

U-Trough Planter System Fine-Tunes Nutrient Placement

Under development for years, the new planter setup provides basic crop-nutrient needs and stimulates soil biological activity with microbial additives.

By Ron Ross

A CHANCE MEETING with South African farmers during a trade show inspired Jeff Littrell and his company's partners to design a planting system that simultaneously applies one dry and two liquid fertilizer products.

They've named it the "U-Trough" planting system, and 5 years later, Littrell feels there's solid evidence that the system can boost corn yields by 8 to 10 bushels per

acre. In some cases, he's seen yields increase 40 bushels an acre or more.

"I've been in the fertilizer business for 30 years, so any new idea to improve nutrient placement and efficiency catches my eye," says Littrell, vice president of BRT Ag & Turf and FHR Farms based in

Rochester, Minn. He and his family also manage a crop and beef-cattle operation.

"The South Africans told us about a system they used to apply dry row-support fertilizer on one side of the row; liquid row-support on the other side; and liquid pop-up in the furrow," he says. "They reported corn yields in the 250- to 300-bushel range."

Learning Curve. Littrell says this system wasn't something to be adapted overnight, so his company spent a lot of time, money and effort to create a planter that combines precise fertilizer placement with what he believes is the right fertilizer package.

"The basic design we came up with, in fact, closely resembles many planters used by no-tillers," Littrell says.

As a fertilizer-company manager, he was eager to take the idea to the market. But as a farmer, he knew U-Trough wouldn't be accepted without valid research data.

He and his partners modified a six-row Kinze planter with the U-Trough concept, and configured a tractor cab with a full

complement of precision-farming technology.

Then they started a test-plot program across the Corn Belt. This year, they completed U-Trough modifications on a 17-year-old, 12-row John Deere planter, and Littrell used the 12-row system to plant his home farm, as well as several-hundred custom acres.

Littrell says it made good economic sense to modify older planters instead of investing in new machines.

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Jeff Littrell

"We would have to modify them regardless of their age to have a machine that does exactly what we want," he says.

Building The U-Trough. Littrell and his crews literally removed everything from the old planter drawbars and started from scratch. The finished 12-row rig includes:

- Rebuilt row units, including CleanSweep precision farming row cleaners with air-up and air-down control; Case IH gauge wheels; Copperhead Ag closing wheels and twisted drag chains.

- A 20/20 SeedSense monitor in the tractor cab that measures a range of planter functions, including population, singulation, vacuum pressure, seed spacing, planter speed and down force.

- A 20/20 AirForce system, a compressor-tank system that automatically adjusts down pressure as soil conditions change.

- John Deere single-disc coulters for the liquid and dry formulations.

"John Deere single-disc systems have been used by a lot of American corn growers and have proven themselves in a wide range

of conditions," Littrell says.

- Redball starter/liquid row-support system.

- Air clutches, dry fertilizer tank, dry fertilizer assembly and saddle tanks for liquid fertilizer.

The SeedSense system is one of six monitors in the tractor cab, including the Ag Leader Integra that controls pop-up and liquid row fertilizer while mapping and controlling auto-steer functions.

Tough Tests. Research efforts have been spearheaded by agronomist John Oolman, a veteran crop consultant who conducted extensive field-plot studies with several major seed and chemical companies before joining BRT Ag and Turf/ FHR Farms.

"We now have test plots, each 230 by 1,000 feet, in Minnesota, Illinois, Nebraska and other Midwestern states," says Oolman, who visits each plot several times during the growing season.

The six-row U-Trough planter is dedicated to the test-plot program. This year, they also set up three 50- to 60-acre plots with the 12-row planter to get a better idea of U-Trough response in field-size conditions.

"We take tissue tests and can apply sidedress and/or foliar nitrogen applications in a mix with fungicides or insecticides, if warranted," Oolman says. "We want the corn to be able to express maximum response to the U-Trough program."

What Is Different? What makes the U-Trough planting system different, Littrell explains, is the combination of the precise placement with a proprietary blend of fertilizer materials developed by his company.

The dry fertilizer — blown on at about 150 pounds per acre through a single-disc John Deere coulter in a 3-by-3 pattern — is a pelletized 17-8-5-5S-7Ca formulation. It contains ammonium nitrate, ammonium sulfate, phosphoric acid, potassium sulfate, calcium, carbon and soft-phosphate rock.

The other side of the corn row gets 25 gallons per acre of a liquid 25-0-0-2S-2Ca

created from a mix of 28% UAN, calcium nitrate, Thio-sul, water, sugar and microbes applied through a single-disc opener.

At the same time, an 8-19-3 orthophosphate starter is injected — while applying 26 ounces per acre of Micro-Pak, a live bacterium — just below the seed furrow.

The goal is to provide basic nutrient needs of the crop as well as stimulate biological activity in the soil with microbial additives, Littrell says.

Colleague Is Helpful. Much of the input for the development of the company's products comes from the onfarm experiences of Keith Schlapkohl — a Stockton, Iowa, no-tiller who was a founding partner of BRT Ag and Turf and currently serves on the company's board of directors.

In an effort to boost nutrient-placement accuracy and plant-use efficiency, the Iowa grower modified a Walker self-propelled sprayer to foliar feed on the underside of leaves, where spray is absorbed faster, as well as dribble nitrogen 2 inches off the soil surface.

The rig has two liquid-application systems with a 300-gallon tank for foliar spray, and a 1,000-gallon tank for sidedressing nitrogen.

"We applied the same design principles that Keith innovated to modify a second Walker sprayer that we use in research plots and on our Minnesota farms," Littrell adds.

All Non-GMO. A primary difference between the U-Trough plots and mainstream seed-company plots is that all seed used is non-GMO. The company sells non-GMO seed.

"We think there's still a lot of opportunity for conventional seed, and with a system like U-Trough, growers can coax just as much yield with intensive management as they can get from much-higher-priced, multiple-stacked hybrids," says Littrell. "Also, concern about glyphosate resistance to certain weeds is growing."

In addition to the 8- to 10-bushel yield increases, test plots are also recording higher test weights and improved nutrient density in the corn, Littrell says. That's particularly important to cattle or hog feeders.

The Next Step. Oolman says interest in U-Trough grows each year, with requests coming in from growers who would like to test the system on their own farms.

"Our goal is to help growers understand the value of the U-Trough concept. We are more than willing to share what we have

learned about modifying our planters," Oolman says. "We have some growers who change the system slightly to accommodate their planter setups. But when they do that, yields have suffered."

As a result, the company will offer plans and advice on building a U-Trough system. Oolman and Littrell also hold a series of seminars, during which staff agronomists explain how they modified planters for U-Trough.

The total cost of the planter and in-cab modifications for the 12-row system was about \$40,000.

"That might seem high, but when you can create a precision machine out of a planter that is nearly 20 years old, it sure beats \$190,000 or more for a new rig," Littrell says. "We think U-Trough is the kind of thinking the grower of the future will have to consider." ✨

TRIPLE THREAT. On test plots, the U-Trough system produced yield increases in corn of 8 to 10 bushels per acre, along with higher test weights and nutrient density, says Jeff Littrell, vice president of BRT Ag & Turf and FHR Farms. "We think U-Trough is the kind of thinking the grower of the future will have to consider," he says.

