

# Farmers Advised to Make Tillage System Fit Their Farm

A few years ago, a farmer had little choice in the type of tillage tool he used. Everyone used some combination of plow, disk and harrow.

Today's farmer faces a different problem. Farm equipment dealers have a growing line of tillage tools and accessories. Choosing the right piece of equipment often requires a difficult decision.

But understanding the various tillage tools available and how they fit into different tillage systems will enable a farmer to choose the right system for his crop program, according to Thomas H. Williams, extension agricultural engineer at the University of Delaware.

### Conventional Tillage

Most Delaware farmers still use conventional tillage practices of plowing their fields in the spring followed by one or more diskings one or more harrowings and planting.

Williams says conventional tillage provides smooth, residue-free, pulverized soil that assures uniform planting. It also allows ample time for the farmer to apply fertilizers, herbicides and other chemicals before planting.

But conventional tillage systems have some drawbacks, too. Since there are many separate operations, each requiring a different piece of equipment, costs are high.

On fine soils, especially those low in organic matter, surface crusting can prevent seed emergence. And because the soil is well pulverized, serious erosion problems can occur.

To reduce tillage costs, farmers can use a combined tillage system, explains Williams. This practice combines seedbed preparation with planting by mounting the planter behind a secondary tool such as disk field cultivator, rotary hoe, spring-toothed cultivator, spike-toothed harrow, sweeps or rotary knives.

Besides reducing the number of trips across the field, combined tillage provides better erosion control than conventional tillage. It also produces as good a seedbed on medium textured and lighter soils.

### Chisel Planting

Chisel planting has become popular with farmers who prefer minimum tillage systems. Chisel planting usually requires two operations — deep chiseling with chisel points in the fall, shallow chiseling with sweeps in the spring with unit planters mounted behind the tillage tool bar.

Williams says chisel planting helps conserve soil moisture at planting and partially incorporates surface-applied fertilizers.

But this system is not recommended for flat land requiring surface drainage, and crop residues must be well chopped and dry to prevent clogging the chisel teeth. A farmer must also rely on chemical weed control, especially on grasses.

### Rotary Tillage

Rotary tillage is another no-plow system. Performed in full width or in strips, rotary tillage uses a once-over tool consisting of rotating spring knives for the primary tillage, secondary tillage and planting in one operation.

For best results, rotary tillage should be confined to the top three or four inches of the soil.

### Slot Tillage

"Zero" or slot tillage uses fluted coulters as the only tillage tool in front of the planter. The coulters cut through crop residues, tilling a two or three inch strip for each row. Some growers use a disk ahead of the planter to incorporate crop residues and chemicals.

### Disk Tillage

Some farmers use a tandem disk rather than rotary knives for primary tillage, adds Williams. Known as disk tillage, this practice is well suited to soybean ground being prepared for corn — particularly in areas where soil movement by wind or water is a problem.

Continued use of this system, however, may cause compaction of the soil.

Any tillage system should be considered an important part of the total crop production system, says Williams. It must be compatible with other production factors such as fertilizer and pesticide applications, row spacing and harvesting.

Thus, proper management of

all inputs — time, machinery, capital and labor — and the ability to fit the system to prevailing soil and weather conditions are the means of success with any tillage system.

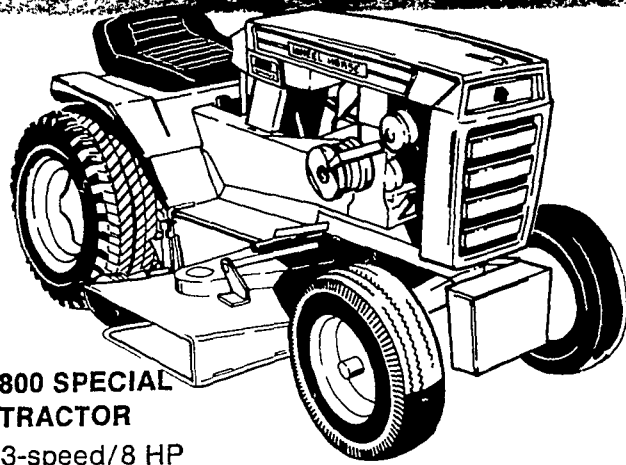
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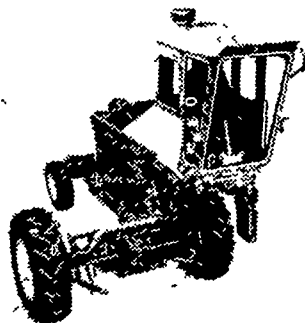
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