

Red Clover Cover Crop & Tillage Effect on Corn Yield

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Objective

To evaluate the effect of red clover cover crop and tillage on corn production.

Background

Cooperator:	O.A.R.D.C., NW Research Station	Fertilizer:	300 lb/ac 10-26-26, urea at planting, 28% N at 50 gal/acre sidedress
County:	Wood	Planting Date:	April 21, 2010
Nearest Town:	Hoytville	Planting Rate:	30,000
Drainage:	Systematic Tile, well-drained	Row Width:	30 in.
Soil type:	Hoytville clay	Herbicides:	Lexar, Princep,2,4-D, Glyphosate
Tillage:	see methods	Harvest Date:	September 24, 2010
Previous Crop:	wheat		
Variety:	Becks 5354HXR		
Soil test:	pH 5.9, P 23ppm, K 165 ppm, OM 3.4%		

Methods

Two tillage methods with and without red clover. The entries were replicated four times in a randomized complete block design. Plot size- 10 x 70 feet each entry. Harvest data was collected from the center rows. Previous crop was wheat. Medium red clover (*Trifolium pratense*) was frost seeded in wheat in April, 2009. Wheat straw was chopped and left on plots. After wheat harvest, clover was allowed to grow until November, 2009 when Roundup and Clarity herbicides were applied to kill the clover. Tillage plots were chisel plowed and then harrowed in November, 2009. Residue in tillage plots was 30 percent. No-till plot areas were continuous no-till for 6 years. Corn was planted at same time in all plots. At corn planting time, soil moisture levels were similar in all treatments. Sidedress nitrogen was applied on 6-8-10 at V6 growth stage. Yields were adjusted to 13.5% moisture.

Results

Cover Crop	Tillage	Yield (bu/ac)
No Clover	No-till	129.8 a
Red Clover	No-till	138.6 b
No Clover	Conservation Tillage	139.3 bc
Red Clover	Conservation Tillage	144.8 c
LSD (0.20)		5.8

Corn Yield Response to Tillage

Cover Crop	Tillage	Yield (bu/ac)
No Clover	No-till	129.8 a
No Clover	Conservation Tillage	139.3 b
	LSD (0.20)	9.1

Summary

Cost of red clover analysis:

The no-till red clover cover crop increased corn yield by 8.8 bu/ac. compared to no-till with no clover.

Value of increase: 8.8 bu/ac x \$6.00 /bu (price of corn) = \$ 52.80
Cost of red clover: 12 lb/ac x \$2.00/lb (price of clover) = \$ 24.00
positive net return on clover = \$ 28.80

When corn was planted into wheat residue, conservation tillage had a significant effect on increasing corn yield compared to no-till. However, when red clover cover crop was added to no-till, corn yields were not significantly different compared to conservation tillage without clover.

Cost of tillage analysis:

2010 Ohio State Custom Rates (average)

Chisel plow = \$14.00 per acre
Finish harrow = \$11.50
Total = \$25.50

When comparing the per acre cost of red clover (\$24.00) to total conservation tillage cost (\$25.50) there is no significant difference in input cost with the same corn yield results. Added benefits of red clover cover crop and no-till are soil quality improvements in soil tilth and active carbon.

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