

***33 Ways to Build & Maintain
a Superior Strip-Till System***

By Jack Zemlicka

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Whether fall or spring, deep banded or shallow application, seeking a yield increase or crop consistency, get expert, experienced-based advice on how to customize your strip-till system to suit your operational objectives.

1. It takes time to build soil structure if coming from conventional-tillage practices. Plan on at least a 4-year window to see marked improvement in soil health.
2. Working with fertilizer providers or a local agronomist is a good way to determine proper depth for fertilizer. It seem that most strip-tillers are trying to place their anhydrous, P and K depths of about 6-7 inches depending on soil types. Depending on fertilizer, the depth will change because liquid will typically be placed shallower. Strip freshener type machines can typically place fertilizer in the 2-4-inch range.
3. Using equipment that delivers the precise amount of fertilizer it's set to is essential for an ideal strip-till fertility program. Equal metering, row-by-row, is important so farmers should make sure that their equipment is set up correctly. The more you reduce your rates the more you have to focus on getting consistent application.
4. Consider using a starter or pop-up fertilizer on your planter — such as 5 gallons per acre of 10-34-0 — applied in the strip to get plants off to a good start in spring.
5. Deweese, Neb., strip-tiller Brian Herbek says micronutrients have been one of his limiting factors according to tissues tests and soil samples. Working with his agronomist, he assembled a micronutrient “concoction” of mostly boron, molybdenum, manganese, copper and zinc to dribble out of his newly custom-fabricated and installed liquid tanks of the strip-till rig. “The number one thing we were deficient on was boron,” he says. “It’s a huge element, we’ve got to watch what we’re doing with it. Agronomists say that most farmers throughout the country are deficient in it, especially on fields with higher corn yields. When you’re getting to that 250-300 bushel mark, you need to focus on it.”



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6. Don't cut nitrogen application rates, especially when banding during the first few years of strip-till. If you see an early reduction in nitrogen use, it's likely because you were over-applying
7. If you have high pH levels in your soil, consider putting down almost 50% of your phosphorous (P) and potassium (K) banded in the strip. Banding it will protect and preserve the nutrients as opposed to broadcast application.
8. For soils with high clay content, using a coulter system on row units for spring strip-till, instead of shanks, can help avoid smearing if it happens to be wet in the field. This will help them warm up and dry out faster ahead of planting
9. Strip-till and planter consultant Kevin Kimberley urges strip-tillers to use mole knives that have a narrow width. He cuts most mole knives down with a plasma cutter to 0.75 to 1 inch wide. "Soil structure is crucial to even emergence and uniform stands of corn," he says. "It's worse to have soil that's too loose than soil that's too tight. Plants won't do well in extremely loose soil, but you can see that corn plants will emerge and grow well between the dual tracks from the tractor."
10. Remember that residue is the lifeline of your soil. Strip-till leaves the majority of residue on the soil surface, which can improve your soil structure. Some say 75% residue should remain.
11. Make sure your strip is as wide as the planter row unit ensuring you are planting 100% in the strip
12. Check, double-check and triple-check measurements for planter clutch settings and drive settings. "My top tip is once your planter profile is set up, grab a flash drive and back it up because you never know if your display is going to crash when you are in the field," says West Brooklyn, Ill., strip-tiller Dave Delhotal. "Also, make sure all your hybrids, clients' field, etc., are loaded on your display before you even start. It's easier to load your hybrids, for example, in advance rather than trying to do it in the season then all of a



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sudden you've got different, funky names for your hybrids because you're in a hurry and uploaded them incorrectly.”

13. In spring, pre-plan your fertility program based on soil samples or mapping programs to ensure desired rates and formulas for optimal yield potential.
14. Don't get your N levels too high and don't get your salty fertilizer levels too high in the zone in spring. If you do have to apply saltier fertilizers, make sure you put it down at least 5 inches, and get it out of the seed zone.
15. Consider using reverse osmosis water. Stockton, Iowa, strip-tiller Keith Schlapkohl puts his water through a two-step process to help stretch his inputs. First he runs it through a Reverse Osmosis system, which removes minerals to make it 99% pure. Then he structures or energizes the water.
16. When using a shank in the spring, make sure to use a less aggressive knife or point than you would in the fall. You still want some of that explosion, but not so much that the basket can't come up afterward to take some of the air pockets out.
17. If you're strip-tilling in the spring instead of the fall, you'll have some residue breakdown because you're not going right after the combine. Consider setting your residue manager a little less aggressively than you might normally. This will prevent that residue manager from digging too much, and if you have a heavy rain you won't end up with divots.
18. It's essential to keep your combine's corn header in good condition. “To get the consistency of that residue into lengths that will degrade faster and give us the opportunity to work it into that nice little mound that's 9 inches wide and 5 inches tall,” says Tony Anderson, from Washington Court House, Ohio. “That allows it to mellow down over the spring, and helps that mound better absorb those harsh spring rains.”
19. Consider strip-tilling at 6 mph or more to help get a better fracturing of the soil in the subregions of the upper strip.
20. Strip-till and planter consultant Kevin Kimberley urges strip-tillers who have mole knives on their strip-till rigs to use 3 coulters for each row to manage the soil tilled by the knife. “Place one coulters in front of the mole knife to size the dirt,” he says. “This helps the knife from blowing out big chunks of soil. Set the coulters so it runs 1 inch deeper than the mole knife and place the other 2 coulters ahead of the knife, Kimberley says. “The two coulters ahead of the knife need to be off center by 3 to 5 inches, depending on soil conditions. Stagger these coulters instead of running them side by side with the mole knife. This setup keeps the dirt from plugging up between the coulters when the soil is wet.”
21. Many agree that it's still best to split fertilizer applications across several stages of the growth cycle. If

farmers apply N with their strip-till bar and planter already, there is an opportunity to split it up even further. If you run a 2-by-2 application through a frame mounted fertilizer opener it doesn't mean you shouldn't also be running an in-furrow product also. Farmers seeming to have the most success with a fertilizer opener also have an in-furrow solution. It helps get the seed growing immediately and feeding it until it can grow out to that denser band.

