

Irrigated no-till economics

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No-till crop production has proven to be the best production system for conserving moisture. Leaving the previous crop's residues on the soil surface and attached has improved water infiltration into the soil and reduced soil moisture evaporation.

Numerous research projects have shown the moisture conservation that no-till crop production provides under irrigation.

The University of Nebraska has conducted research at the North Platte research farm which showed leaving residues on the soil surface reduced soil moisture evaporation up to five inches on bare soil and up to three inches of soil moisture were conserved after crop canopy.

So why have producers been slow or unwilling to adopt no-till crop production practices under irrigation?

Gravity irrigation where water is run down the row for the crops has problems in no-till crop production. Some crops produced in our region don't fit a no-till system very well, mostly due to lack of residues after harvest.

There is a perception of yield drag when producing crops using no-till production practices. Most producers, myself included, began our farming careers using heavy tillage equipment and we basically thought we had unlimited use of our groundwater resource.

Any change in production practices is a slow process which is difficult and requires patience for complete adoption.

The University of Nebraska Panhandle Research and Extension Center in Scottsbluff, started an irrigation research project five years ago looking at the different production systems used in our area. They compared no-till, strip till, and conventional tillage practices under irrigation.

They used two different crop rotations for this study. One cropping rotation they used was a corn-corn-edible bean rotation and the other rotation was a corn-edible bean-corn-sugar beet rotation.

My personal preference would have included winter wheat in these rotations as well. If you are looking at a crop rotation strictly from a water savings viewpoint, I think you have to adopt rotations similar to what dry land farmers are using in their no-till crop rotations.

Dry land producers generally follow two golden rules for conserving moisture when choosing crop rotations. The first rule is to have two thirds of the rotation in high residue crops such as winter wheat and corn.

The second rule is to produce as good a winter wheat crop as possible to provide the residues necessary to produce the high water use crop in the rotation, which is the corn.

I think if we are going to be able to lower our water use requirements under irrigation to levels that are sustainable for generations to come we are going to have to adopt crop rotations that are similar to our dry land acres.

The only difference will be on the irrigated acres we can produce higher yields with the limited water we will have to work with.

The crops that are difficult to grow in no-till systems will be grown on a limited basis around the no-till crops in these rotations.

The University of Nebraska looked at the yields and the economics of the no-till, strip till, and conventional tillage irrigation production systems. Next week we'll take a look at what they found with this research.