

THE LEADING EDGE

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Fall Management Techniques Prepare Fields for Spring Planting

Strip-tillage and anhydrous application make good fall partners



Strip tillage allows all soil preparation and fertilizer application to be completed in one pass in the fall.

Spring is always crunch time for producers. As equipment advances to meet the changing needs of farmers, it has become possible to complete two critical seedbed preparation steps in the fall: Pre-plant tillage and fertilizer application. Completing as much fieldwork as possible in the fall so a cushion exists for spring planting is a smart management decision.

The fall strip-till advantage

Fall strip-tillage is referred to as a relatively new tillage practice, and its advantages are abundant. The tillage method offers the conservation of no-till with some of the soil preparation benefits of more aggressive tillage.

While yields may not immediately jump with a switch to strip-till from

conventional tillage, the savings that result from reduced labor, fuel, machinery, and custom-spreading charges are all benefits, according to Dave Nelson, a strip-tiller and co-owner of Brokaw Supply Company in Fort Dodge, Iowa.

"After two years of strip-tillage, we can already see the next benefits to come with the strip-tillage system. Better water infiltration allows the crop more available water. Minimal compaction issues give us healthier soil for plant life. The soil structure is changing, giving us more earthworms, better soil aggregation and creating 'gopher mound' type of soils," said Dave.

Studies show that strip-tillage improved soil temperature in the top 2 inches by more than 2° F over no-till in central Iowa. This improvement can be limited by excessive wet weather or in poorly drained fields.

More specifically, fall strip-till benefits are many:

- Post-harvest soils are generally drier than spring soils, which means compaction from machinery is limited as the tillage is performed.
- In many operations, the fieldwork demand after harvest is lighter than in the spring.
- In a Minnesota study, strip-till maintained almost half a field's soybean residue, which is more fragile than corn residue. No-till saved an average residue cover of 60 percent; strip-till saved 47 percent, on average. (The standard for conservation tillage is 30 percent residue cover, according to the Natural Resources Conservation Service.)
- Strip-tilling in the fall to create the eventual seedbed gives this zone time to dry and mellow over the winter months. Planting into this even seedbed improves seed-to-soil contact.
- Compared to no-till, tilled strips warm and dry more quickly in the spring, making earlier planting—and potential yield improvements—possible.
- Nutrients can be placed precisely where spring seedlings' roots will encounter them at critical growth stages. Improved germination and more even emergence also occur.

Double up: apply fall anhydrous while strip-tilling

Strip-tillage also presents excellent opportunities for precision fertilizer placement: Fertilizer placed directly in the tilled strip is waiting to contact emerging roots, creating a growth explosion. As more roots develop, the precision-placed nutrients continue to nurture the plant. And, completing some nutrient application in the fall helps simplify spring field operations.



Fall strip till provides more time in the spring to focus on planting.

For some producers, the ability to better manage nitrogen application during spring strip-tillage outweighs the benefits of fall strip-tillage and fertilizer application. Carefully consider what is best for your unique operation.

For fall nitrogen application, anhydrous is a popular choice because nitrification is delayed when it is applied in soils below 50 degrees and at depths of 4 to 6 inches. Anhydrous is also still the most economical choice for supplying crops with nitrogen. However, experts typically warn that application of fall anhydrous in sandy or poorly drained soils could result in significant nutrient loss by spring planting.

Darren and Brian Hefty are recognized by many producers from their Ag PhD TV program, but they also strip-till with the help of real-time kinetic GPS guidance.

"A few years ago, when fertilizer prices started getting crazy, we went to strip-till for the nutrient placement," said Darren, in a Case IH news release. "We were putting our nutrients down about 6 to 10 inches deep, and planting right over the top.

“One of the best things we’ve done with it is to put nutrients on in the fall and come right back to that same spot in the spring and plant directly over it. We’ve had better yields and we’ve also been able to get by with less fertilizer.” 1

It is also suggested that producers include secondary nutrients in their fall nutrient mix—a practice that typically is a manageable investment.

The right equipment for fall strip-tillage

When completed in the fall, strip-till setups often aim to create residue-free, tilled strips about 6 inches wide and 4 to 8 inches deep. In addition to a strip-till toolbar, other equipment considerations exist to accomplish this goal.

Successful strip-tilling starts with the combine. A spreader for adequate residue distribution and a chopper to handle tough residue are integral in preparing the ideal seedbed. Residue that has been sized and properly distributed reduces the chance that a strip-till machine will plug.

Without auto-steering and satellite guidance technology, consistently placing tilled strips and then planting into the same strip can be challenging. Consider hiring someone with the right equipment to strip-till, or invest in the technology yourself.

It’s also important to ensure your equipment has adequate horsepower. While strip-till typically requires less horsepower than most conventional, aggressive tillage operations, it does have some heftier requirements than no-till. Additional horsepower will be needed if producers plan to apply anhydrous, phosphorus, and potassium during strip-tillage. Between 20 and 30 horsepower per knife is a typical guideline.

If producers are planning to strip-till and plant using markers for guidance, it is critical that the row-width and number on the strip-till toolbar matches that of the planter.

Actual strip-till toolbar setups vary and are customizable for the soil conditions and unique needs of each producer. According to the University of Illinois Extension, a fall strip-till toolbar for Illinois farmers is likely to include:

- Large, smooth, sharp **coulters** mounted about 1 foot ahead of the knife.
- A tillage shank, often a **mole knife**. The shape of this tool leaves a "mole hole" at the bottom of the furrow that makes it less likely for anhydrous to escape.
- **Covering disks** to catch the soil thrown by the mole knife and form it into a mound.

Residue management creates a clean seedbed for planting. While optional, **residue managers** are often a critical addition to a strip tillage setup, and are especially beneficial in heavy wheat and corn residue. They can also make strip-tilling continuous corn a possibility.

Manufacturers are making residue managers specially designed for compatibility with a number of strip-till toolbar sizes. One example is the 2967-039, frame-mounted residue manager from Yetter Farm Equipment. "The adjustable mounting bracket of the 2967-039 enables it to be mounted to 4-inch-square, 7-inch-square, 5-by-7-inch, 4-by-6-inch, and many other toolbar models," said Andy Thompson, a Yetter AOR manager.

Thompson went on to say that the floating design of this residue manager allows the wheels to hug the soil surface and effectively move the right amount of residue. It also has depth-control adjustment options to increase producers' control.

Multipurpose attachments specially made for strip-till are also becoming widely available. These attachments often combine tillage, fertilizer application, closing, and residue management tools on one convenient attachment, giving producers the option to adapt unused toolbars to create customized strip-till machines.



Residue management, soil preparation, and fertilizer application all in one unit. Strip-till units can be retrofitted onto existing toolbars or added to new toolbars.

Look for versatile strip-till tools with benefits such as:

- High-clearance to avoid plugging in taller residue like cornstalks.
- Parallel linkage to maintain consistent depth in changing ground conditions.
- Spring-loaded sealers with infinite adjustment possibilities.
- Residue attachment options of varying aggressiveness.
- Placement tools that can apply liquid or dry fertilizer, or anhydrous.

Finding the window

Today's equipment makes simultaneously completing fall strip-tillage and anhydrous application possible, but all the right equipment makes no difference if the timing is wrong. Realistically, the window of time during which soil has both the right temperature to limit nitrification (below 50 degrees) and the right consistency (before winter dampness has settled in) is narrow.

Producers should know their fields, consider the likely weather patterns, and weigh the advantages and disadvantages of performing both operations at

the same time to determine whether this time-saver will result in a return on investment after next year's harvest.

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