

JAGADEESH MOSALI, staff scientist with the Samuel Roberts Noble Foundation Agricultural Research group, right, talks with a foundation farmer client as he monitors wheat with a GreenSeeker.



## GreenSeeker monitor and N-rich strips can improve nitrogen efficiency in wheat

By RON SMITH  
Farm Press Editorial Staff  
rsmith@farmpress.com

A combination of N-rich strips and a GreenSeeker monitor can save wheat farmers significant amounts of money on nitrogen fertilizer — or make certain the crop gets what it needs at topdress time.

Jim Johnson, a soils and crops consultant and certified crop advisor with The Samuel Roberts Noble Foundation in Ardmore, Okla., says the process involves installing N-rich strips in the fall then monitoring in February with the GreenSeeker to evaluate topdress nitrogen needs.

N-rich strips are swaths in the field with a double rate of nitrogen.

"We recommend making one extra pass over one strip with whatever analysis a farmer typically makes in the fall. That's it," Johnson says. "It does not take much time or effort, and it has the potential to really affect a producer's bottom line."

In February, he uses the GreenSeeker, an instrument that measures a plant's "greenness," to compare wheat in the N-rich strip to the wheat with standard fertilizer application.

The GreenSeeker emits an infrared light that shines on the growing wheat plant. "It measures the reflectance to determine greenness (the opposite of red on the color chart)."

The difference in green readings be-

tween the N-rich strip and the rest of the wheat gives Johnson the basis for topdress nitrogen recommendation.

He considers planting date, growing conditions since planting and other factors to determine likely growth response to additional nitrogen.

"Once we get the two numbers from the GreenSeeker, we have computer calculations to figure nitrogen need," he says. An Oklahoma State University website, [nue.okstate.edu](http://nue.okstate.edu), includes a calculator that makes the recommendation.

"It's very user friendly," Johnson says.

He worked with about 14 wheat farmers this year, the second year he's offered the program to Noble Foundation clients. "We had only two last year but we had an intern last fall who helped get the program kicked off."

From those 14 clients, Johnson evaluated 34 fields. "We lost some to drought," he said. "Of those 34 fields, we had a nitrogen response from 11. The other 23 fields needed no topdress nitrogen."

Farmers saved a significant amount of money on those fields, compared to the nitrogen they typically would have applied.

"The standard practice is to add 60 pounds of actual nitrogen in February," Johnson says.

"By leaving that out, farmers saved about \$30 per acre, based on nitrogen at 50 cents a pound. Last year, with nitrogen prices closer to \$1 a pound, they would have saved \$60 an acre."

The system is easy to set up, he says. "Farmers just make an extra pass across the field in the fall with whatever standard fertilizer analysis they use to create the N-rich strip. Using the sensor in February takes very little time. Most farmers can cover all their fields in a day. Every county agent in Oklahoma has a GreenSeeker. The Noble Foundation has one as well."

He says farmers can easily justify the expense if they want their own Green-

Seeker only monitors nitrogen.

The program offers an environmental advantage, too. "We're no longer applying nitrogen indiscriminately, so we see benefits to watersheds," Johnson says.

He says fall fertility may remain the same although farmers may be able to cut back some on nitrogen.

"They still need to soil test. The GreenSeeker only monitors nitrogen."

**"Once they use a GreenSeeker, they are hooked. It's easy for them to see the results. They see the numbers from the unit and they can see how they save money. It's still not a perfect system, but it's so much better than just applying a standard amount of nitrogen in the fall and again in the spring."**

Seeker. Cost is about \$2,000.

"Several farmers could buy one together," he said. "They don't use it every day so it's an easy tool to co-own."

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amount of nitrogen in the fall and again in the spring."

Johnson says many Southwest wheat farmers can improve nitrogen management.

"In one out of three years, using standard nitrogen rates will provide the right amount of nitrogen. In one out of three years, standard rates will be too high. And in one out of three years, standard rates will be too low."

GreenSeeker and N-strips improve those odds significantly.