THE INLUENCE OF THE FERTILIZATION UPON THE OIL CONTENT AND PRODUCTION ON ONE ASSORTMENT OF THE RAPE VARIETIES

INFLUENȚA FERTILIZĂRII ASUPRA CONȚINUTULUI ŞI PRODUCȚIEI DE ULEI LA UN SORTIMENT DE SOIURI DE RAPIȚĂ

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Abstract: *The research was made with the purpose of establishing the varieties on which, in the favorable pedoclimatic conditions for rape from the Vest Plain in our country, can be obtained the highest oil productions. In this way, was studied to the influence of the fertilization upon the oil content, at an assortment of seven rape varieties.*
The researched biological material was formed of seven rape varieties new for the reference area, as follows: Valesca, Orkane, Ader, Potomac, LG, Belini, Milena. To point the negative effect of the nitrogen fertilization, to optimize the doses upon the oil content, was accounted the agrofond dose, in domain N0-N150. The research was made on a fund of P80 K80, so that varieties can expose their productive potential and the specific oil content. The results obtained accentuated the fact that the seven rape varieties studied, in the fertilization domain N0-N150, the oil content varied between 43,1% and 47,7%. The highest oil content was registered on Milena variety. The oil production was calculated on the base of the determined oil content and the seeds production. Fertilizers with nitrogen, negatively influenced the oil content, at all the studied varieties, the oil content being inferior on the agrofond fertilized with nitrogen, towards the agrofond that wasn't fertilized with nitrogen. The researches results are important for the growers, because they increase the possibility to obtain oil productions higher than 1t/ha.

Rezumat: *Cercetările s-au efectuat cu scopul de a stabilii care sunt soiurile la care, în condițiile pedoclimatice favorabile rapiței din Câmpia de Vest a țării, se pot obține cele mai mari producții de ulei. În acest sens s-a luat în studiu şi influența fertilizării asupra conținutului de ulei, la un sortiment de şapte soiuri de rapiță. Materialul biologic cercetat a fost format din şapte soiuri noi de rapiță pentru zona de referință, după cum urmează: Valesca, Orkane, Ader, Potomac, LG, Belini, Milena. Pentru a reliefa efectul negativ al fertilizării cu azot, în vederea optimizării dozelor asupra conținutului de ulei, s-au avut în vedere doza agrofondului, în domeniul N0-N150. Studiul s-a efectuat pe un fond de P80 K80, astfel ca soiurile să-şi poată expune potențialul productiv şi conținutul specific de ulei. Rezultatele obținute au evidențiat faptul că la cele şapte soiuri de rapăță studiate, în domeniul de fertilizare N0-N150, conținutul de ulei a variat între 43,1% şi 47,7%. Cel mai ridicat conținut de ulei s-a înregistrat la soiul Milena. Pe baza conținutului de ulei determinat şi a producției de semințe s-a calculat producția de ulei. Îngrăşămintele cu azot au influențat negativ conținutul de ulei, la toate soiurile luate în studiu, conținutul de ulei fiind inferior pe agrofondul fertilizat cu azot, față de agrofondul fără azot.Rezultatele cercetărilor sunt importante pentru cultivatori, deoarece evidențiază posibilitatea realizării unor producții de ulei de peste 1t/ha.*

Key words: *behaviour, varieties, fertilization, rape autumn*
Cuvinte cheie**:** *comportare, soiuri, fertilizare, rapiță de toamnă*

INTRODUCTION

It is known the fact that the rape cultivation for fuel production to be economical, from the rape seeds production harvested from one hectare, must be extracted 1-1,2 tons of oil, realizable objective in the conditions in which seeds production are higher than 2500kg/ha.

In this conditions, the autumn rape varieties cultivated presently in the pedoclimatic area specific to the Vest Plain are unconvincing under the aspect of the seeds production, and

respectively the oil production, for which reason it is imposed the testing of other varieties cultivated in countries with similar pedo-climatic conditions with he ones from our country, with the purpose of introducing them in the crop and the optimization of some technological links for obtaining economical and high quality crops.

