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
County: Wood
Nearest Town: Hoytville
Drainage: Tile, well-drained
Soil type: Hoytville, clay
Tillage: notill
Previous Crop: wheat
Variety: Pioneer 34M78
Fertilizer: 300 lb/ac 10-27-25, urea at planting, sidedress 28% N
Planting Date: 5-24-08
Planting Rate: 30,000
Row Width: 30 in.
Herbicides: Lexar, Honcho
Harvest Date: 10-15-08

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 early spring 2007. After wheat harvest, clover was allowed to grow until 10-8-07 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 6-18-08 at V6 growth stage. All plots harvested center two rows.

Results

<table>
<thead>
<tr>
<th>Cover Crop</th>
<th>Sidedress Nitrogen Rate</th>
<th>Corn Yield bu/ac</th>
</tr>
</thead>
<tbody>
<tr>
<td>No clover</td>
<td>0</td>
<td>28.9 a</td>
</tr>
<tr>
<td>Clover</td>
<td>0</td>
<td>30.2 a</td>
</tr>
<tr>
<td>No clover</td>
<td>80</td>
<td>84.4 b</td>
</tr>
<tr>
<td>Clover</td>
<td>80</td>
<td>95.4 c</td>
</tr>
<tr>
<td>No clover</td>
<td>160</td>
<td>115.5 d</td>
</tr>
<tr>
<td>Clover</td>
<td>160</td>
<td>125.1 e</td>
</tr>
</tbody>
</table>

LSD (0.10) 9.4
Summary

Cost of clover analysis:

At 80 lb/ac sidedress nitrogen clover cover crop increased corn yield by 11.0 bu/ac.
$38.50 = 11.0 bu/ac x $3.50 /bu
$18.00 = cost of clover – 12 lb/ac x $1.50/lb
$20.50 = net return on clover

At 160 lb/ac sidedress nitrogen clover cover crop increased corn yield by 9.6 bu/ac
$33.60 = 9.6 bu/ac x $3.50 /bu
$18.00 = cost of clover – 12 lb/ac x $1.50/lb
$15.60 = net return on clover

In this analysis the investment in a red clover cover crop return a positive net return. The optimum N rate, however, was similar whether a cover crop was present or not. There may have been some nitrogen benefit to the cover crop, but the rates evaluated within this study did not allow for a clear distinction.

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