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Conservation Tillage Makes Sense



Conservation tillage is a broad term referring to several tillage methods that maintain crop residue (stubble or other plants) on the field surface. These tillage methods reduce wind and water erosion, conserve soil moisture, and increase organic matter, which result in better soil structure. Studies have shown that conservation-tillage fields can have yields that equal or exceed conventional-tillage fields, and the practice cuts production costs considerably. The approach varies from "minimum tillage," where about 20 percent of the previous year's crop residue is left, to "no till", where at least 90 percent of the previous year's crop residue remains on the

soil surface.

Conservation tillage causes less compaction of the soil, (compaction occurs when heavy equipment and implements cross the field over and over), which has a positive effect on the soil, allowing water to percolate into the soil instead of causing erosion and washing pesticides and fertilizers into the surface water. The soil's better permeability also favors soil invertebrates. Invertebrates account for 90 to 95 percent of all animal species, and play a critical role in soil health. Growers need insects, spiders, worms, snails, and nematodes because the invertebrates act as decomposers, pollinators, soil conditioners, food sources for higher organisms, and control agents for other organisms, which may be harmful.

Conservation tillage, including no-till and strip-till (only the seed row is tilled), makes as much sense as ever—especially with rising fuel prices. "If it's such a good idea, why don't more people do it?" was a question raised by Randall Reeder, an associate professor and extension agricultural engineer at Ohio State University. Reeder, whose expertise is in conservation tillage and soil compaction, spoke to farmers at last year's Center for Excellence Field Day in Lenawee County. Farmers can save two to three gallons of fuel an acre by adopting conservation tillage, said Reeder. But sometimes it is difficult to get farmers to try no-till. With high value crops farmers don't do a lot of experimenting.

The savings in fuel and other machinery costs can make up for a loss in production but farmers should not assume they'll lose production by going from conventional tillage to conservation tillage. "Lower yields during the first few years of using no-till is a commonly cited belief," said Reeder. However, research has found increased yields using no-till with other cropping changes.

There are many options for farmers interested in adopting continuous conservation tillage. A three-crop rotation is one option to consider. Another is strip tilling. Research has shown that strip tilling can produce higher yields than no-till in cold, wet climates, Reeder said. Strip tilling allows the soil to warm up faster than no-till.

A five-year study found that no-till and a three year rotation including corn, soybeans and wheat plus cover crops produced higher yields than a corn and soybean rotation using conventional tillage, said Reeder. (The cover crops were cowpea after wheat and cereal rye after corn.) Applying a higher rate of manure or compost during the first years of conservation tillage can also jump start yields, according to Reeder.

To reap all of the benefits of no-till it must be continuous, Reeder said. “Many of the benefits of conservation tillage are lost if a field is tilled every other year or every five years.” Many farmers will no-till soybeans but then chisel plow before planting corn. There is no research at Ohio State that shows chiseled corn does better than no-till after soybeans, Reeder said. “It’s curious that if there is no economic advantage to chisel plowing after beans, why do so many farmers still do it.”

Considering all the benefits of conservation tillage, it is something local growers may want to look into if they are not already using it.

For additional information:

Landowners Guide: Introduction to cropland management for wildlife

http://www.dnr.state.mi.us/publications/pdfs/huntingwildlifehabitat/landowners_guide/habitat_mgmt/Cropland/Cropland_Introduction.htm

USDA-NRCS Michigan newsletter

ftp://ftp-fc.sc.egov.usda.gov/MI/news/Current%20Developments/Winter_2011.pdf

Video: Don’t Call it Dirt!

http://wn.com/A_Culture_of_Conservation_Don%27t_Call_it_Dirt_A_Passion_for_Soil#

Conservation Tillage: An ecological approach to soil management

<http://books.google.com/books?hl=en&lr=&id=v24KZNMQRvIC&oi=fnd&pg=PA33&dq=Conservation+tillage,+MI&ots=tLLXRxlPim&sig=8M02dxYPEIx0cdXciQXngKiDwLw#v=onepage&q=Conservation%20tillage%2C%20MI&f=false>