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Planning tillage for 2001

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Abstract
It's not too early to plan your tillage strategy for 2001. In fact, now is an ideal time to make the decision to switch from conventional tillage to a conservation tillage system, especially if there has been no soil disturbance (tillage) since harvest. Because tillage operations open the soil surface to receive or lose moisture, you should decide now what you intend to do—before limiting your options by performing a primary tillage operation.

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It's not too early to plan your tillage strategy for 2001. In fact, now is an ideal time to make the decision to switch from conventional tillage to a conservation tillage system, especially if there has been no soil disturbance (tillage) since harvest. Because tillage operations open the soil surface to receive or lose moisture, you should decide now what you intend to do—before limiting your options by performing a primary tillage operation.

Primary tillage increases surface roughness. So if you have already performed primary tillage operations (such as chisel plowing), a secondary tillage operation may be required to level the soil for planting, which dramatically reduces the amount of residue left after planting.

Tillage comparison research shows that the best-yielding tillage systems vary from year to year and that much of the variance depends upon weather patterns and the a producer's management skills. Moreover, given that conventional tillage and conservation tillage systems require differing management skills, the lower input costs associated with conservation tillage may increase profitability for equal (or nearly equal) yield.

Producers use differing justification when making the choice to till or not to till. It may be helpful to look at the personal experiences of producers in different regions of the state, but consider the differences in soil, climate, and management when weighing the experience of others.

Many producers omit or use tillage as soil and weather conditions warrant. For example, over the past 1 1/2 seasons many producers opted to reduce tillage in favor of retaining moisture. Conversely, with the wet springs of 1998 and 1999, some producers who practiced conservation tillage chose light tillage in cold, wet conditions to warm and dry soil. Others avoid tilling for many years to maintain natural soil structure. However, it is critical to carefully consider long-term consequences to the soil before making any decision.

If you have questions about tillage, there are many resources. Call ISU Extension and discuss any concerns with crop and ag engineering field specialists, or talk to agribusiness consultants, Natural Resources Conservation Service staff, other producers who have experience with conservation tillage, and farm equipment dealers.

You also may refer to ISU Extension publication MWPS 45, Conservation Tillage Systems and Management, a 270-page handbook on conservation tillage systems. To get a copy, contact Extension Distribution Center, 119 Printing and Publications Building, Iowa State University, Ames, IA 50011, or call 515-294-5247. The publication costs $15 plus $4.37 shipping.

Conservation Tillage Choices

No-till: A conservation tillage system where no disturbance of the soil occurs prior to planting (with the exception of injection of liquid manure or anhydrous ammonia). All crop residue remains on the soil surface, protecting it from erosion. No-till is often used to satisfy soil conservation requirements on highly erodible land. It is becoming more popular among many Iowa producers because of its advantages and emerging technologies that address its limitations.

Strip-tillage: A conservation tillage practice that requires fall or spring tillage of only one-third of the soil, in strips 6 to 8 inches in width. The strips are opened with modified anhydrous ammonia applicator knives, rototillers, in-row chisels, row cleaners, double-discs, cultivator sweeps, or other angled blades that lift the soil. The tilled zone provides relative positions for seeds, fertilizers, or anhydrous ammonia.

Ridge-tillage: A conservation tillage option for almost any operation. Crop residue from the previous harvest remains on the soil surface after harvest until planting (unless nutrients are injected). The residue and crop stubble protect the soil by limiting exposure to wind and water erosion through fall, winter, and early spring. Crops are planted on ridges that stand 4 to 6 inches above the surface of the surrounding field. The exposed ridges and dark soil warm more quickly than the surrounding soil, which accelerates germination and growth, improves yields, and provides other benefits such as a quickly established crop canopy. Ridges are reestablished during row-crop cultivation.

Weighing Advantages and Disadvantages

As a producer, you must weigh the benefits of conservation tillage systems (no-till, ridge-tillage, and strip-tillage) when thinking about making a switch.

Advantage	Disadvantage
• Reduced input costs • Reduced soil erosion • Comparable or equal yield • Reduced time spent per acre • More beneficial soil structure	• Learning new management strategy • Minor equipment modifications • Cool, wet soils could slow early growth (except ridge tillage)

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