Corn+Soybean Digest

TECHNOLOGY

Farmers apply science to optimize nitrogen on corn

Think Different The South Central Co-op at Lacona, Iowa, is promoting a more science-based approach to applying nitrogen fertilizer on corn to its member farmers. In the first year of its new Sustain platform, 28 farmers signed on to apply no fertilizer last fall, only a base amount at planting, and more N as needed in split applications during the growing season as recommended by the Adapt-N modeling tool. The goal is to apply only the amount of nitrogen the corn crop needs, when the corn plants can use it, for optimal yields and minimum nitrate loss to tile and waters downstream.

Lynn Betts 1 | Jul 20, 2016

Randy Miller was one of the first farmers to change his fertilizer habit and join the South Central Co-op's Sustain program – applying nitrogen to corn using a more science-based approach than is customary in his area.

After applying all nitrogen in one pass, for the most part, in his 25 years of farming, Randy was one of three farmers last year that worked with the Lacona, Iowa, ag retailer to test and transition to split applications.

Test results were good. This year, 28 farmers joined the program to make split applications on 81 fields over 4,000 acres. It was the kickoff year for the retailer's new Sustain platform.

30 bushel yield boost

"I was probably as surprised as anyone with last year's results," says South Central's agronomy manager Brent Hall. "First, I was surprised that Adapt-N and our Soil Scan 360 tests found so much of the spring-applied 150 to 160 pounds of N could be lost by summer. And then I was surprised by the 30 bushel per acre yield increase we received when we added 50 pounds of N per acre by plane in June."

Hall says the total amount of N applied for most Sustain participants this year may have been less than in the past, but the big difference was application timing. “Most farmers here will typically apply 150 to 160 pounds of N per acre pre-plant in one shot in the spring, and that’s it,” Hall says.

“But these 28 farmers using the Sustain platform applied a reduced base rate of 50 to 80 pounds pre-plant, and we used Adapt-N as the corn grew to guide us in how much more N we would topdress dry, from mid-June to early July. It varied from field to field; in most cases Adapt-N called for another 50 to 80 pounds.

Using less N this year

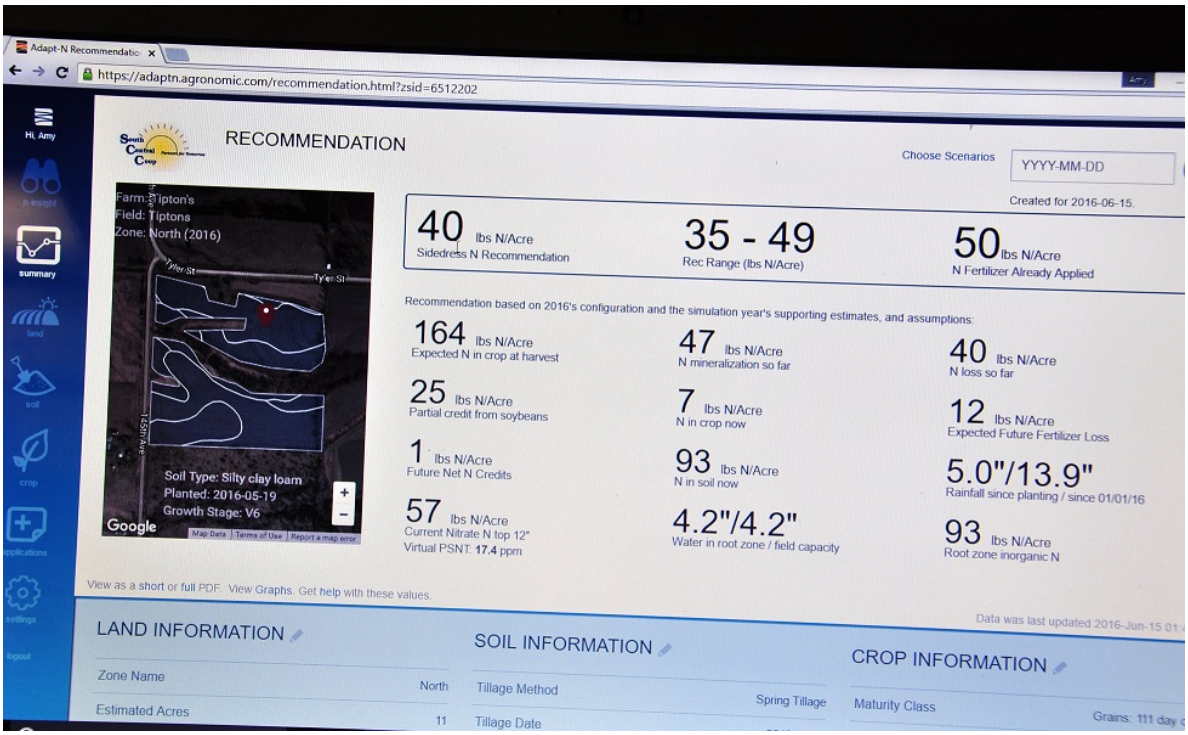
That’s how it worked for Chad Altenhofen near Chariton, Iowa. “I’d normally apply about 180 pounds of anhydrous in the fall or spring with no stabilizer. But with this program last year I applied 120 pounds in the spring, and we watched Adapt N to tell us when to apply more and how much,” Altenhofen says. “It worked great—I saw a 20 to 25 bushel per acre bump in corn yields and I cut back the nitrogen amount by 20 pounds. This year we’re using even less. We’re getting as good or better yields with less N, all because with split applications guided by Adapt-N, we don’t lose as much N and we apply when the corn needs it.”

“We’re trying some foliar fertilizer as a third shot of N, but I think going forward, we’ll settle into being most comfortable with two N applications for most people,” Hall says.

0.75 pound N per bushel?

“We don’t know yet, but we’ll find out if we can grow corn with three quarters of a pound of nitrogen per bushel, compared to the ISU standard of 1.1 pound per bushel,” Hall says. “I think we can do that on these soils in southern Iowa.”

Hall has treated his dry urea with NutriSphere, a polymer coating, and branded it as EnergizeN. “This dry urea gives us a longer window to apply N, and has been a



game-changer for us," Hall says. "This can lay there for three weeks without a rain and still be viable, so our window of application is a month or more. I'd guess about 60 percent of our customers apply ammonia themselves as side-dress or preplant, but most of our customers have their dry fertilizer custom-applied. We just have to be sure it's applied by tassel time—we've probably got three weeks from mid-June to do that top-dressing."

No more single N application

"Fall application or a one-time pre-plant N application was a convenience thing," says Miller. "We didn't really have a good way to do this split application consistently. But we just weren't getting what we wanted from one fertilizer trip—we were just throwing nitrogen away. It's good to have the ability now to wait on part of it. The tests on my farm reaffirmed what I thought would happen—I think split applications can have huge benefits for us."

"We're trying to curb costs and maximize yields for our growers," says Hall. "We think that with the use of Adapt-N, a check on Adapt-N with our Soil Scan 360 tools, and our experience we're doing a good job of that. A lot of farmers who haven't signed up yet are watching to see how this works."

Find out more about the Sustain program.