

## No Tillage Cropping Systems:

### Information about no-tillage

No-till protects the soil from excessive erosion, reduces soil aeration from tillage, allows organic matter to accumulate and improves the overall health of the soil. Switching can also help you reduce input costs and, thus, boost your bottom line profits. It is part of an integrated effort to conserve the nation's natural resources.



### What are some benefits from using no-tillage?

No-tillage cropping systems are known to provide many benefits to soils that can enhance production of crops. Many of the improvements to soils that result from no-tillage production such as increases in soil aggregation, water-holding capacity, nutrient cycling, and biological activity are related to increases in soil organic matter. No-tillage systems are known to increase soil organic matter because of the absence of destructive tillage operations, the minimization of soil erosion losses, and the return of crop residue to the soil. Organic matter levels in no-tillage systems can be further improved with the use of cover crops, perennial crops, and the use of organic amendments.

### What are the basics of the no-tillage cropping system?

- 1) Reduces tillage
- 2) Sow cover crops and/or utilize crop residues
- 3) Implement crop rotations to break disease, pest and weed cycles
- 4) Greater flexibility of farm operations through improved soil structure leading to more manageable soils and timelier planting and other operations

## What are the soil quality gains from using no-tillage?

**Soil quality gains from no-tillage systems are in the form of physical, chemical and biological improvements to the soil.**

*Physical* benefits include; better soil aggregate size and strength which means better soil structure, better infiltration, better permeability, lower bulk density, better water holding capacity, decreases in erosion, and improved water quality.

*Chemical* benefits include; higher cation exchange capacity (the sum total of exchangeable cations that a soil can absorb), which results in higher soil nutrient holding capacity and greater potential mineralizable nitrogen resulting in an increased soil nitrogen bank.

*Biological* benefits include increased carbon which serves as a food source for soil microbiology. Soil microorganisms are responsible for the decay of organic matter and cycling of both macro-and micro-nutrients back into forms that plants can use. Increasing the biological activity in the soil is the key to maintaining or increasing soil productivity.

**Increases in soil, physical, biological and chemical properties enhance soil function while improving water quality, plant, and animal habitation.**

## Why should I switch to no-tillage?

Crops grown under no-tillage systems use water more efficiently; more rainfall or irrigation water is captured in the soil; the water-holding capacity of the soil increases; and water losses from runoff and evaporation are reduced. All factors combined translate into higher yields and more profits.

No-tillage cropping systems results in less time, labor, fuel and machinery cost per acre resulting in better whole farm profitability and sustainability.

Crops grown under no-tillage systems often have less in-crop weed emergence and allow safer use of herbicide for weed control.

No-tillage system crop yields are very similar to tillage system yields. This means bottom line profits are higher in no-tillage systems.

In addition, the use of no-tillage cropping systems helps applicants for the new Conservation Security Program rank higher.