

AUTUMN RAPESEED PRODUCTION UNDER THE INFLUENCE OF SOWING DENSITY IN THE CONDITIONS OF S.C.D.A. LOVRIN IN 2011

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Abstract: Rape culture is efficient only if the conditions for obtaining high seed production are satisfied. Rape seed contains 40-49% unsiccative oil with iodine index between 94-112. Rape is a good honey plant, offering early pick for bees. From one hectare of rapeseed it can be harvested up to 80-90 kg of honey. Rape production is strongly influenced by the technology used. Rape culture is effective in conditions which ensure optimum technological conditions for obtaining seed production and higher oil. Rape seed oil is a key ingredient in many foods. Its reputation as a healthy oil has created high demand in markets around the world, and overall it is the third most widely consumed vegetable oil in the world. The oil has many non-food uses, and often replaces non-renewable resources in products including industrial lubricants, biofuels, candles, lipsticks, and newspaper inks. The used agrofond was $N_{90}P_{90}K_{90}$, the other technology elements are specific to the area. The experimental results were calculated and interpreted by specific methods of experimental technique. For research, several varieties and hybrids belonging to different companies were used: PAMELA variety (LG), EXOTIC and EXTEND hybrids (Monsanto) and PR46W14 hybrid (Pioneer). Analysis of average production achieved by varieties and hybrids under study, points out that there are small differences between them. In the bifactorial experience from S.C.D.A. Lovrin, in average favorable climatic conditions, on four rapeseed cultivars were obtained yields of over 3000 kg / ha, and even 3460 kg / ha at Extend hybrid. At all four cultivars tested, the yields are strongly influenced by sowing density. Best results are obtained in the range of 100-150 g.s./m² sowing density. At the sowing density of 100 g.s./m², increase production of 344 kg / ha is provided statistically as very significant. In the climatic conditions of 2011, the highest yield is achieved at EXTEND hybrid, 3460 kg/ha. In terms of seeding density the best results are obtained by sowing rape at a density of 100 g.s./m², 3508 kg/ha.

Key words: rapeseed, sowing density, production, hybrid

INTRODUCTION

Rape is currently one of the world's most important oleifere species. Rape oil has many industrial uses, with a significant share in feeding people. (Gh Bîlteanu, 1969, 2001) Rape culture is among the crops with significant increases in global surface in recent years.

Rape seed contains 40-49% unsiccative oil with iodine index between 94-112.

From 100 kg rapeseed, 30-35 kg oil and 50-55 kg grist is obtained (N. Săulescu, 1947).

Today, among oleaginous plants, rape ranks on the fifth place in the edible oil production top, rapeseed oil having wide applications in industry and food.

Rape is an excellent rotation plant. It has a high commercial value and can provide significant revenues for farmers (V. Tabără, 2005).

Rape is a good honey plant, offering early pick for bees. From one hectare of rapeseed it can be harvested up to 80-90 kg of honey (F. Canțăr, 1965, Simona Nită, 2004).

Rape production is strongly influenced by the technology used (Gh Bîlteanu 1993, 2001, I. Borcean, 1991, D.Soltner, 1986, Z. Borlan, 1995, C. Hera et al, 1980).

MATERIAL AND METHODS

For research, several varieties and hybrids belonging to different companies were used: PAMELA variety (LG), EXOTIC and EXTEND hybrids (Monsanto) and PR46W14 hybrid (Pioneer).

Research is carried out at S.C.D.A. Lovrin in a bifactorial experience placed in randomized blocks. Experimental factors are:

A factor – variety

- a₁ = Pamela
- a₂ = Extend
- a₃ = Exotic
- a₄ = PR46W14

B factor –density

- b₁ = 50 g.s. / m²
- b₂ = 100 g.s. / m²
- b₃ = 150 g.s. / m²
- b₄ = 200 g.s. / m²

Sowing time was in the first half of the first decade of October. The used agrofond was N₉₀P₉₀K₉₀, the other technology elements are specific to the area.

The experimental results were calculated and interpreted by specific methods of experimental technique.

RESULTS AND DISCUSSIONS

Table 1 shows the synthesis of the four cultivars production of rape under the influence of seeding density. The analysis of results shows that by increasing seeding density, production is reduced. The best yields are obtained by sowing rape in the range of 100-150 g.s./m² density where production increases are appreciated statistically as very significant at the density of 100 g.s./m² and distinct significant at the density of 150 g.s./m².