22. There are differing takes on the value of fall-applied anhydrous, but there's little argument about it being the most affordable source of

N. If applied correctly, it can help minimize nutrient losses during winter because of the chemical composition of the fertilizer. For fall strip-tillers who are dual-applying dry fertilizer for P and K and anhydrous for N, anhydrous should be placed 6-8 inches deep, most likely with a shank or a mole knife that has an 1½-inch foot on it. Because when you stir those soil molecules up, you're freeing additional water molecules up for that anhydrous ammonia to attach to, which is exactly what it seeks out to find."



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23. Soil testing and sampling can produce variable and even inconclusive results. But they're still a good tool to assess nutrient needs. "We look at recent soil sample results to determine if we need to address a nutrient deficiency," says Le Roy, N.Y., strip-tiller Donn Branton. "Why spend the money if it is not justified?" he says. In the past, Branton has pulled soil samples using 1-acre grids, by soil types and, more recently, by management zones based on soil types and topography.

24. To minimize N loss, fall fertilizer applications are best made in soils colder than 50 F. Using an N stabilizer can minimize leaching. Once that soil temperature is at 50 degrees or below, it really slows down the microbes that would take ammonia and convert it to the nitrate form, which is the form farmers worry about leaching. Whereas anhydrous ammonia (NH₃) is what is injected in to the ground, it is quickly

converted into ammonium (NH₄⁺) once it comes into contact with water molecules in the soil.

25. It's important to know your cap on the cation exchange capacity of soils. When loading soils up with N in the fall beyond their capacity to hold nutrients, strip-tillers could just setting themselves up for fall leaching process. That's where a split-application or ESN product is valuable, so farmers can boost their N utilization level. It's not a matter of putting on more dollars of N, but putting on smarter N.

26. There are two things farmers can do to make their program "bulletproof" against volatilization. One is injection of fertilizer. And the other is a ½ inch of rain within 24 hours.

27. To maximize N-use efficiency, apply a base N in the fall — maybe 30-50% of your total complement for the year of the N product. Then coming back with some starter on the planter, and then doing a sidedress injection operation around V6 stage if you really have a good crop. Then if you feel like it's going to increase your N use efficiency, come back in that V10 to V12 stage with some sort of application, with a sprayer and a coulters or another type of application that would top that off to top out your yield.



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28. One way to increase N efficiency is to just apply less of it while getting roughly the same results. In some of his most productive fields, Dewese, Neb., strip-tiller Brian Herbek says his N use ratio is down to about 0.7

pounds of N to the bushel. While adopting soil health-conscious policies across the farm may have set the stage for this success, Herbek says dialing back application rates is worth a try. "People are always saying it, but it's probably true that most of us farmers are overapplying N," he says. "It's important, but it's not as important as we think it is. What we did in 2019 was take some of our N budget and spent that on our micronutrients."

29. Strip-till and planter consultant Kevin Kimberley recommends spring strip-tillers use just one coulters — the narrow ripple coulters — along with the narrow knife. Set the knife to run about 4 inches deep and the coulters about 5 inches deep.

30. Stockton, Iowa, strip-tiller Keith Schlapkohl believes that pesticides and herbicides don't stop after just killing off the "bad stuff." Beneficial biology, bugs and plant life are killed, too. "Four ounces of insecticide is all I use for rootworm beetle control, which is way below labeled rates," Schlapkohl says. "For herbicides, my complete corn program for weed control is two quarts of Lexar and half a pound of Atrazine. By doing something different with water, I'm able to reduce my herbicide, insecticide rates."
31. Disc openers on a planter get overlooked a lot more than they should. Farmers tend to run a planter 4-5 years and never even put openers on the row units. "We try to replace them at least every other year," says West Brooklyn, Ill., strip-tiller Dave Delhotal. "New openers are 15 inches and we like to replace them around 14½-inches. Unfortunately, they might not get to 14½ inches until the middle of the season. So just automatically replace them every other year."
32. Persia, Iowa, strip-tiller Bill Darrington recommends adding sugar into a fertility mix. Every time he goes across the field, no matter the reason, he applies 1 pound of sugar per acre. For \$0.75 an acre, it's a bargain for the increased nutrient uptake and energy source it provides for microorganisms. To further emphasize the point, in a pinch, he bought out the local grocery store's supply of RC Cola and added that to his mix. "I think it worked great," he says. "Think about what's in soda — carbon dioxide, sugars, phosphoric acid and caffeine."
33. Agronomist Mike Petersen recommends applying 30-50% of the needed fertilizer with the strip-till during his general session on smart fertility programs. He says product type and placement can have a heavy impact if it's not well thought out. "Many times, you'll have to do a fall application, because we know how our soil conditions can be in the central and eastern part of the Corn Belt," he says. "Be smart about it. If you are going to use dry fertilizer, use products like ESN — a coated product that is going to last. When you are looking at liquid products, don't place it too deep, because then you are going to lose it."

STRIP-TILL

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