

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	Drainage:	Tile, well-drained
County:	Wood	Soil type:	Hoytville, clay
Nearest Town:	Hoytville	Tillage:	notill & conservation

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, experiment began in 2003.

Corn system – Becks 5335 at 30,000 plants/acre on May 12, 2009, 30 inch row spacing. Fertilizer- 300 lb/ac 10-26-26, 50 gal/ac 28% sidedress nitrogen. Herbicide- Lexar, Honcho Plus. Harvest date – November 3, 2009.

Soybean system – Pioneer 93Y10 at 200,00 plants/ac on May 20, 2009, 7 inch spacing. Herbicide- post spray- Roundup Weathermax-22 oz/ac, AMS 48 oz/ac. Harvest on October 1, 2009.

Results

Corn Yields 2009						
2006	2007	2008	2009	Tillage	Yield (bu/ac)	
Corn	Soybean	Wheat	Corn	No-till	125.8	A
Corn	Soybean	Wheat	Corn	Tillage	133.4	B
Corn	Corn	Corn	Corn	No-till	140.0	C
Corn	Soybean	Corn	Corn	No-till	143.3	CD
Corn	Corn	Corn	Corn	Tillage	146.0	D
Corn	Soybean	Corn	Corn	Tillage	146.6	D
Soybean	Corn	Soybean	Corn	Tillage	147.4	DE
Soybean	Corn	Soybean	Corn	No-till	148.0	DE
Corn	Corn	Soybean	Corn	No-till	152.5	EF
Corn	Corn	Soybean	Corn	Tillage	153.9	F

LSD(.05) 5.16

Soybean Yields 2009						
2006	2007	2008	2009	Tillage	Yield (bu/ac)	
Soybean	Soybean	Soybean	Soybean	Tillage	50.9	A
Wheat	Soybean	Wheat	Soybean	Tillage	51.6	AB
Soybean	Soybean	Soybean	Soybean	No-till	52.1	ABC
Wheat	Soybean	Wheat	Soybean	No-till	52.2	ABC
Soybean	Corn	Corn	Soybean	No-till	53.3	BC
Soybean	Corn	Corn	Soybean	Tillage	54.0	C
Soybean	Wheat	Corn	Soybean	No-till	56.7	D
Corn	Soybean	Corn	Soybean	No-till	57.7	D
Soybean	Wheat	Corn	Soybean	Tillage	58.0	D
Corn	Soybean	Corn	Soybean	Tillage	58.7	D

LSD(.05) 2.02

Summary

This experiment has been conducted for seven years. In 2009 corn yield was significantly better following soybeans in 2008. Corn yields following wheat in 2008 were significantly worse compared to other crop rotations. Tillage was not a consistent significant factor effecting corn yields. Soybean yields were significantly better following corn in 2008. Continuous soybeans and soybean/wheat rotations were significantly worse. Tillage was not a consistent factor effecting soybean yields.

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