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Think before you till

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Abstract

Making a tillage management decision for 2003 starts now. The first decision is what tillage, if any, needs to be done after harvest. Because crop residue from harvest is still on top of the soil (and spread evenly from the combine), fall is the best time to move to a conservation tillage or no-till system. Whether you should convert to conservation tillage or no-till requires an understanding of conservation tillage and no-till options that are best for your specific field conditions and management requirements.

Keywords

Agronomy, Agricultural and Biosystems Engineering

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences | Bioresource and Agricultural Engineering

INTEGRATED CROP MANAGEMENT

Think before you till

Making a tillage management decision for 2003 starts now. The first decision is what tillage, if any, needs to be done after harvest. Because crop residue from harvest is still on top of the soil (and spread evenly from the combine), fall is the best time to move to a conservation tillage or no-till system. Whether you should convert to conservation tillage or no-till requires an understanding of conservation tillage and no-till options that are best for your specific field conditions and management requirements.

Managing a conservation tillage system

The balance between what is environmentally responsible and economically feasible is a key issue in choosing a conservation tillage system. Producers who farm in rolling terrain have realized that no-till can help reduce soil erosion and production costs while maintaining yields and building soil tilth and overall soil productivity. But what is less well known is that "flatlanders" also can use no-till to do a better job of controlling costs with a minimal reduction in corn yield and no reduction in soybean yield. Flatland producers may have yields holding nearly even using no-till, with enhanced profitability and lower production costs.

The main challenge is how to manage your tillage system and the additional management improvements that make it a successful system. Evaluating no-till or any other tillage system based solely on the tillage will not produce the intended results. Time and management are critical factors for any conservation tillage system to perform well. Other field management practices such as drainage, timing of field operations, and equipment suitability need to be considered. With no-till, you can eliminate the costs of carrying tillage equipment. Some equipment conversion is needed, but converting to no-till only means (for most producers) the addition of heavier down-pressure springs, row cleaners, and possibly a coulter on each planter row unit. The actual cost of converting existing equipment ranges between \$300 and \$400 per planter row, which for many producers, amounts to a nominal additional production cost of approximately \$1 or \$2 per acre per year.

Benefits of tillage

If you decide to use a tillage system, make sure you know its benefits. Determine why a tillage pass is necessary. The most common reasons for tillage are to break up soil compaction, provide for the next crop in the rotation sequence (e.g., limited tillage in heavy corn residue or leveling a field for seeding a cover crop), and redistribute crop residue.

Soil type, slope, and crop rotation greatly affect any



decisions about timing, intensity, and type of tillage, as well as decisions about what is needed to achieve the level of residue required to protect the soil until next year's crop is up and growing. If tillage is routinely required to redistribute residue, go back a step and see whether the combine can be set up to distribute residue more evenly.

Benefits of No-Till

- reduction of soil erosion
- reduced water runoff
- less time in the field
- lower fuel consumption
- improved soil physical and chemical properties
 - better infiltration rate
 - conservation of soil moisture
 - improvement of organic matter and other nutrients

If you decide you must do fall tillage, the next step is to consider the current soil conditions. Is it dry enough to work? Tilling wet soils can contribute to a soil compaction problem that you are trying to improve. Soil slope is also important. Disturbing or turning under residue on soils with 2 percent or more slope leaves the surface vulnerable to wind and water erosion through late fall, winter, and spring until next year's crop establishes canopy.

Plan your work and then work your plan

This fall, instead of just heading to the field after harvest out of habit, make the process around tillage decisions an informed one. No matter what tillage management system you use, establish a goal of at least 30 percent residue cover at planting time next year. This amount of residue cover is important in reducing soil erosion and improving of soil tilth, soil organic matter, and water quality.

Also, be diligent about equipment quality and the work performed. Remember that reported yield reductions in conversion to conservation tillage and no-till are not necessarily caused by the tillage system. Reductions may occur while learning the correct responses to the challenges of a new tillage system and failure to recognize the additional management requirements required for the new system to be optimal.

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