Influence of Minimum Tillage Systems Upon the Weed Control and Yield in Some Arable Crops

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SUMMARY

The paper presents the influence of the conventional ploughing tillage technology in comparison with the minimum tillage, upon the weed control and yield in the case of maize, soya-bean and winter wheat in a three years crop rotation. The soil tillage system influences the productivity elements of cultivated species (Tab. 1) and finally the production thus obtained (Tab. 2). The results of investigations showed that the yield is a conclusion soil tillage systems influence on soil properties, plant density assurance and on weed control.

Tab. 1

<table>
<thead>
<tr>
<th>Variant / Characteristic</th>
<th>Plough + disc – 2x</th>
<th>Plough + rotary harrow</th>
<th>Disc + rotary harrow</th>
<th>Rotary harrow</th>
<th>Paraplow + rotary harrow</th>
<th>Chisel + rotary harrow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plants/m² M</td>
<td>3.5</td>
<td>3.8</td>
<td>3.3</td>
<td>3.3</td>
<td>3.5</td>
<td>3.5</td>
</tr>
<tr>
<td>Plants/m² S</td>
<td>24.3</td>
<td>24.7</td>
<td>18.5</td>
<td>19.4</td>
<td>17.8</td>
<td>16.4</td>
</tr>
<tr>
<td>Plants/m² W</td>
<td>480</td>
<td>500</td>
<td>460</td>
<td>475</td>
<td>465</td>
<td>440</td>
</tr>
<tr>
<td>Weeding M</td>
<td>65.9</td>
<td>54.4</td>
<td>86.2</td>
<td>110.2</td>
<td>78.3</td>
<td>85.3</td>
</tr>
<tr>
<td>Weeds/m² S</td>
<td>63.8</td>
<td>62.6</td>
<td>87.9</td>
<td>92.2</td>
<td>88.1</td>
<td>87.7</td>
</tr>
<tr>
<td>W</td>
<td>24.1</td>
<td>18.7</td>
<td>27.7</td>
<td>36.3</td>
<td>26.1</td>
<td>30.5</td>
</tr>
</tbody>
</table>

M - maize, S - Soya-bean, W - winter-wheat

Tab. 2

<table>
<thead>
<tr>
<th>Variant / Characteristic</th>
<th>Maize kg/ha</th>
<th>Soya kg/ha</th>
<th>Wheat kg/ha</th>
<th>Diff.±/Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plough + disc – 2x</td>
<td>4860</td>
<td>3025</td>
<td>3730</td>
<td>000</td>
</tr>
<tr>
<td>Plough + rotary harrow</td>
<td>5849</td>
<td>3546</td>
<td>3986</td>
<td>* + 256*</td>
</tr>
<tr>
<td>Disc + rotary harrow</td>
<td>4314</td>
<td>3146</td>
<td>3683</td>
<td>** + 360**</td>
</tr>
<tr>
<td>Rotary harrow</td>
<td>4583</td>
<td>3313</td>
<td>3612</td>
<td>** + 88**</td>
</tr>
<tr>
<td>Paraplow + rotary harrow</td>
<td>4730</td>
<td>3385</td>
<td>3615</td>
<td></td>
</tr>
<tr>
<td>Chisel + rotary harrow</td>
<td>4710</td>
<td>3113</td>
<td>3486</td>
<td></td>
</tr>
</tbody>
</table>

MT – control variant. Maize: DL 5% = 100.01 kg/ha, DL 1% = 151.45 kg/ha, DL 0.1% = 243.30 kg/ha. Soya: DL 5% = 190.75 kg/ha, DL 1% = 271.16 kg/ha, DL 0.1% = 392.62 kg/ha. Wheat: DL 5% = 241.21 kg/ha, DL 1% = 338.57 kg/ha, DL 0.1% = 477.99 kg/ha. ns – not significant, * positive significance, 0 negative significance.