



PROFILES IN soil health

Leon Moses

Greensboro, North Carolina

492 acres

Crops: Corn, soybeans, hay

Planting: All No-till

Covers: Most used mixes:

- Ryegrass
- Hairy vetch
- Clover



Bring soil alive to boost yields

Leon Moses has transformed the farm he operates. More importantly, he has also transformed his thinking. He no longer sees the soil as just a medium for producing crops. Instead, he sees a living soil that's the focus of his operation.

"I'm doing something good for the soil, and in turn the soil rewards me with yields that don't even compare to what we used to have," says the superintendent of the 492-acre North Carolina A&T State University farm.

Moses began experimenting with no-till and strip till farming 25 years ago as a research technician. "I saw what happened there and decided no-till was the right thing to do. When I became superintendent in 2004, we began using no-till for all our corn and soybeans," he says.

In 2006, he turned to cover crops — not for what they could do for the soil, but because he had a shortage of hay for the farm's livestock. "But I began to learn very quickly that no-till

Returns from Healthy Soils

Leon Moses has a long, healthy list of what his crop rotation and mixed cover crop system is doing for his soil and his operation. On his short list:

- Building a strong soil structure
- Super water infiltration
- Saving time
- Savings on equipment
- Better insect control
- Reduced soil compaction
- Cut commercial nitrogen use by 100 pounds an acre
- Nearly eradicated Johnsongrass, which was a big problem
- A 35 to 45 percent increase in return on investment

and cover crops combined to make healthy soils that rewarded me with higher yields," Moses says.

Now, he uses no-till and cover crops 100 percent. "When I took over as superintendent in 2004, some soybean yields were at 25 bushels an acre. Now we can easily get 65 bushels per acre of soybeans," he says. "It used to take 40 acres of corn to fill our silo and now we only have to cut 10 acres of corn to fill the silo. We were getting 10 tons per acre of silage and now it's 22 tons an acre. The yield we used to get just doesn't begin to compare with what we get now."

"The return on my investment on this farm is easily a 35 percent to 45 percent increase and we get three or four times more production," Moses says. "It's the best way to go. The proof is always in the pudding."



A corn plant emerges through a terminated cover crop on the North Carolina A&T State University farm near Greensboro.

Reducing inputs

"As yields have gone up, we've reduced our inputs, too," Moses says. "When I first started with cover crops, I didn't think I'd be changing my inputs. But in time, we noticed nitrogen requirements were going down year after year.

"We've been able to cut commercial nitrogen use by 100 pounds an acre for corn by using cover crops," he says. "I'm very happy about that. The nitrogen requirement for corn on our soils is 200 to 220 pounds per acre; we use only 100 to 120 pounds of commercial nitrogen and still produce a good crop of corn."

The cover crops have added benefits, too. "We had what you could call a Johnsongrass farm in 2004, there was so much of it," he says. "Using no-till, cover crops, and some chemical weed killer, we've almost eradicated it here. I smile about that."

Other things he can now smile about, he says, are improving water quality, getting better insect control, reducing soil compaction, and building soil.

Farming with nature

"In the beginning, farming with nature or improving soil health wasn't the idea," Moses says. "But you realize after you're into it that you are doing exactly that. Before, we were only using the soil as a medium – putting a bunch of fertilizer onto the soil to get a crop. But these cover crops bring the soil alive, more in a natural order.

"Maybe the most surprising thing to me is the ability of the soil to hold moisture when you have a dry year. In a drought, you see conventional crop systems in trouble," he says. "But I see my crops enduring and bouncing back when the rain comes."

The "Aha!" moment for Moses came a few years ago, he says, when he grew crops that were 8 feet tall instead of 4 feet tall, with no soil erosion. "

That's when I knew we'd stick with this. Tall, green crops—this is the way I want to farm," Moses says. "Now we're farming with Mother Nature, and we're having more fun, too."

Focus on soil health

"As I've watched this farm evolve, I've come to realize my soil's health is a lot like my personal health. If I neglect the soil, I can't expect it to be productive, just as when we neglect our bodies, we can't expect them to perform," Moses says.

"Cover crops are your ticket to improving soil health," Moses says. "We like to keep the land covered all year round. You can't leave your soils bare over the winter."

His favorite cover crops are rye, clover, and vetch. He plants them with a no-till drill, and uses a crimper roller to weaken the mature cover crop and then finishes with chemical weed killers. "We've added a sprayer to our drill so we can drill and spray at the same time," Moses says. "We spray a second burndown as we plant at times. That's the only equipment modification we've made."

Moses says no-till and cover crops build a strong soil structure with super infiltration. "It's a little thing, but what I really love about farming this way is the ability I have now to get out on my land. After a heavy rain, six hours later, water is in the ground, not puddled on top or run into the ditch. We can get a two-inch rain and within a day or so I can get back on that land."

Examine what you're doing

"I think conventional farmers should examine what they're doing," Moses says. "I'd like them to sit down with me; I'd show them what our numbers used to look like compared to what they look like now, yields and inputs. There's just no comparison."

"To get more farmers on board, we need to help them learn what real soil health is," he adds. "If you ask conventional farmers if their soil is healthy, they

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- Leon Moses, farmer

will probably tell you it is. But truth be told, it's just being used as a medium. When I started to realize soil is a living thing and not just a medium for growing crops, that's when I changed my principles and practices, and I saw everything change."

The most satisfying thing for Moses, besides being profitable, is when he runs into people who tell him they notice how much better the farm is looking. And they ask him how he did it.

"You look at what you used to do, and what you do now, and there's no comparison," he says. "You're proud of what you're doing. We're saving on equipment, we're saving time, we're making our soil and our plants healthy, and we get a healthy check. I can't imagine ever going back."

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