management,” states Kevin Kuehner, local watershed coordinator. “Through on-farm demonstrations, growers can judge for themselves which rate of nitrogen optimizes their farm’s agronomic, economic, and environmental performance.”

To initiate each demonstration, a 50-acre portion of a farmer’s field was selected with soybeans being the previously grown crop. Cooperating producers then applied nitrogen in 10-acre width strips at five different application rates of 60, 90, 120, 150, and 180 pounds N per acre. On the majority of sites a smaller 2.5-acre strip of 0 pounds of applied N was used as a control. In the fall, the N-Rate plots were then machine harvested using combines equipped with global positioning enabled yield monitors. The demonstrations were calibrated and verified by a certified professional independent crop consultant. The data were then analyzed by Dr. David Mulla of the University of Minnesota Precision Ag Center to determine Economically Optimum Nitrogen Rates.

“Farmers have been surprised by the results,” says Kuehner. “Most were especially surprised when some of them found out they could save anywhere between \$7-\$14/acre by simply lowering their normal N application rates, even during 200+bu./acre years and all while maintaining yields. In just nitrogen alone, this could save area producers \$10,000 or more a year in

fertilizer costs. They are also surprised that even in the zero-applied N-strips, corn yields still averaged up to 132 bushels/acre," Kuehner continues.

Dave Mogensen, St. Peter farmer, has participated in the demonstrations for the past five years in the Seven Mile Creek Watershed and St. Peter Wellhead Protection Area. "The N-rate plots have proven to me that we can get by with less N when compared to what we were applying before," says Dave. "Because of the plot work we have reduced our rates by 20-30 pounds." Results from the three-year study around St. Peter have shown that Economically Optimum Nitrogen Rates (EONR) ranged from 90-120 lbs. N/acre. The results from the study validated that U of M recommendations of 120 lbs./acre are adequate for area corn farmers and yield goals.

The results are remarkably similar to other plot-work conducted the past two years by Blue Earth Consulting of Lake Crystal. "These results are right in line with what we have found in the Lower Maple River, and Watonwan River watersheds. The more years of data we can get the more confidence farmers will have in the recommendations for cutting back on N-rates," says Bruce Nowlin, a certified professional independent crop consultant. In that study over 40 farmers scattered throughout South Central MN participated. Results showed that if farmers were applying a common rate of 150 lbs./acre N after soybeans, N-rates could be safely reduced by 10-30 lbs./acre without risking loss of profit. The optimum N-rate in that study was found to be about 111 lbs. N/acre.

The main goal of these watershed-based projects is to give growers better ways to address environmental issues without sacrificing the productivity or prosperity of their operation. It is planned that these farmer-backed, on-farm demonstrations will continue in future years.

For more information about On-Farm Nitrogen Rate Demonstrations access the following web site at <http://mrbdc.mnsu.edu/org/bnc/> or call Kevin Kuehner, watershed coordinator at (507) 381-9440 or Bruce Nowlin, Blue Earth Consulting at (507) 947-3362.