THE LEADING EDGE

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No-till and Strip-till: Looking Better Than Ever

Farming is often a livelihood for generation after generation of a family. Practices are passed down and refined over the years, and the appeal of sticking with methods that are familiar and that bring attractive yields is obvious.

Tilled strips warm more quickly in the spring

But agriculture is also an evolving science—new techniques and theories are tested and evaluated, and ways to improve upon what were once commonly accepted practices are being introduced.

No-till and strip-till methods are two such practices. Although they have been around for some time, only relatively recently has research become conclusive on their long-term feasibility. The benefits of both practices outweigh the drawbacks in many circumstances.

A farmer in central Illinois planting 300 acres of corn will save 44% in fuel costs in switching from conventional tillage to no-till.

Visit the web site ecat.sc.egov.usda.gov to make your own comparison.

At the forefront of the revived interest in alternatives to conventional tillage is the pressure brought by increasing fuel prices. That no-till and strip-till systems require fewer passes through the field and therefore save fuel money is no secret. But recent spikes in prices have more conventional tillage farmers revisiting the option of reduced tillage systems.

The lag-time associated with making the necessary process and equipment adjustments is beginning to pale in comparison to the economic hardships that accompany four or five passes worth of diesel fuel.

Residue on the surface also serves another purpose—carbon

sequestering. According to a study by the University of Illinois, converting to no-till is one of the most cost-effective ways to reduce the build-up of carbon dioxide in the atmosphere because residue holds carbon in the soil. As the global warming phenomenon gains media attention, this fact is also positive, although the results are not readily apparent.

Conservation tillage is also favorable because of other, more practical, environmental benefits. It's widely known that residue on the soil surface prevents erosion, conserves moisture, improves tilth, and reduces crusting tendencies.

In the end, however, the decision on whether or not to switch to no- or strip-tillage is often about the numbers. Research shows that no-till systems, when managed properly, offer better economic returns than conventional tillage.

Corn-soybean rotation greatly improves corn yields in no-till.

While yield lagged in some cases, reduced investment of time, equipment, and fuel compensated for this difference. Whether in the first year of no-till planting or the fifteenth, returns remain consistent—an area that once raised concerns.

Experts agree that when possible, strips should be prepared in the fall. However, producers need to consider labor required for harvest versus labor required for tillage to make sure it is feasible for their operation.

Strip-till practices are slightly newer than both no-till and conventional tillage systems, but the concept of strip-tillage is clearly advantageous. It generally offers about 70 percent of the residue coverage associated with no-till but also the prepared seedbed of conventional tillage. The tilled strips warm more quickly in the spring, allowing farmers to get into strip-tilled fields earlier than those with full ground cover.

To date, research shows that strip-till generally produces yields slightly higher than no-till and intermediate to conventional tillage.

For crops being planted into high-residue fields, strip-till has more proven advantages. Corn planted into 6-inch tilled strips following high-residue crops like corn, grains, or hay showed yield increases of almost 10 percent.

Equipment designed to meet the challenges that come with strip- and no-till systems is now readily available, and is making these tillage systems

It is recommended that striptillage be practiced on relatively flat land with poorly drained soils, where soil temperatures tend to be cold. No-till is a good choice for fields that are hilly or have steep slopes. Fields where weeds

feasible in more conditions than ever before. Costs associated with both tillage systems' equipment are reasonable.

can easily be controlled with herbicides and that have good drainage are also good no-till candidates.

A successful no-till operation is the result of a planter suited to the task. Even no-till planters require careful adjustment to ensure success in varying field conditions—observing these differences and compensating for them is essential. In heavy or wet residue conditions, a two-coulter, offset coulter, or v shaped two-disc setup may be necessary.

No-till and strip-till systems require fewer passes through the field

The development drills for crops other than corn has increased the appeal of no-till for some farmers. Many drills feature one disk blade to cut soil and a frogger to widen the slot. A closing wheel pushes the soil over the seed after it is dropped into the slot.

Strip-till operations require the purchase or fabrication of a toolbar with a variety of attachments, many of which may already be part of a conventional tillage operation and need only slight modifications.

Residue management and coulter tillage are important steps in effective strip tillage. Clearing residue creates a clean seedbed for planting, and proper tillage methods ensure an ideal seedbed for next year. Aggressive and durable residue managers specially engineered to tackle tough residue are now widely available.

Residue managers clear residue ahead of berm builders.

Typical strip till tools also include anhydrous ammonia application knives or other fertilizer injection systems. When choosing knives, it is important to consider soil disturbance, depth, type of fertilizer, and ground speed. Precision fertilizer placement tools place fertilizer in a zone where roots will intercept it and reap the benefits throughout the growing season.

In strip-tillage, planting into the strips prepared the previous fall

was tricky but important to the success of the crop. Advances in automatic tractor steering technology controlled by global positioning have made it easier for farmers to plant into strip-till rows. While not an inexpensive option, it is an example of how technology continues to evolve in support of conservation tillage practices.

In both strip and no-tillage systems, closing the seed trench well is imperative. Good seed to-to-soil contact will greatly contribute to uniform germination, strong stands, and better yields. There are a wide variety of sealing and closing options available to suit the needs of every operation.

Conventional tillage typically requires fives passes through the same field. No-till requires only two to three passes, typically an application of nitrogen, planting, and possibly a follow-up trip to broadcast fertilizer. Strip-till requires only two passes, the first in the fall prepare the strips and the second in the spring to fertilize and plant.

Once the correct equipment is acquired, producers realize savings year after year. As the cost of labor increases, three less trips through a field becomes more appealing.

No-till and strip-till are practices that can have obvious benefits when undertaken in the right set of circumstances. Developing the right processes for each individual operation takes time, but with patience and dedication to appropriate management techniques, economic and environmental gains will result.

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