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No-Till Notes:

“The Value of Residue”

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Let's talk about the value of residue in no till farming. The management decisions we make as producers directly affect our soils and how they perform in crop production. Residue, and residue management, is critical to successful no till farming. High amounts of residue left on the soil surface have numerous benefits. This residue will directly affect how water infiltrates into the soil, acts as a barrier to reduce soil water evaporation, and results in less weed competition for the crops we are producing.

The residue is the food source for most all of the microorganisms which live in our soils. The microorganisms will cycle the residue in time and this process will increase the amount of organic matter found in the soil. This increase in organic matter will lead to:

- Better water storage capacity in the soil
- Better water infiltration
- Increased nutrient availability to the plants
- Better soil structure

The amount and type of residue left in the field will directly affect the quality of the soil in which we produce our crops.

Let's start off by examining how residue affects our soil's ability to absorb and store water. Here in semi-arid western Nebraska water is always the most critical element when it comes to crop production. I feel any type of management we can use to increase the amount of water available to our crops is critical to crop production. No till farming is the best system we have to increase water availability to the crops we are producing.

High amounts of residue left on the surface will act as a barrier between the soil's surface and the weather or irrigation events which provide the water. The residue will help protect the soil particles on the surface from breaking down into an impenetrable crust which will not allow water infiltration. If the crust forms water will run off the surface and be lost. Getting water past the soil surface and into the soil is greatly improved with this layer of protection. The residue breaks up the rain or irrigation droplets so they have a less catastrophic affect on the soils surface.

Bud Davis, retired state agronomist for the Kansas NRCS, will present a rainfall simulator demonstration at the No Till On The Plains Winter Conference Nov. 14-15 in

Gering. Bud's demonstration shows the value of residue on the soils surface and is an excellent demonstration.

Another benefit from the residue being left on the surface is seedling emergence. With the residue protecting the soil's surface and helping to prevent the soil surface from developing an impenetrable layer, seedling emergence is also improved. Hard crusting of the soil's surface in conventional tillage often leads to poor or erratic emergence of crop seedlings. This protective layer of residue helps to prevent this crusting from taking place. On our farm we haven't had to replant a crop because of severe crusting. The layer of residue also slows the drying of the soils surface during seedling emergence which improves this emergence and equates to better stands in our fields.

High amounts of residue also act as a barrier in slowing down soil water evaporation during the growing season. A two-year study done by the University of Nebraska at the North Platte research farm showed high amounts of residue greatly reduce soil water evaporation. In this study the researchers had a bare soil surface and a surface covered with residue during the irrigation season. In comparing the two surfaces, the bare soil surface had a soil evaporation loss of greater than six inches when compared to a soil surface with residue on it. Six inches of water loss due to evaporation is six inches we can't afford to lose in our area.

The study also compared the two surfaces when under a crop canopy. The bare surface registered a water evaporation loss of over 3 inches when compared to the soil with residue on the surface. Even under a crop canopy the value of residue was evident. When you look at our overall growing season, only for a few months of the year do we have a crop canopy to help slow this evaporation loss. High amounts of residue on the soil surface will go a long way in minimizing this loss of valuable water available to our growing crops. This soil water evaporation loss is something we can control and help minimize with no till farming. Losing three to six inches of water to soil evaporation is too much loss of this valuable resource and a loss we can not afford in our crop production practices.

I plan to get more in-depth on residue management in weeks to come. But for now, this should be enough to whet your appetite for No-Till. Remember to make plans for the upcoming No-Till events in Gering Nov. 14-15 and Rushville Dec. 4.