Need photo: Beauty shot. 15” soybeans about 6” high with cornstalks readily visible. Ideally with buffer in background.

Why use a Conservation Tillage System?

Profit.

- Yields are as good, if not better than reduced or intensive tillage systems when producers pay attention to management details
- Optimizes soil moisture. Each tillage trip reduces moisture by about 1/2”. Improved infiltration and increased organic matter is especially important on droughty soils or to get through a persistent dry period. Some call this “weather-proofing.”
-Saves time. On a 1000 acre farm an additional 100 hours are needed for making one pass with an 18’ disk (160 MFWD). Many producers take advantage of the time savings by exploring other ‘opportunities.’
-Reduces fuel consumption. In fact, fuel use can be reduced by 3.5 gallons/acre by using no-till instead of intensive tillage. This saves 3,500 gallons on a 1,000 acres or $3,000 (.85/gal)/year.
-Reduced machinery wear. Less machinery means fewer pieces need to be replaced. Economists report $5/acre is saved reductions in machinery wear and costs.

Environment.

- Reduced soil erosion. This is an obvious benefit of conservation tillage. In fact, a 90% erosion reduction can be expected compared to intensive tillage.
-Increase organic matter. Each tillage trip oxidizes some organic matter. This releases of carbon dioxide. Research shows continuous no-till can increase organic matter in the top 2 inches of soil about 0.1% each year.
-Improve water quality. Particularly when combined with crop nutrient management, weed and pest management, and conservation buffers, conservation tillage plays an important role in improving both runoff to creeks and lakes as well as water that finds its way into aquifers.
-Wildlife is helped with conservation tillage. The crop’s residue provide some shelter and food. And, if combined with other needed habitat (grassy cover and woody areas), numbers may increase significantly.

Conservation Tillage: One of the Core 4.

As each crop year passes, we improve our understanding of how to manage for better soil, cleaner water, greater profits and a brighter future. We call this management approach the Core 4. The four fundamental components of this approach are: Conservation Tillage; Crop Nutrient Management; Weed and Pest Management(IPM); and Conservation Buffers. If you’d like to learn more about the Core 4 approach, call your local agronomic and/or natural resource professional:

- Agricultural Retailer
- Certified Crop Adviser
- Conservation District
- Extension Agent
- Independent Crop Consultant
- Natural Resources Conservation Service

Color Stacke
Adobe Illust
10/30/98

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The Conservation Technology Information Center is a non-profit public-private partnership dedicated to advancing economic and environmentally beneficial agricultural management systems.

What’s Conservation Tillage?

Conservation Tillage include no-till, strip-till, ridge-till and mulch-till systems. It saves time, reduces fuel costs, improves soil and water quality, encourages wildlife and, ultimately, increases profit.

Need photo: Beauty shot. Show both no-till soybeans and mulch-till corn. Buffer along field edge and/or stream and/or grass waterway. Crop should be 4-9” high. Ideal would include producer inspecting field for something (i.e. stand, weeds.)

Conservation Tillage

Need photo: No-Till cotton about 12” high in heavy residue.

Need photo: Strip-till corn putting ammonia on field

Need photo: Air seeder planting wheat in Great Plains

Need photo: TBD...Any ideas? No-till drill or 10” planter??

What is Conservation Tillage?

In short, it can be no-till, strip-till, ridge-till or mulch-till. It’s any system that leaves about a third of the soil coverd after planting.

No-till/strip-till: No-till means leaving the residue from last year's crop undisturbed until after planting. Strip-till, while very similar, strip-till means you have disturbed up to a third of the row width (i.e. less than 10” of a 30” row). There are several ways this is done. Some use a coulter, residue manager or similar system while others use specialized shanks, usually for injection of nutients, before or during planting.

Ridge-till: 4-6” high ridges are formed at cultivation. Planters use specialized attachments to scrap-off the top two inches of the ridge. Crop protection products are commonly banded.

Mulch-till: This is a full-width tillage system, usually with one or two tillage passes. Yet, around a third of the surface remains coverd with residue from last season’s crop after planting. Equipment such as chisel plows, disks, field cultivators or a combination of these are used.

Reduced-till and intensive-till: These full-width tillage systems are *NOT* conservation tillage systems. Cover left on the field after planting is less than the systems descibed above.

Management Fundamentals.

Managing a conservation tillage system becomes part of your overall farm management strategy. It includes planning crop rotation; analyzing soil conditions; keeping tabs on soil temperature and moisture; adjusting nutrient and weed management approaches and selecting equipment, usually attachments, to match your system.

Crop Rotation

The previous crop will, in many ways, dictate the amount of tillage (if any) that can be done and still leave around a third of the soil surface covered with crop residue.

Corn, wheat and sorghum produce high levels of residue after harvest. Thus, you can either plant directly into these residues (no-till/strip-till) or use one or two tillage passes (mulch-till) and still leave around a third of the soil covered.

Soybean and cotton production results in much less of the crop’s residue remaining after harvest. Thus just one tillage pass may not leave enough cover after planting.

Soil Condition

While compaction, drainage and low fertility levels are important to correct in any tillage system, they are especially important to correct *prior* to adoption of a conservation tillage system. Improved soil structure and organic matter reduce the necessity to repeat these corrective measures.

Equipment Selection and Adjustment

To assure good seed-to-soil contact, equipment must be selected and adjusted to match your system, soils, yields and size. For instance, your combine needs have a spreader so the crop’s residue is evenly spread across the full width. If you equipment is extremely old, you’ll need to strengthen it to handle high residue and more strenuous field conditions. In some regions residue managers, coulters and other planter attachments may be needed. Special equipment--like strip-till equipment--may be needed for sensitive crops (corn and cotton) in climates where moisture keeps the soil cool and moist at planting time. Row width will also need to be analyzed.

Weed Control

Weed control strategies may need to be modified. While weed pressure often seems to increase the first few years, over time weed pressure decreases. Of course, a different array of weeds prefer the the conservation tillage system to the intensive and reduce tillage systems.

Nutrient management

Your approach to nutrient management will also change to optimize production in a conservation tillage system. For instance, crops that require nitrogen to be added to the soil, usually do best if your nutrient management program includes a starter fertilizer applied with the planter.

Bottom Line

If you manage these factors–crop rotation, soil condition, equipment selection and adjustment, nutrients and weed control–conservation tillage will help improve your bottom line. It’s also a critical step in maintaining–and even improving–soil productivity.

Best of all, it helps keep your topsoil, nutrients (particularly phosphorous) and crop production products on your fields and out of creeks, lakes, and streams. In fact, scientific evidence indicates approximately 80% of environmental issues that result from cropland can be corrected by integrating these systems into your farm management approach.