The varieties destined for industrialization, especially in the direction of bio-fuels production (known as Green Diesel, Biodiesel, etc.), used on Diesel engines, must present a high content of oil, to have high production capacity, and to be resistant to frost, fall and diseases

MATERIAL AND METHODS

The studied varieties were: Valesca, Orkan, Ader, Potomac, LG, Belini, Milena.

The experiments disposal method along the experimental cycle was in ribbons, with three repetitions. The precursory plant was the autumn grain crop.

The base work of the soil was made with the disk harrow (GD-3,2), which realized a good mobilization and aeration of the soil without turning the furrow.

The sowing was made in the first decade of September with 80 germinal seeds/m^2. The distance between the rows was 12.5 cm, and the sewing depth was 2 cm.

The phosphorus fertilization in dose of P_{80}, was made before the terrain preparation, and the nitrogen fertilization in dose of N_{150}, was made in two stages, the first on frosty land, in February, and the rest of the dose, in the second half of March.

Weeds control was made through pre-emergent herbicidation with Treflan 480 EC – 2 l/ha, on the time of the preparation of the germinal bed and post-emergent with Lontrel 300 – 0,4 ml/ha, in March.

The pests control was made with Carbendazin 500 SC – 1 l/ha, together with Karate Zeon, 150 ml/ha.

In the experimental field were made test towards the plants height variation, the ramification degree variation, the variation of the siliqua on plant number, the variation of the seeds in siliqua number, the seeds production, the content and the oil production.

The tests were made on variants; the samples were taken from all the three repetitions and were homogenized at the level of every variant.

The calculation of the harvest data were made according to the arrangement method of the experiments in the field, and the results of the tests from vegetation regarding the plants height, the ramification degree and the number of siliqua/plant were calculated through the analyze of the statistic variations line.

The content of oil was determined through SOOXLET method.

On the base of the content of oil and seeds production, the oil production was calculated.

RESULTS AND DISCUSSIONS

The quality results from the experimental cycle, regarding the content and the oil production, are presented in table 1 and figures 1 and 2.

At the level of the factors studied, the variation amplitude was situated between the extreme limits of 43.1% at Orkane variety fertilized with N150P80K80 and 47,7% at Milena variety fertilized with N0P80K80.

Notably is the negative influence of the nitrogen fertilizers, at all the varieties studied, the content of oil being inferior on the agrofund fertilized with nitrogen towards the agrofund without nitrogen.

From table 1 and figure 2 results that the only variety on which the oil production was higher than 1000 kg/ha was Valesca, registering a production of 1071,1 kg/ha. With

productions of over 800 kg/ha, were registered varieties Potomac and Milena.

Analyzing the influence of the nitrogen fertilization on the fund of P80K80 is noticeably the fact that even if the nitrogen fertilizers have diminished the content of oil, this had favorably influenced the oil production, due to the favorable influence upon the seeds harvest.

In the context analyzed in average on the 7 fertilized varieties with N150, the oil production was raised with 65%, respectively with a very significant difference of approximate 400 kg/ha.

