

Transitioning to organic farming

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As the organic food trend continues to grow; more farmers are converting from conventional agriculture to organic production. One of the fastest growing markets in the U.S. is the production of organic milk. The growth of this industry has prompted many farmers to transition their land to organic feed grain production. With transition on the rise, it is necessary for these farmers to have effective and economical organic management practices.

A research team led by scientists from Penn State University and University of New Hampshire conducted a four-year study examining the impact of reduced-tillage and [cover crops](#) managed for hay and [forage production](#) on the agronomic and economic performance of feed [grain production](#).

Two [cropping system](#) experiments were carried out in central Pennsylvania from 2003 to 2007. For the first year both plots rotated between a cover crop, corn and soybeans; one plot was managed with full tillage and the other with reduced tillage. Changes in weed populations, crop yields, and economic returns over the three year rotation were monitored by the research team.

From a weed management perspective, the results indicate that utilizing reduced tillage for organic production could present a challenge for some farmers. Weed populations were less responsive to the choice in cover crop than to the reduction in tillage. Weed populations dramatically increased in reduced tillage systems.

"This is a troubling result because the weed populations that increased included perennial species such as Canada thistle and bindweed which are very difficult to control without tillage once they become established. In a way, these perennial weeds can actually act as 'management drivers,' forcing organic growers to have to periodically utilize more intensive tillage practices to reduce their populations," says Richard Smith, University of New Hampshire.

The study also suggests that growers who want to transition to organic production while minimizing tillage may experience variable economic success depending on how they begin their rotation. Costs associated with manure and compost, which was purchased off-farm, also strongly influenced the economics of the systems. The authors conclude that integrated systems that include field crop and dairy production, where manure sources are available on-site or locally, would improve the economics of these systems. While tillage did not have a significant effect on cumulative net returns in either experiment, there did appear to be a trend for higher returns in the rotations that utilized full-tillage.

According to Smith, further research will be necessary to determine the most cost-effective approaches to reducing tillage in transitional and organic production systems. Research is ongoing at Penn State University.

More information: The full study can be found in the January/February 2011 issue of *Agronomy Journal*.

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