Clover Cover Crop & Nitrogen Rate Effect on Corn Production

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Objective
To evaluate the effect of clover cover crop and nitrogen rates on corn production.

Background

Cooperator:	O.A.R.D.C. NW Branch	Soil test:	
County:	Wood	Fertilizer:	300 lb/ac 10-27-25, urea at
Nearest Town:	Hoytville	planting, sidedress 28% N	
Drainage:	Tile, well-drained	Planting Date:	5-12-09
Soil type:	Hoytville, clay	Planting Rate:	30,000
Tillage:	notill	Row Width:	30 in.
Previous Crop:	wheat	Herbicides:	Lexar, Honcho
Variety:	Becks 5335HXR	Harvest Date:	11-4-09

Methods

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. All systems in this comparison were no-till. Medium red clover was frost seeded in wheat on April 18, 2008. After wheat harvest, clover was allowed to grow until 10-29-08 when Roundup and Clarity herbicides were applied to kill the clover. Corn was planted at same time in all plots as no-till. Sidedress nitrogen was applied on 6-16-09 at V6 growth stage. All plots harvested center two rows. Wheat straw was chopped and left on plots. At corn planting time, soil moisture levels were similar in all treatments.

Results

Cover Crop	Sidedress Nitrogen Rate	Corn Yield (bu/ac)	
No clover	0	39.9	A
Clover	0	47.6	B
No clover	80	93.3	C
Clover	80	103.2	D
No clover	160	129.5	E
Clover	160	135.4	E
		LSD(0.10) 6.3	

Summary

Cost of clover analysis:

       At 80 lb/ac sidedress nitrogen clover cover crop increased corn yield by 9.9 bu/ac.
          9.9 bu/ac x $3.50 /bu = $ 34.65
cost of clover – 12 lb/ac x $1.75/lb   = $ 21.00
          net return on clover   = $ 13.65

       At 160 lb/ac sidedress nitrogen, the clover cover crop increased corn yield but it was not significantly different from no clover treatments.

Cost of nitrogen analysis: $ 0.66/lb Nitrogen

No clover   80 lb N = $52.80   93.3 bu/ac x $3.50 /bu = $326.55 $ 273.75 net

No clover   160 lb N = $105.60   129.5 bu/ac x $3.50/bu = $453.25 $ 347.65 net

       Positive return from 80 additional lb/ac nitrogen – corn yield increase value = $ 73.90/ac

Clover   80 lb N = $52.80   103.2 bu/ac x $3.50 /bu = $361.20 $ 308.40 net

Clover   160 lb N = $105.60   135.4 bu/ac x $3.50/bu = $473.90 $ 368.30 net

       Positive return from 80 additional lb/ac nitrogen – corn yield increase value = $ 59.90/ac

There was a significant benefit from the cover crop at 80 lb/ac.nitrogen. The optimum N rate at 160 lb/ac, however, was similar whether a cover crop was present or not.

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