

For the week of Dec. 2, 2007

No-Till Notes:

“Dry land” farming

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Our recent weather pattern has added new meaning to the term "dry land" farming. The ongoing drought in parts of the Panhandle rivals the dust bowl days of the 30's. In recent articles I have discussed how residue and a no till farming system can save water. In our semi-arid environment we can apply the same principles that store moisture under irrigation to our dry land farming acres. With additional water savings found in a no till farming system we can shorten the fallow period, better utilize the moisture Mother Nature provides and increase our cropping intensity to add profitability to our farming operations.

Conventional wheat/summer fallow farming methods have added stability to our fluctuating moisture patterns by producing a crop once every two years. This type of farming system allows the producer a fair success at producing a decent crop of wheat every other year. The system does have faults with 1) consistent weed pressure (particularly downy brome, jointed goat grass, and rye), 2) poor moisture management, and 3) costs.

The conventional wheat/ summer fallow system starts with wheat harvest in July. This is followed by a 14-month fallow period. Think about how much rainfall occurs over this 14-month period. Our average annual precipitation in the Panhandle is between 12-18 inches depending upon your farm location. I estimate the precipitation received during the 14-month fallow period to be one inch more or 13-19 inches.

Our soils across the Panhandle range from very sandy soils to silt and clay loam soils. There is some variation in the amount of available water these soils store. Very sandy soils may only store 0.6" of water per foot of soil, where the silt and clay loam soils may have the ability to store up to 2.2" of moisture per foot of soil. This would indicate our soils can store somewhere between 2.4"-8.8" of moisture in a 4 foot soil profile. However, many of our soils only have a root zone of 2 feet or less because of an underlying residual limestone layer that holds little water and is not assessable to many plant roots.

On our farm we have some of the better water holding capacity soils with the Keith and Alliance silt loam soil types. During a field day at our farm this past summer we dug a soil pit to look at our soils and how they were responding to long term no till. Dr. Ray Ward, owner of the Ward Laboratories soil testing company attended the meeting and examined our soil. Dr. Ward concluded our silt loam soil would hold approximately 5 inches of available moisture. The reason for the lack of moisture holding capacity was the shallow soil profile. The profile or root zone is only 1-2 feet

deep. The underlying material is residual limestone, which holds little water compared to the silt loam soil. I suspect most of our soils across the Panhandle are fairly shallow and contain some residual limestone underneath the more productive layer of topsoil. That is one reason we need to save all of our soil from wind and water erosion.

I'm going to assume on average the soils across the Panhandle will store somewhere between 3-7 inches of moisture. With our average precipitation of 13-19 inches of moisture received during the 14-month fallow period the concern is the utilization of the moisture we receive. During the course of the fallow period there is a loss of 12 inches of precipitation due to our shallow soils being unable to store the moisture we receive.

With a continuous cropping no till farming system we are better able to utilize this additional moisture by shortening the fallow period because the ground is covered with residue that slows water loss by evaporation. The fallow period during a continuous no till cropping system varies depending upon the cropping rotation. There is the additional option of practicing a flexible fallow where a crop is planted after the soil profile has been allowed to replenish moisture based on its available water holding capacity. Once the soil has received enough moisture to establish a crop the producer then relies on additional rainfall and reduced loss of water by evaporation to take the crop to maturity. By shortening the fallow period a no till farming system is better able to utilize the moisture we receive that produces additional grain or forage. This increased intensity in the cropping rotation will translate to increased profitability in your farming operation.

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