ON THE BEHAVIOUR OF SOME OIL RAPE CULTIVARS FROM THE POINT OF VIEW OF PRODUCTION QUALITY IN THE SOIL AND CLIMATE CONDITIONS OF THE SDE TIMISOARA

COMPORTAMENTUL UNOR SOIURI DE RAPIȚĂ PENTRU ULEI DIN PUNCT DE VEDERE AL CALITĂȚII PRODUCȚIEI IN CONDIȚIILE PEDOCLIMATICE ALE SDE TIMIŞOARA

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Abstract: *In this paper we present the behaviour of some oil rape cultivars from the point of view of their yield and oil content. Results obtained determine scientifically the main components of some efficient rape cultivation technologies in the Banat area.*

Rezumat: *În această lucrare este prezentată comportarea unor cultivare de rapiță pentru ulei privnd producția realizată şi conținutul de ulei.Rezultatele obținute determină ştiințific componentele esențiale ale unei tehnologii eficiente de cultivare a rapiței în Banat.*

Key words: *rape cultivation, production, oil content, fertilisation*
Cuvinte cheie: *rapiță, producție, conținut de ulei, fertilizare*

INTRODUCTION

One of the most important and promising present crops – rape – fully justifies the interest of cultivators, taking into account the multiple use of the oil obtained from this plant. In fact, progress recorded in rape cultivation both worldwide and in Romania, lead to the reconsideration of the areas cultivated and to a larger attention paid to this crop, an important source of vegetal oils. The production level is determined by the interaction between the plants biological limits and the impact of technological elements. The topic aims at establishing the technological elements determining high yields and high quality oil through the solution of the issues concerning the behaviour of rape cultivars in the Banat area conditions.

MATERIALS AND METHOD

Research aiming at reaching the objectives was carried out between 2005 and 2007 at the DS in Timisoara.

Calculating trial data was done according to the field trial setting method.

We carried out a trial for the testing of the oil rape cultivars in order to study their behaviour in the Banat area conditions and their yielding capacity from the point of view of bio diesel oil production.

On the trial field we studied as biological material the following cultivars: *Ontario*, *Manitoba*, *Ladoga*, *Montego*, and *Atlantic* sown in September at a sowing density of 100 g.g./m^2 and a row distance of 25 cm.

RESULTS AND DISCUSSION

Yield results obtained in the year 2006 are presented in Table 1 . Crop level was between 3009 kg/ha and 3285 kg/ha. The Manitoba cultivar ranked first (3285 kg/ha) from the point of view of the yield, yielding 2% more than the Ontario cultivar, i.e. 54 kg/ha, which is a very significant difference in yield.

Table 1

Yield results in 2006 in the Timisoara area

Cultivar	Yield		Difference (kg/ha)	Significance
	(kg/ha)	%		
Ontario	3285	100	-	-
Manitoba	3339	102	54	xxx
Atlantic	3009	92	-276	ooo
Ladoga	3027	92	-258	ooo
Montego	3109	95	-176	ooo

DL 5% = 23 kg/ha; DL 1% = 33 kg/ha; DL 0.1% = 49 kg/h

Studying the yield graph, we can see that the lowest yield was in the Atlantic cultivar (3009 kg/ha).

Results obtained in the year 2007 from the point of view of the rape yield are shown in Table 2.

Table 2

Yield results obtained in the year 2007 in the Timisoara area

Cultivar	Yield		Difference (kg/ha)	Significance
	(kg/ha)	%		
Ontario	2330	100		
Manitoba	2567	110	237	xxx
Atlantic	1968	84	-362	000
Ladoga	1999	86	-331	000
Montego	2069	89	-261	000

DL 5% = 13 kg/ha; DL 1% = 19 kg/ha; DL 0.1% = 29 kg/ha

Analysing data, we can see that yield values in 2007 were lower than those of the year 2006.

The Manitoba cultivar ranked again first from the point of view of the yield (2567 kg/ha), the difference compared to the Ontario cultivar being a very significant one.

The Ontario cultivar ranked second with 2330 kg/ha. kg/ha.

The Atlantic, Ladoga, and Montego cultivars yielded in the year 2007 rather close yields between 1968 kg/ha and 2069 kg/ha.

Table 3 and figure 1 show the results obtained after analysing oil comparatively between the year 2006 and the year 2007.

