

# Cover Crops and No-Till

## Practice Substitution and Cover Crop Flexibilities

A major concern with the 2012 drought is the lack of available quality forage. Cover Crops grazed for forage must be managed under a prescribed grazing plan.

***Producers are responsible for checking that their crop insurance policy allows cover crops to be used for forage.***



## Cover Crops

Do you have problems with:

- Lack of forage due to drought
- Crop moisture stress
- Soil erosion
- Fertilizer and chemical cost
- Herbicide resistant weeds



Cover crops can play many important roles in cropping systems that are well recognized. Cover crops build deep macropores in the soil, which allow more water to penetrate during the winter months. Established cover crops shade the soil and are effective at reducing weed competition.

Brassicas such as forage turnips and radishes can provide supplemental grazing when mixed with other cover crops like cereal rye grass. These cover crops can provide high quality forage during times when native rangeland forage quality is poor - like during times of drought. Forage turnips, radishes, oats, and cereal rye can also serve as nitrogen scavengers capturing excess nitrogen and other nutrients and keep them from reaching the ground water or running off with surface water.

*"Managing Cover Crops Profitability"* is an excellent source for additional comprehensive cover crop information. You can download a free copy of this publication at: <http://www.sare.org/Learning-Center/Books/Managing-Cover-Crops-Profitably-3rd-Edition>

## No-Till

It is important when considering any positive or negative impact on yields this crop year that 2012 is far from a normal growing season. Spring droughts are extremely rare. 1988 was the last time most of us can remember, but with the prolonged heat, 2012 is really more like the droughts of the 1930s. Crop year 2011 ended up with a very dry fall, with many areas up to 6 inches below normal yearly precipitation, and much of the state is from six to eight inches or more below normal this year.

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# Cover Crops and No-Till ... Continued

Many are reporting no-till fields have held on to their yield potential far better and longer when compared to conventional-till fields. As the crop year went on and the rainfall virtually ceased, the benefits of long term continuous no-till systems and the inherent moisture conservation derived from implementing them have been apparent. Probable contributing factors are:

- No-Till may have slower root growth and development in a cool wet spring season, but tends to catch up and outperform conventional tillage systems later in the season as the cooler wetter environment supports better root growth. The spring 2012 crop planting season was very warm and the soil profile did have ample moisture to germinate seed if the soil was left covered with residue and undisturbed before planting. A planting depth of a minimum 2 ½" deep will place the seed in a uniform moisture environment. The use of a pop-up in-furrow fertilizer program is an "insurance policy" that is effective in the cool, wet springs, and would likely have been a benefit in this unusually dry spring.
- Tilled fields had a flush of microbial activity after tillage, releasing a considerable dose of nutrients that were available to plants early on and providing that early "tillage boost". However, the loss of soil moisture resulting from as little as a single tillage pass resulted in destroying soil structure and a significant enough crop moisture loss to precipitate an early plant death by up to two weeks in conventional tilled fields.
- Most areas of the state had from six to eight inches of precipitation during the April to mid June. This is an important time frame for nutrient uptake, where up to 80% of the mature plants nutrient needs are satisfied. The moisture conservation resulting from continuous no-till practices, the good residue cover decreasing soil surface temperatures and soil moisture evaporation, and the good soil structure inherent to continuous no-till systems allows for improved root penetration of the soil profile and optimum nutrient uptake.
- Some fields in the early stages or first year of transition to no-till were planted in soil that was a little moist and had little rain thereafter. The moist conditions and less than optimum "conventional tillage soil structure" may have resulted in limited lateral root growth due to slight sidewall compaction. Planting the seed deeper and the use of cover crops to expedite the soil structure improvement and increase soil organic matter will be important steps to take to avoid these problems in the future.

Long term benefits from improved soil health such as increased water holding capacity, improved water infiltration and enhanced nutrient cycling should lead to a more resilient cropping system during future extremes in weather. Healthy soil will provide multiple pathways for crops to access the needed resources. Continued pursuit of higher soil function is a fundamental goal to achieve high production and a healthy environment, no matter the growing conditions.

