

## **No-Till Notes: Benefits of residue**

**By Mark Watson Panhandle No-Till Educator**

In past weeks I have discussed the benefits of leaving residue on the soil surface to help reduce water evaporation and improve water infiltration into the soil. Another benefit to leaving the residue on the surface using a no till farming system is weed control.

Most of us at one point or another has mulched a vegetable garden or your wife's flower garden. The idea of the mulch is to save on water and control weeds. The same benefits of mulching the flower garden are used in a no till farming system. The heavy layer of residue acts as a barrier to weeds and helps with weed control in a no till field.

There are additional components to a no till farming system which help with weed control. The majorities of weeds in our fields are small seeded and need to be in the top couple of inches of the soil profile in order to germinate. Any seed below this layer is unable to germinate, and will lay there until an opportunity presents itself to germinate. In no till farming this top two inches of soil is the weed bank we need to control. As long as we use minimum disturbance in our planting and don't till the soil, the majority of the weeds we need to contend with are in this layer. If tillage is done in the field, we stir the soil and introduce a whole new seed bank to contend with. The lack of tillage in no till confines our weed seed bank to the top few inches of soil.

A heavy layer of residue helps control this weed bank by making it difficult for the weeds to get the light they need for germination and growth. Another means of weed control is a well designed crop rotation. Complex crop rotations using a mixture of warm and cool season grass and broadleaf crops is the best form of weed control. Monoculture rotations such as wheat/fallow consistently allow for cool season weeds such as downy brome, rye, and jointed goatgrass to establish themselves on a regular basis. The only way to combat these weeds in a wheat/fallow system is to use expensive herbicides to reduce their populations, but never gain complete control. As the soil is tilled, a new weed bank is established which will have to be controlled in the following growing season.

A good crop rotation will greatly reduce the instance of problem weeds. South Dakota State University has done studies to show that a rotation designed to control specific weeds will reduce the weed population by 96 percent in two years. An example of this would be to plant two warm season crops in a row, such as corn and proso millet, to reduce the weed population of downy brome by 96 percent. If your field has a warm season weed problem, planting two cool season crops, such as wheat and peas will reduce the population of the warm season weeds by 96 percent.

A complex rotation of wheat, edible beans, corn, peas, and back to wheat will do an excellent job of weed control. If you examine this rotation, there are two consecutive cool season crops grown back to back, the wheat and peas, followed by two warm season

crops, corn and edible beans. This rotation also has a mixture of cool and warm season grasses and broadleaf crops which allows for grass weed control in the broadleaf cropping sequence, and broadleaf weed control in the grass crops. A rotation such as this would do an excellent job of weed control if that is the sole purpose of the rotation. I will discuss more on cropping rotations in upcoming articles.

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