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

COMPORTAREA UNOR SOIURI DE RAPIȚĂ PENTRU ULEI ÎN ZONA COLINARĂ BUZIAŞ (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 Triumf with over 3,000 kg/ha on an agri-fund of $N_{150}P_{80}K_{80}$. Oil content varied between 37.00% and 47.00% depending on the soil and on fertilization level.*

Rezumat. *Cercetările s-au efectuat în zona colinară a Banatului (teritoriul Buziaş) pe un sol de tip preluvosol tipic şi au vizat comportarea unor noi soiuri de rapiță de toamnă, în condiții de fertilizare diferențiată. Cele mai mari recolte de peste 3300 kg/ha s-au obținut la soiul Triangle, urmat de soiul Alaska cu peste 3000 kg/ha şi Triumf peste 3000 kg/ha, în condiții de fertilizare cu $N_{150}P_{80}K_{80}$. Conținutul de ulei a variat între 37% şi 47%, în funcție de soi şi nivelul de fertilizare.*

Key words*: rape, cultivars, fertilisation*
Cuvinte cheie: *rapiță, soiuri, fertilizare*

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 lubrification, 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./m^2 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

Nitrogen rate on the agri-fund of $P_{80}K_{80}$	Cultivar				Averages of the agri-funds			
	Triumf	Triangle	Alaska	Attila	Yield kg/ha	%	Difference kg/ha	Significance
N_0 $P_{80}K_{80}$	1260	1127	932	1080	1099	100		
N_{50} $P_{80}K_{80}$	1865	2013	1933	1762	1893	172	794	XXX
N_{100} $P_{80}K_{80}$	2555	2753	2635	2429	2593	236	1494	XXX
N_{150} $P_{80}K_{80}$	3068	3340	3220	2944	3143	286	2044	XXX

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

Average of the cultivars

Cultivar	Triumf	Triangle	Alaska	Attila
Yield kg/ha		105	2180	2054
%		122	100	94
Difference Kg/ha			-7	-133
Significance				

DL 5% = 172 kg/ha, DL 1% = 259 kg/ha, DL 0.1% = 387 kg/ha

Nitrogen fertilisers were well valorised as the experimental cultivars have a high valorising ability. Thus, by applying a rate of N_{50} 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 N_{100} a led to an increase of 1,500 kg/ha, increase amplified by the rate of N_{150} 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 (N_0) to 38.10% in the variant fertilized with N_{150}. 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.

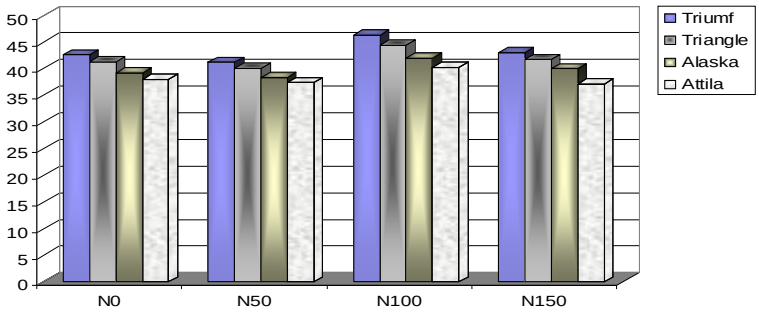
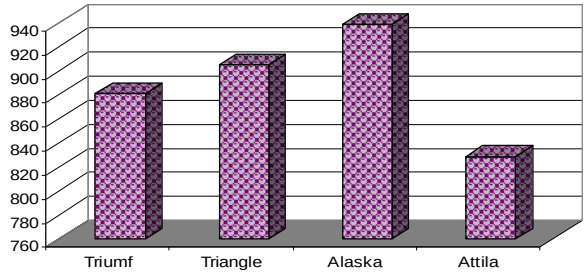


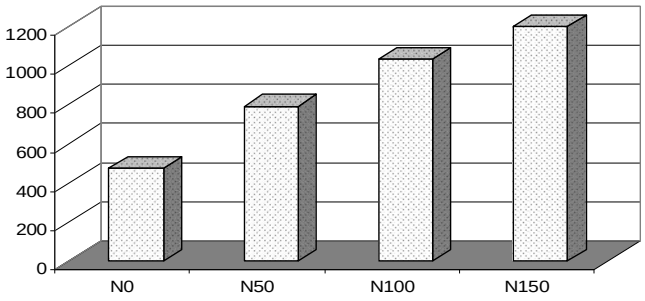
Figure 1. Variation of oil content depending on cultivar and on fertilisation level



Yield kg/ha	881	905	939	829
%	100	102	107	94
Difference		24	58	52
Significance				

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

Figure 2. Oil yield depending on cultivar.



Yield kg/ha	475	791	1032	1197
%	100	159	217	252
Difference		316	557	722
Significance		XXX	XXX	XXX

DL 5% = 103 kg/ha, DL 1% = 147 kg/ha, DL 0,1% = 209 kg/ha

Figure 3. Oil yield depending on nitrogen rate

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

1.BÎLTEANU GH. , - *Fitotehnie,* vol. 2 ED. Ceres, Bucureşti, 2001 p. 90-108.

2.BORCEAN I, BORCEAN A. –*Cultura şi protecţia integrată a cerealelor, leguminoaselor şi plantelor tehnice,* Editura de Vest, Timişoara, 2004,

3.BORCEAN I, ŢĂRĂU D, BORCEAN A., DAVID GH., EUGENIA BORCEAN – *Fitotehnia şi protecţia culturilor de camp*, Ed. De Vest Timişoara, 2005 p. 158-159.

4.MUNTEAN L.S., BORCEAN I., ROMAN GH., AXINTE M., , *Fitotehnie*, Editura I.I. de la Brad, Iaşi – 2003

5.NIŢĂ SIMONA – *Tehnologii de cultivare pentru cereale- leguminoase cultivate pentru boabe şi plante tehnice,* Ed. Eurobit Timişoara, 2004.

6.PROCA MARIA –*Studiu privind comportarea unor soiuri importate de rapiţă pentru ulei şi influenţa unor verigi tehnologice asupra producţiei şi calităţii în două zone pedoclimatice din România*, Teză de doctorat, USAMVB Timişoara, 2006.