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LATE SEASON N ON-FARM RESEARCH

Nitrogen in our environment is a major concern with many people today. We all deal with it in our drinking water being within the health standard, the current city of Des Moines lawsuit with farm nutrient runoff into surface water and the environmental problems with the Gulf of Mexico Dead Zone. If nitrates in domestic and irrigated wells get too high, Natural Resource Districts (NRD's) begin to have special requirements with nitrogen applications with operators.

When and at what rate nitrogen fertilizer should be applied are important decisions every year for today's corn producers. A Nebraska Department of Ag fact sheet states our nitrogen efficiency is getting better. Today's corn farmers grow 87 percent more corn per ounce of fertilizer than they did 30 years ago.

Nitrogen management in certain years can be challenging. Heavy rains and saturated soils can cause nitrogen to be lost to the atmosphere, leach below the root zone or be lost with agricultural surface runoff. It's more of an issue when the bulk amount was applied before planting in heavy rainfall years. The critical stage for corn needing larger amounts of nitrogen is V8 to tassel stage. If we have heavy rains in June and saturated soils, the amount of nitrogen still available as corn nears V8 to tassel stage, will be critical. That's a question many growers could be asking if we have a wet June, it just depends on our weather. Corn growers using in-season applications to better coordinate timing of nitrogen application can see advantages in wet years.

At an extension board meeting this month, a board member who farms in the Swanton area indicated last year he experienced an economic response in his corn from late season application via airplane with urea. But, by the time you see yellow or visual symptoms in the late vegetative stages, you have already lost some yield potential, but it was better late than never.

If corn becomes too tall in wet conditions, for sidedressing, previous on-farm research conducted in Missouri has indicated mid-season nitrogen application may be economically feasible. In Northwest Missouri in 2013, local ag suppliers were flying on urea to nitrogen deficient corn fields. A project was conducted to test the feasibility of this management practice in Nemaha County by extension educator Gary Lesoing. His full report can be found at:

<http://ow.ly/zaUz300C3pV>

On-farm experiments were initiated during the summer of 2013. Nitrogen was applied to 3 different fields of nitrogen deficient corn in Nemaha County. Corn was tasseled and showed indication of nitrogen stress (yellow in color).

In the first experiment, nitrogen was applied at the rates of 0, 50, 75 and 100 lbs N/ac on July 12th in a field where soil samples only showed 5 lbs of N in the top 3 feet of soil. The application method simulated nitrogen being top-dressed with a high clearance ground applicator or through aerial application randomized and replicated. At harvest time, corn was hand-harvested, shelled, tested for moisture and yields were calculated on a 15.5% moisture basis.



Corn yields were 75, 105, 106 and 123 bu/ac for the 0, 50, 75 and 100 lbs of nitrogen side-dressed treatments respectfully. Cost of these treatments were 31.5 cents/lb of nitrogen applied and \$15/acre application cost. Income was based on a corn price of \$4.20/bu. Gross income for the treatments were 0, \$144, \$145 and \$218 for 0, 50, 75 and 100 lbs. of nitrogen/ac treatments respectively. This translates into net profits of 0, \$113, \$106 and \$172 per acre for these respective treatments.

At the current corn prices, this practice shows promise both as a rescue treatment and as a practice for delaying nitrogen application in high risk fields. If a farmer has a field that has a high potential for early season nitrogen loss due to leaching or denitrification from fields that are water logged, a late N application may be feasible.

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