ON THE BEHAVIOUR OF SOME COLZA CULTIVARS
IN THE BUIAS HILL AREA (TIMIS COUNTY)

COMPORTAREA UNOR SOIURI DE RAPIŢĂ PENTRU ULEI
ÎN ZONA COLINARĂ BUZIAȘ (JUDETUL TIMIS)

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Abstract. Research was carried out in the hill area of the Banat (Buzias) on a typical preluvosoil and aimed at studying the behaviour of some new winter rape cultivars in different fertilization conditions. The highest yields of over 3,300 kg/ha were in the triangle cultivar, followed by the Alaska cultivar with over 3,000 kg/ha, and Triumph with over 3,000 kg/ha on an agri-fund of N₁₅₀P₈₀K₈₀. Oil content varied between 37.00% and 47.00% depending on the soil and on fertilization level.

Key words: rape, cultivars, fertilisation

INTRODUCTION

Colza is appreciated as one of the most important oil plants and as the most producing oil plant of the Cruciferae family.

Expanding colza cultivation is due to the progress in the chemical composition of the oil together with oil content increase. Refined oil is used as such in feeding or in the manufacturing of margarine.

Colza oil as such or after a series of changes through hydrogenation, oxygenation, etc. has multiple uses in the textile industry, in the leather industry, in the dye and lacquer industry, in the printing industry, in the cosmetics industry, in lubrication, etc.

Through its demands to soil and climate conditions, colza is a crop adapted to the area of reference, in conditions of economic efficiency.

MATERIAL AND METHOD

The cultivars under study were Triumf, Triangle, Alaska, and Attila. The fertilisation levels followed the nitrogen fertilisation impact applied on a constant agri-fund of phosphorus and potassium on yield, oil content, and oil yield.

The trials were of the bi-factorial type organised after the sub-divided plot method with three replications.

The pre-emergent plant was winter wheat. Sowing was done in the first decade of September with 150 g.g/m² at a row spacing of 12.50 cm, and at a depth of 3.00 cm. results were calculated in accordance with the field trial setting method. Upon harvesting, we sampled to determine oil content, and then we calculated oil yield on the ground of the seed yield.
RESULTS AND DISCUSSION

Table 1 shows the yield obtained in the experimental cycle 2004-2006. Analysing the behaviour of the cultivars, we can see that on the average for the four fertilising levels mean yields were close, the differences lacking significance, which leads to the conclusion that in the area under study we can cultivate all the tested cultivars.

Table 1

Colza yield depending on soil and fertilisation level during the experimental cycle 2004-2006

<table>
<thead>
<tr>
<th>Nitrogen rate on the agri-fund of P80K80</th>
<th>Cultivar</th>
<th>Averages of the agri-funds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Triumph</td>
<td>Triangle</td>
</tr>
<tr>
<td>N0 P80 K80</td>
<td>1260</td>
<td>1127</td>
</tr>
<tr>
<td>N50 P80 K80</td>
<td>1865</td>
<td>2013</td>
</tr>
<tr>
<td>N100 P80 K80</td>
<td>2555</td>
<td>2753</td>
</tr>
<tr>
<td>N150 P80 K80</td>
<td>3068</td>
<td>3340</td>
</tr>
</tbody>
</table>

DL 5% = 112 kg/ha, DL 1% = 209 kg/ha, DL 0.1% = 337 kg/ha

Nitrogen fertilisers were well valorised as the experimental cultivars have a high valorising ability. Thus, by applying a rate of N50 we can get on the average for the four experimental cultivars an increase in yield of about 800 kg/ha.

Doubling the nitrogen rate to N100 a led to an increase of 1,500 kg/ha, increase amplified by the rate of N150 to over 2,000 kg/ha.

Oil content in the field under study varied between 37.10 and 46.30%.

On the average for the four agri-funds, the highest oil content was in the Alaska cultivar 41.30%, while the lowest content was in the Triangle cultivar, i.e. 39.20%.

Nitrogen fertilisers had a negative impact on oil content, which diminished, on the average for the four experimental cultivars, from 43.30% in the control (N0) to 38.10% in the variant fertilized with N150. Oil yield made no difference between the cultivars from the point of view of the significance.

Oil yield depending on the fertilization level points out that, though nitrogen fertilizers had a negative impact on oil content, they had a positive impact on oil yield with significant differences, which increased with nitrogen rate.

We can say that oil yield per ha was influenced mainly by seed yield and not by oil content.
Figure 1. Variation of oil content depending on cultivar and on fertilisation level

Figure 2. Oil yield depending on cultivar.

Figure 3. Oil yield depending on nitrogen rate

<table>
<thead>
<tr>
<th>Yield kg/ha</th>
<th>DL 5%</th>
<th>DL 1%</th>
<th>DL 0.1%</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>103</td>
<td>147</td>
<td>209</td>
</tr>
<tr>
<td>Difference</td>
<td>316</td>
<td>557</td>
<td>722</td>
</tr>
<tr>
<td>Significance</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
</tbody>
</table>

DL 5% = 76 kg/ha,  DL 1% = 119 kg/ha,  DL 0.1% = 193 kg/ha

<table>
<thead>
<tr>
<th>Yield kg/ha</th>
<th>DL 5%</th>
<th>DL 1%</th>
<th>DL 0.1%</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>100</td>
<td>102</td>
<td>107</td>
</tr>
<tr>
<td>Difference</td>
<td>24</td>
<td>58</td>
<td>52</td>
</tr>
<tr>
<td>Significance</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
</tr>
</tbody>
</table>

DL 5% = 103 kg/ha,  DL 1% = 147 kg/ha,  DL 0.1% = 209 kg/ha

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CONCLUSIONS

1. Colza is a crop justified in the hill area of the Banat if we observe cultivation technology. Yield during a cycle of three years of which two were less favourable were above 3,000 kg/ha when fertilised with $N_{150}P_{80}K_{80}$.

2. The Triumf, Triangle, Alaska, and Attila cultivars are adapted to the conditions in the area under study, an area characterised by soft winters with no plant losses due to frost and with well distributed rainfalls compared to plant requirements.

3. Fertilising is a basic technological step, as soils in the area have a low fertilising potential.

LITERATURE

2. Borcean I., Borcean A. – Cultura și protecția integrată a cerealelor, leguminoaselor și plantelor tehnice, Editura de Vest, Timișoara, 2004,