Rotation and Tillage Effect on Wheat Production

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Objective
To evaluate the effect of crop rotation and tillage on 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: notill & conservation
Previous Crop: see below
Variety: Merrill DT1A 15-23

Fertilizer: fall 300 # 10-26-26
Planting Date: 10-1-08
Planting Rate: 1.8 million/acre
Row Width: 7.5 in
Herbicides: none
Harvest Date: 7-7-09

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, and fertility.

RESULTS

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>Tillage</th>
<th>Yield (bu/ac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>Wheat</td>
<td>58.7 a</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn</td>
<td>Corn</td>
<td>77.5 b</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soybean</td>
<td>Soybean</td>
<td>79.5 b</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheat</td>
<td>Soybean</td>
<td>85.3 c</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soybean</td>
<td>Wheat</td>
<td>Tillage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSD (0.05)</td>
<td>3.76</td>
<td></td>
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</tbody>
</table>

Summary
This experiment has been conducted for six years. In 2009 wheat yield was significantly better with the soybean: wheat rotation with conservation tillage. The soybean:wheat:corn no-till system was significantly lower in yield compared to the other wheat systems. These results are not normally found to be true. This plot may have had corn residue interfere with wheat planting and establishment.

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