Soil Lab Tests Record Number Of Samples

FAYETTEVILLE, ARK.

Despite a tsunami of more than 160,000 soil samples in 2010 and temporary loss of half its equipment and staff, the soil testing labs of the University of Arkansas Division of Agriculture still managed to delete a backlog and return to a less-than-seven-day turnaround.

The sheer quantity of samples has generated some frustration by producers and consultants used to quick turnaround times on this free service. The testing is underwritten by a fertilizer tonnage fee paid by producers.

"We are committed to providing top-level service," said Nathan Slaton, professor of crop, soil and environmental science, who oversees the test labs in addition to his teaching and research duties. "Our Marianna lab staff have invested more than 450 hours of overtime to get through as many samples as possible for our growers."

This marathon included a four-week long sprint when the lab staff analyzed 36,000 samples.

"That's a record for us," Slaton said.

While productivity is up, the lab has received a record number of samples, including more than 43,000 samples in both March and October 2010. "The number of samples received during those record months simply exceeded the lab's daily analytical capacity and increases the amount of time needed to deliver soil test results to clients."

Producers send in samples for testing to help improve crop yields and optimize nutrient management, and in recent years, there has been a 15 to 20 percent annual growth in the number of samples.

In the past, most samples were a composite of soil taken from various parts of a field and combined into a single batch.

Precision agriculture has changed that, Slaton said.

"The average composite sample typically represented 40 to 45 acres of row crop land," he said. "With precision agriculture, most producers and consultants are sampling on 2.5-acre grids, which means that same 40-45 acre field is now represented by 15 to 20 samples instead of one."

"Business is too good," he said. "Grid soil samples accounted for 50 percent of the samples received in 2009, up from 18 percent in 2006."

During the avalanche of soil samples, the lab suffered breakdowns of two of its four ICP instruments – the inductive coupled plasma spectrophotometers – that are responsible for determining soil nutrient concentrations. Each of these instruments, manufactured in Germany, runs six figures, costing as much as a small house.

"You can't go down to the hardware store and buy what you need to fix this instrument," he said.

"The repair of one instrument purchased in early 2010 was covered under warranty. The other instrument was nearly 20 years old and considered obsolete – making the parts needed for repair very difficult to find," Slaton said.

All machines were up and running in the first few weeks of January.

The labs were also lost some highly trained staff to illness.

"It's amazing we were able to analyze the samples we did while down two people," Slaton said. "That speaks to the quality and dedication of the staff we have in place.

"We are working on ways to be more efficient; more cost-effective to help our producers maximize the value of the fertilizer tonnage fees they pay," he said.

On Jan. 21, Slaton could see the light at the end of the tunnel.

"Up through Jan. 19, we've got 6,500 samples and all four ICPs running," he said. "By the end of the week, we should be back to a less-than-10-day turnaround."

The soil-testing lab in Marianna was built in 1954 and has analyzed about 15,000 samples per year with funding from a 25-cent-per-ton fertilizer tonnage fee. The same facility is still being used to analyze more than 10 times that number of samples. Δ

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