Analysis of average production achieved by varieties and hybrids under study, points out that there are small differences between them. The best behavior in terms of production had EXTEND hybrid with a production increase of 120 kg / ha statistical uninsured. In the case of PR46W14 hybrid an average production of 3034 kg / ha is achieved, which represents only 91% of the reference variety, the difference of 306 kg / ha being achieved statistically as significant.

Table 1

Rape average production synthesis depending on variety, hybrid and density in conditions of S.C.D.A. Lovrin in 2011

A factor Variety	B factor - Density				Factor A average			
	b ₁ 50 gs/m ²	b ₂ 100 gs/m ²	b ₃ 150 gs/m ²	b ₄ 200 gs/m ²	Yield kg/ha	%	Difference kg/ha	Significance
PAMELA	3045	3500	3590	3225	3340	100		
EXTEND	3338	3530	3548	3425	3460	104	120	
EXOTIC	3773	3470	3105	2985	3333	100	-7	
PR46W14	2500	3530	3230	2875	3034	91	-306	0

DL 5% = 300 kg/ha

DL 1% = 400 kg/ha
DL 0,1% = 524kg/ha

B factor (Density)	Factor B average			
	b ₁ 50 gs/m ²	b ₂ 100 gs/m ²	b ₃ 150 bs/m ²	b ₄ 200 gs/m ²
Yield kg/ha	3164	3508	3368	3128
%	100	111	106	99
Difference kg/ha		344	204	-36
Significance		***	**	

DL 5% = 150 kg/ha DL 1% =200 kg/ha DL 0,1% = 262 kg/ha

Graphical representation of average production for the four rapeseed cultivars are shown in Figure 1. For a correct interpretation of these results, we note that in spring of the year 2011 there was a strong attack of *Epicometis hirta* (hairy beetle), which negatively affected production this year at some of rapeseed varieties and hybrids under test; treatment was made with contact and systemic insecticide, Fastac and Biscaya.

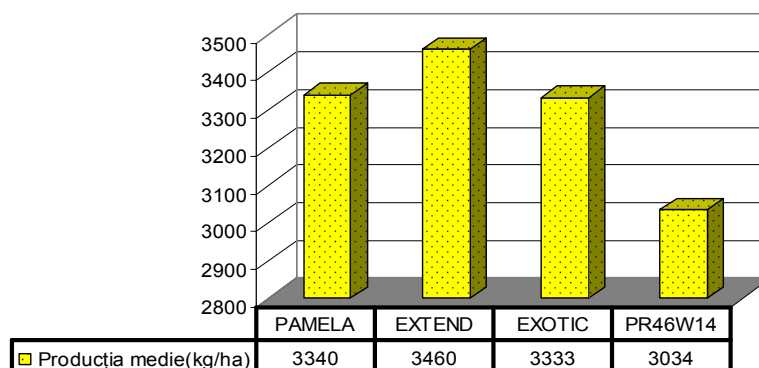


Fig. 1 - The average yields (kg / ha), depending on the variety and cultivated hybrid obtained in 2011

CONCLUSIONS

Analysis of the results obtained in rapeseed production under the influence of variety / hybrid and seeding density in S.C.D.A. Lovrin in the climatic conditions of 2011 allows us to formulate some conclusions even if the results are only for a year of experimental cycle.

1. Climatic conditions during seeding-emergence were not the most favorable, which made the period from sowing to emergence to extend longer than normal.
2. Climatic conditions during winter were at the level required by rape even if at certain times temperature fluctuations were recorded.
3. Varieties / hybrids included in the study have a good degree of adaptability to climatic conditions in the western part of the country (Lovrin microfaun).
4. The production capacity of the studied cultivars is very good (beyond 3000 kg/ha).

5. Sowing density affect production levels in all four cultures taken in research.
6. There are cultivars with oscillatory behavior in different seeding densities (EXOTIC hybrid) – high production at 50 g.s./m² seeding density and low at 100 and 150 g.s./m² density.
7. In the climatic conditions of 2011, the highest yield is achieved at EXTEND hybrid, 3460 kg/ha.
8. In terms of seeding density the best results are obtained by sowing rape at a density of 100 g.s./m², 3508 kg/ha.
9. The observations made after results interpretation obtained after one year of the experimental cycle are only partial, it is necessary to wait for the results to be obtained within the next 2 years of the cycle.

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