

The Benefits

The benefits of no-till farming on irrigated ground are well documented and include:

- ◆ Increased residue
- ◆ Increased soil organic matter
- ◆ Reduced erosion potential
- ◆ Increased water holding capacity
- ◆ Improved soil tilth
- ◆ Increased earthworm populations
- ◆ Improved soil structure
- ◆ Elevated infiltration rate
- ◆ Reduced field time and machinery wear
- ◆ Reduced fuel requirements
- ◆ Improves water quality

The Downside

Unfortunately, we must take the good with the bad:

- ◆ Cooler, wetter soils in the spring
- ◆ A shift from annual to perennial weeds
- ◆ A need for increased management inputs
- ◆ A potential delay in seeding due to wet soils
- ◆ More residue to deal with, which can cause planting problems
- ◆ The potential for increased weed, disease and insect problems



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Conservation Tillage Practices

The amount of data regarding minimum till and conservation farming systems can be overwhelming. However, there are a consistent points for all conservation tillage efforts.

No-till and conservation farming methods take several years to prove themselves, both with respect to changes in soil conditions and crop responses. Anyone entering a no-till or reduced tillage system should give it at least five years and figure that many changes will be necessary over that time.

Under irrigated conditions, the most significant problem that producers usually end up facing is excessive residue. Residue usually breaks down pretty quickly, but it can become a problem. Managing large amounts of residue is a challenge for new no-till producers, but remember that good residue management is vital for success in no-till systems. Try breaking the residue cycle; lengthen the crop rotation by diversifying, spread straw and residue aggressively during the harvest process, and make sure that your drills will cut and penetrate the residue. The goal here is to be as clean as possible and do as little disturbance as possible.

Other alternatives are periodic tillage, rotations that alternate between high residue and low residue crops, intensive grazing during the non-crop season, and in some cases, baling the residue. Changing from 22" to 30" row spacing can be beneficial in dealing with residue in fields with furrow irrigation.

Rotational considerations and variety selection must consider previous crop, future crop, disease and insect susceptibility. Even sunflowers have been shown to be beneficial in a rotation as they help keep the soil free of compaction layers.

References:

"I Irrigate. Convince Me to No-Till" by Jim Bauder-Montana State University

Extension Soil and Water Quality Specialist

The No-Till Farmer, No-till.com, and South Dakota No-till Association websites.

Getting Started

The following ideas can improve the chances of success when trying a conservation tillage system: seek advice from other growers who are successfully using a reduced tillage system. Communicate with soil scientists or others who might be conducting tillage system research. Attend plot tours or field days demonstrating tillage methods. Join a tillage club or grower association focused on reduced tillage. Attend tillage related conferences or workshops. Seek additional information from the websites listed in this brochure and other web sources.

The Manitoba-North Dakota Zero Tillage Farmer's Association Website

<http://www.mandakzerotill.org/>

The South Dakota No-Till Association

<http://www.sdnottill.com/>

Lethbridge Research Center

<http://res.agr.ca/leth/advsoils.htm>.

The No-Till Farmer

<http://www.lesspub.com/cgi-bin/site.pl?ntf/index>

No-till.com

<http://www.no--till.com/>

Kansas State University No_till Page

<http://www.oznet.ksu.edu/notill/>

Keys to Success

The key to success with no-till operations is good management, which must include:

- ◆ Diversity in crop selection and aggressive rotation
- ◆ Patience and a willingness to work at it for at least five years
- ◆ A willingness to accept and deal with more risk
- ◆ Close attention to variety selection, seeding rates, fertility
- ◆ Management to minimize pest problems.
- ◆ Equipment that is fine tuned to deal with your particular no-till operations
- ◆ Aggressive residue management starting at the beginning of the season

