

Benefits Of Soil Testing

Testing Can Help Farmers Manage Crop Nutrients

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At a field day sponsored by the Conservation Technology Information Center whose mission is to get the word out on responsible fertilizer management and responsible fertilizer use, David Dunn, manager of the University of Missouri Delta Center Soil Testing Lab at Portageville, discussed the different tests that the lab offers.

"They've sponsored this field day to highlight the research efforts that we've undertaken in cotton, corn and rice," he explained. "So, I'm talking about different tests that my lab offers for fine tuning nitrogen management of corn. Particularly there's one test, a pre-sidedress nitrogen test, that when the corn is about knee high if you collect the soil sample we can tell you how much nitrogen is in the soil and how much more you might need to add at that point to maximize corn production."

Dunn also discussed the end-of-the-season corn stalk test which provides information on how effective the nitrogen management practices were this year. While that won't affect this year's yields, using that data will reveal if too little or too much was applied, and what the right amount of nitrogen to maximize your corn yields on this year's crop would have been. That information can be used to modify management decisions next year.

The method for collecting multiple samples through their fields depends on how the fertilizer was applied. "If they applied their nitrogen fertilizer in bands it's important to vary the position that you collect the samples in relative to the row, so you don't catch the band every time," he said. "So we're recommending collecting three samples per location, one in the row, one in the middle of the furrow and one half way in between. Collect those three samples at six locations in the portion of the field that you're interested in and that would be the sample that you'd send to us."

"What we've determined by research is that when the corn is knee high, if you have 100 pounds of nitrogen in the nitrate form in the top foot of the soil profile, that's enough to maximize corn production," Dunn explained. "How we use the test is that we determine the pounds of nitrogen that you have on that top foot and then apply to make up to that 100 pounds. Our studies have shown that to raise the soil by one pound per acre of nitrate nitrogen you need to apply two pounds of nitrate fertilizer; so if we found 50 pounds in the field and your goal is 100, you would have to apply an additional 100, 2 pounds for each pound that you want to raise it."

Another test Dunn explained was the corn stalk test. "Based on the biology of the corn plant during the growing season, they accumulate nitrogen as nitrate in the lower portion of the stalk," he said. When it comes time to do grain fill that nitrate is mobilized from the leaves and the lower stalk and it's used to produce grain. If at the end of the season you have applied excess nitrogen and the corn plant has stockpiled that excess nitrogen, when it's done with the grain fill there is excess nitrogen in the stalk. If there's not enough nitrogen you would have a very low level of nitrate in the stalk at the end of the season."

stalk test.

So Dunn said to take a sample of the corn



David Dunn, Manager of the University of Missouri Delta Center Soil Testing Lab at Portageville, discussed the different tests that the lab offers.

Photo by John LaRose, Jr.

stalk from six inches to 14 inches above the ground in probably 18 places throughout the portion of the field under concern. These are taken to a lab where it will be allowed to dry. Then it is ground and the amount of nitrate in the sample is measured.

"If it's below a certain level you would have benefitted from applying more nitrogen," he said. "If it's between several levels, your nitrogen management practices were right on line; but if we found more nitrate than a certain level, then you overapplied nitrogen."

The testing service is provided at the Delta Center Soil Testing Lab.

"At the Delta Center we charge \$6 for the soil nitrate test, the pre-sidedress nitrate test; and we charge \$10 for the end-of-the-season corn stalk test," he explained. "We do realize that the spring test, the pre-sidedress test, is very time sensitive and farmers need to get that fertilizer applied in a timely manner, so we assign a high priority to getting a turnaround time on those samples. The samples in the fall, that information is not going to be used to make decisions until next spring, so we don't assign as high a priority to getting those done and it takes a little bit longer to physically dry the corn stalks and do that analysis."

To sum it up, Dunn said the University has developed some tests that help producers fine tune their nitrogen management practices and those tests are available to producers.

"We would encourage farmers to use them to manage nitrogen properly," he said. Δ

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