

Four R's Approach To Nitrogen Management

Proactive Answer To Gulf Concerns



The International Plant Nutrition Institute's 4R Nutrient Stewardship System is a choice for growers to increase nutrient stewardship according to Dan Schaefer, Certified Professional Agronomist with Illini FS in Champaign county Illinois.

Photo by John LaRose, Jr.

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The International Plant Nutrition Institute's 4R Nutrient Stewardship System (Right Source, Right Rate, Right Time, Right Place) of nutrient management is a proactive choice for growers to increase nutrient stewardship, especially with nitrogen according to Dan Schaefer, certified professional agronomist with Illini FS in Champaign county Illinois.

By utilization of the 4R's, "Right rate, right source, right timing and right placement," said Schaefer, "a managed nitrogen system rather than a one-time nitrogen application was implemented in the Illini FS trade area; we have gone to a multiple applications of different sources and different rates at different times with our nitrogen applications."

Two years ago Schaefer encouraged growers to make a change. "In my area we do a lot of fall ammonia. My growers typically would put all their nitrogen on in the fall as one rate. We decided to make a change after seeing the increase in corn yields from our on farm research where we used the 4R's approach to nitrogen. We had a real good buy in from our customers. They moved to a lower rate in the fall with N-Serve using anhydrous ammonia. We reduced the rate.

Typically they were running 165 to 180 pounds of N; we dropped them back to 100 to 120 pounds of N in the fall with N-Serve and moved into the spring time frame with a pre-plant application of UAN nitrogen with a nitrification inhibitor as our carrier for pre-plant herbicides."

"Using the N rate calculator from Iowa state, as our basis to prescribe for nitrogen recommendations, we will also add a urea top-dress in corn with a urease inhibitor to prevent volatilization loss. As you think about this time frame, you are looking at urea application the first part of June when corn is between V5 and V10. By using an in crop application of nitrogen you bring a larger portion of your nitrogen needs closer to when the corn crop will use it. You can then make the final adjustments to your total nitrogen needs. You can look back and see what's happened to your nitrogen that you've already applied by what the weather has been. The weather is our biggest determining factor on positive response. Based on the response curves from Iowa State and what we have learned from their N rate studies."

Schaefer then considers whether growers need to go a step further. "The N rate calculator gives you a range. In my area, this year, profitable range was from 165 to 201 pounds of N per acre. Some guys felt like they wanted more, considering the price of corn and the yield potential, that they had in June to go ahead and go to the higher end of the nitrogen rate. With the urea top-dress, we can do that."

Using the four R's approach to nitrogen management will reduce nutrient losses and increase nutrient efficiency and that may lessen the likelihood of USEPA taking action similar to the actions taken in other regions. "The Illinois Agriculture Industry and Illinois EPA are looking at the four R's nutrient management system as a way to educate growers to the importance of nutrient stewardship practices. The Illinois EPA have got to give an answer to the USEPA very soon on how we're going to reduce the nitrogen and phosphorus losses into the Mississippi River that is moving down to the Gulf. We don't want the same rules to come to us that they have in the Chesapeake Bay area. We have got to be proactive. Using the four R's approach to nitrogen management is being proactive," said Schaefer. Δ

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