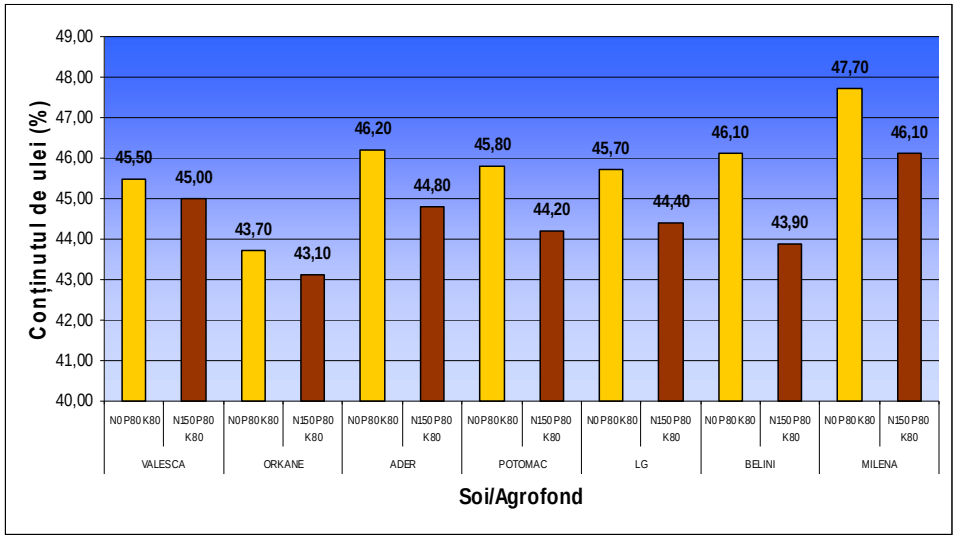

Figure 1. Content of oil variation (%), in term of the cultivated variety and the agrofond

Table 1

Results sintesis regarding the oil production determined in the experimental cycle in Checea area

Variety	Production kg/ha	%	Difference kg/ha	Signification
VALESCA	1071,1	100,0		
ORKANE	777,1	72,6	-294	000
ADER	756,5	70,6	-315	000
POTOMAC	884,6	82,6	-186	000
LG	627,9	58,6	-443	000
BELINI	644,2	60,1	-427	000
MILENA	890,6	83,2	-180	000

DL 5% = 26 kg/ha; DL 1% = 35 kg/ha; DL 0,1% = 46 kg/ha

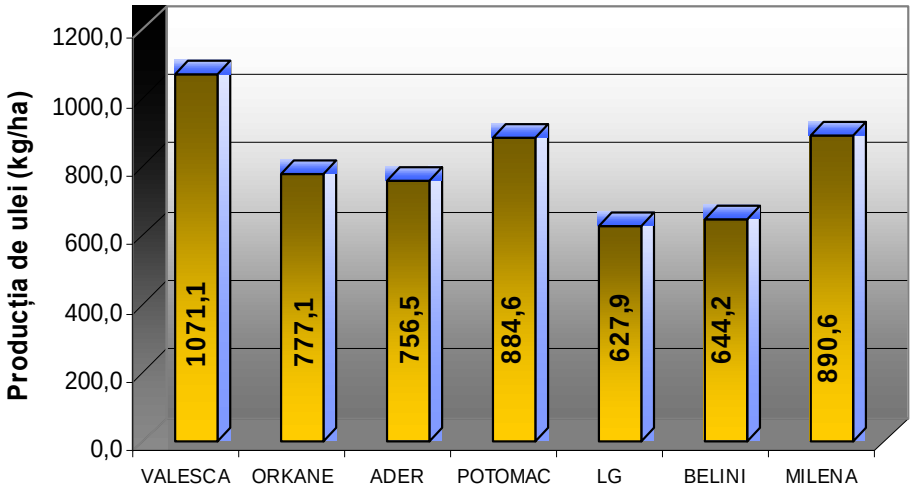

Figure 2. Content of oil variation (%), term of the cultivated variety

CONCLUSIONS

The content of oil on the 7 varieties studied, on two fertilization levels, had varied between 43.1% and 47,7%. The highest content of oil was registered on Milena variety. Fertilizers with nitrogen had negatively influenced the content of oil, at all the varieties studied.

The oil production in the researched domain varied between 627.9 kg/ha (LG variety) and 1071.1 kg/ha (Valesca variety).

Nitrogen fertilizers had favorably influenced the oil production at all varieties, because of the positive effect of this upon the seeds harvest.

In the researched domain on the fund fertilized with N150 P80 K80, in average on the 7 varieties, the oil production was higher with 65%, respectively with approximate 400 kg/ha.

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