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
County: Wood
Nearest Town: Hoytville
Drainage: Tile, well-drained
Soil type: Hoytville, clay
Tillage: no-till & conservation
Previous Crop: see below
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 no-till planted to soybeans.


Results

2004 Crop Yields  bu/ac

<table>
<thead>
<tr>
<th>2003 crop</th>
<th>2004 crop</th>
<th>No-till yield</th>
<th>Tillage yield</th>
<th>LSD tillage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soybean</td>
<td>Corn</td>
<td>195.3</td>
<td>145.7</td>
<td>32.0</td>
</tr>
<tr>
<td>Corn</td>
<td>Corn</td>
<td>160.9</td>
<td>176.9</td>
<td>NS</td>
</tr>
<tr>
<td>Wheat</td>
<td>Corn</td>
<td>169.6</td>
<td>182.1</td>
<td>NS</td>
</tr>
<tr>
<td>Soybean</td>
<td>Soybean</td>
<td>61.9</td>
<td>60.8</td>
<td>1.1</td>
</tr>
<tr>
<td>Corn</td>
<td>Soybean</td>
<td>53.3</td>
<td>56.3</td>
<td>3.0</td>
</tr>
<tr>
<td>Wheat</td>
<td>Soybean</td>
<td>53.9</td>
<td>58.5</td>
<td>1.6</td>
</tr>
<tr>
<td>Soybean</td>
<td>Wheat</td>
<td>91.7</td>
<td>97.0</td>
<td>NS</td>
</tr>
</tbody>
</table>

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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