Table 3

Analytic results concerning oil content in rape cultivars between 2006 and 2007

Cultivar	Oil content (%)	
	2006	2007
Ontario	38.33	38
Manitoba	38	38.2
Atlantic	32	34.6
Ladoga	31.33	30
Montego	36	36.3

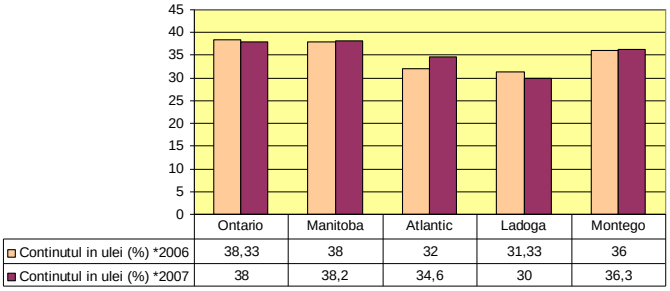

Figure 1. Dynamics of oil content in the two study years

Oil content in the studied cultivars varied between 30% in the Ladoga cultivar in the year 2007 and 38.33% in the Manitoba cultivar in the year 2006.

Analysing data concerning oil content in rape seeds, we can say that the cultivars with the highest values were Manitoba (38.33%) and Ontario (38%).

Table 4 presents results concerning oil yield in rape cultivars in the year 2006.

Table 4

Results concerning oil yield in rape cultivars in the year 2006

Cultivar	Yield		Difference (kg/ha)	Significance
	(kg/ha)	**%**		
Ontario	1248	100	-	-
Manitoba	1276	102	28	xxx
Atlantic	1041	83	-207	000
Ladoga	908	73	-340	000
Montego	1129	90	-119	000

DL 5% = 5 kg/ha; DL 1% = 7 kg/ha; DL 0.1% = 10 kg/ha

We can see that the best results were in the Manitoba cultivar (1276 kg/ha), with a difference of 28 kg/ha statistically ensured as distinctly significant.

The Ladoga cultivar recorded a negative difference of 340 kg/ha, which ranks it last among the studied rape cultivars.

Table 5

Results concerning oil yield in rape cultivars in the year 2007

Cultivar	Yield		Difference (kg/ha)	Significance
	(kg/ha)	**%**		
Ontario	893	100		-
Manitoba	975	109	82	xxx
Atlantic	630	71	-263	000
Ladoga	626	70	-267	000
Montego	743	83	-150	000

DL 5% = 5 kg/ha; DL 1% = 7 kg/ha; DL 0.1% = 10 kg/ha

In the year 2007 again the lowest oil yields were in the Ladoga cultivar (626 kg/ha), the Atlantic cultivar also yielding very low yields (630 kg/ha). Despite the fact that the Montego cultivar yielded satisfactorily, it dif not overrate the Ontario and Manitoba cultivars.

Comparing the two trial years from the point of view of the oil yield, we can see that the year 2006 was more favourable to rape crops with values neatly higher.

Oil content is very much determined by climate conditions. The favourable conditions of the year 2006 resulted in important oil yields in all the oil rape cultivars studied comparatively with the year 2007.

Table 6

Synthesis results concerning oil yield in rape cultivars in the Banat area (2006-2007)

Cultivar	Oil content (%)	
	2006	2007
Ontario	1248	893
Manitoba	1276	975
Atlantic	1041	630
Ladoga	908	626
Montego	1129	743

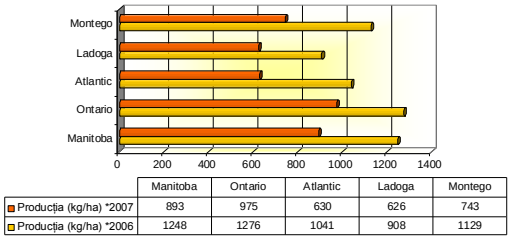

Figure 2. Dynamics of oil yield in the two studied years

Chemical composition of the seeds is influenced by genetic factors, by environmental conditions, and by cultivation technology.

CONCLUSIONS

Yield results obtained on the trial field are superior to those of production conditions, being 20-30% higher in trial conditions since yield level is determined by the amount and quality of inputs contributing to the definition of the production.

Valorising agricultural potential by encouraging alternative crops of technical plants in order to ensure energetic sources of fuel for self-propelled tractors and agricultural machines is a present energetic desideratum with wide prospects of developing rape crops in Romania.

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