

Rotation and Tillage Effect on Crop Production

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Objective

To evaluate the effect of crop rotation and tillage on corn, soybean, and wheat production.

Background

Cooperator:	O.A.R.D.C. NW Branch	Soil test:	
County:	Wood	Fertilizer:	see below
Nearest Town:	Hoytville	Planting Date:	
Drainage:	Tile, well-drained	Planting Rate:	
Soil type:	Hoytville, clay	Row Width:	
Tillage:	notill & conservation	Herbicides:	
Previous Crop:	see below	Harvest Date:	
Variety:	see below		

Methods

The entries were replicated eight times in a randomized complete block design. Plot size- 10 x 70 feet each entry. Harvest data collected from center rows. All systems compared no-till to conservation tillage which left 30% surface residue. Conservation tillage used shallow field cultivator in soybean residue and disk chisel and finish tool in corn residue. The same crop was planted on all treatments on the same day, using the same variety, fertility, and herbicide. In 2002 the entire plot area was notill planted to soybeans.

Corn system – Pioneer 34M95 at 30,000 plants/acre on April 19, 2004, 30 inch row spacing. Fertilizer- 100 lb/ac 0-46-0 and 150 lb/ac 0-0-60, 17 gal/ac 28% preplant, 50 gal/ac sidedress nitrogen. Herbicide- Harness Xtra 5.6L – 2.4 qt/ac, Callisto-3 oz/ac, Roundup Weathermax 22 oz/ac. Harvest date – October 12, 2004.

Soybean system – Pioneer 92M71 at 200,00 plants/ac on May 5, 2004, 7 inch spacing. Herbicide-Preplant Canopy XL-3.5 oz/ac, WeedoneLV4-16 oz/ac, post spray- Roundup Weathermax-22 oz/ac, AMS 48 oz/ac. Harvest on September 17, 2004.

Wheat system – Pioneer 25R47 planted October 10, 2003. Fall 2003 10 gal/ac 28% N, March 22, 2004 topdress 20 gal/ac 28% N. On April 20, 2004 Harmony Extra - .6 oz/ac. Harvest July 6, 2004.

Results

2004 Crop Yields bu/ac

2003 crop	2004 crop	No-till yield	Tillage yield	LSD tillage
Soybean	Corn	195.3	145.7	32.0
Corn	Corn	160.9	176.9	NS
Wheat	Corn	169.6	182.1	NS
Soybean	Soybean	61.9	60.8	1.1
Corn	Soybean	53.3	56.3	3.0
Wheat	Soybean	53.9	58.5	1.6
Soybean	Wheat	91.7	97.0	NS

Summary

No-till resulted in improved crop yields when following soybeans for 2004 corn and soybeans. Tillage was not a factor in continuous corn and corn following wheat. Tillage improved soybean yields following corn and wheat. Wheat yield was not affected by tillage.

For additional information, contact:

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