

STUDY UPON THE MAIN MORPHOLOGICAL AND PRODUCTIVE CHARACTERS ON SEVEN RAPE VARIETIES CULTIVATED IN DIFFERENT FERTILIZATION CONDITIONS

STUDIUL ASUPRA PRINCIPALELOR CARACTERE MORFOPRODUCTIVE LA ȘAPTE SOIURI DE RAPIȚĂ CULTIVATE ÎN CONDIȚII DIFERENȚIATE DE FERTILIZARE.

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Abstract: The researches were made in Banat's Plain, on a chernozem soil type gleic. The purpose of these researches is to bring a contribution to the improvement of the rape varieties structure, with high production potential and high oil content. There were researched seven rape varieties, cultivated on four nitrogen fertilization levels, on a constant fund of P80 K80. The varieties studied were: Valesca, Orkane, Ader, Potomac, LG, Belini, Milena. The nitrogen fertilization levels that were between N0-N75-N150-N225, aimed the doses optimization under the productive and economic aspect. The studied characters were: the variation of the plants height, the variation of the ramification degree, the variation of the siliqua number/plant, the variation of the seeds number/siliqua. The results had accentuated the possibility of obtaining crops of over 3000kg/ha, in the condition on which the medium production in the west part of Romania oscillates between 1200-1600kg/ha. From the varieties were remarked Valesca, Milena, and Potomac, that can be recommended to be cultivated in the reference area. The nitrogen fertilizers had favorable influenced in the researched domain, the plants height, the ramification degree, the siliqua number per plant and the seeds number per siliqua, the maximum values being registered in domain N150-N225.

Rezumat: Cercetările s-au efectuat în Câmpia Banatului, pe un sol de tip cernoziom gleic. Scopul cercetărilor este de-a aduce o contribuție la îmbunătățirea structurii de soiuri de rapiță, cu potențial ridicat de producție și cu conținut ridicat de ulei. S-au cercetat șapte soiuri de rapiță cultivate pe patru niveluri de fertilizare cu azot, pe fond constant de P80K80. Soiurile luate în studiu au fost: Valesca, Orkane, Ader, Potomac, LG, Belini, Milena. Nivelurile de fertilizare cu azot cuprinse între N0-N75-N150-N225, au vizat optimizarea dozelor sub aspect productiv dar și economic. Caracterele studiate au fost: variația înălțimii plantelor, variația gradului de ramificare, variația numărului de silicve/plantă, variația numărului de semințe/silicvă. Rezultă că s-au efectuat determinări asupra caracterelor cu influență directă asupra cuantumului recoltelor. Rezultatele au evidențiat posibilitatea obținerii de recolte de peste 3000 kg/ha, în condițiile în care producția medie pe zona de Vest a României oscilează între 1200-1600 kg/ha. Dintre soiuri s-au remarcat Valesca, Milena și Potomac, care pot fi recomandate a fi introduse în cultură în zona de referință. Îngrășămintele cu azot au influențat în domeniul cercetat, favorabil înălțimea plantelor, gradul de ramificare, numărul de silicve pe plantă și numărul de semințe în silicvă, valorile maxime fiind înregistrate în domeniul N150-N225.

Key words: characters, varieties, fertilization, rape autumn
Cuvinte cheie: caractere, 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 pedoclimatic conditions with the 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/m². The distance between the rows was 12.5 cm, and the sowing depth was 2 cm.

The phosphorus fertilization in dose of P₈₀, was made before the terrain preparation, and the nitrogen fertilization in dose of N₁₅₀, 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 results obtained after the determination of the main morphoproductive characters, on the seven rape varieties taken in study, cultivated in different fertilization conditions are presented in figures 1-4.

At the level of the factors taken in study, the amplitude variation was situated between the extreme limits of 43.1% at Orkane variety fertilized with N150P80K80 and 47,7% on Milena variety fertilized with NOP80K80.

From figure 1, result the fact that on all varieties, the lowest height of the plants was registered on variants that were not fertilized with nitrogen, and the highest was registered in the fertilization domain N150-N225.

From figure 2, results that the ramification/plant number was less influenced on all the varieties, fact that can be explained through the rainfall deficit from the growing and ramification period of the plants.

The number of siliqua/plant presented in figure 3 and the number of seeds/siliqua presented in figure 4, indicates as optimum the fertilization doze of N150.

Based on these results, we can observe that the increase of the doze at N225 is not motivated, from the productive and economic point of view.

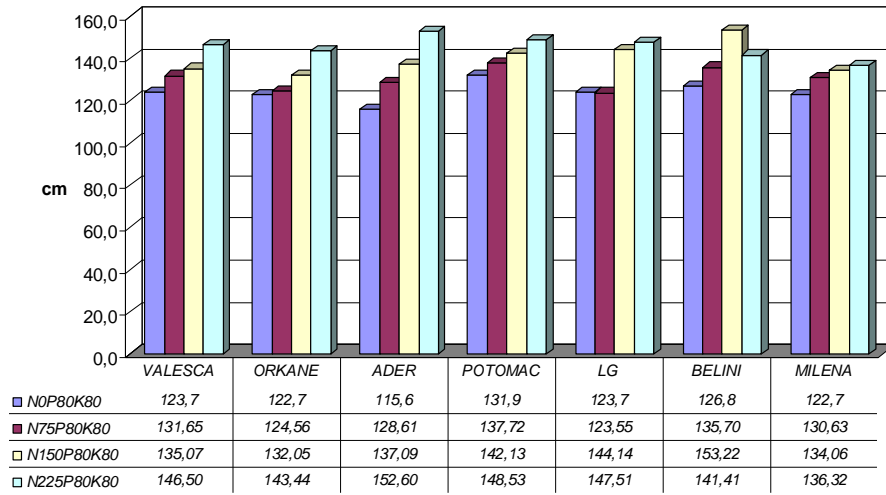


Figure 1. Plants height variation determined in year 2008 in the experimental field from Checea

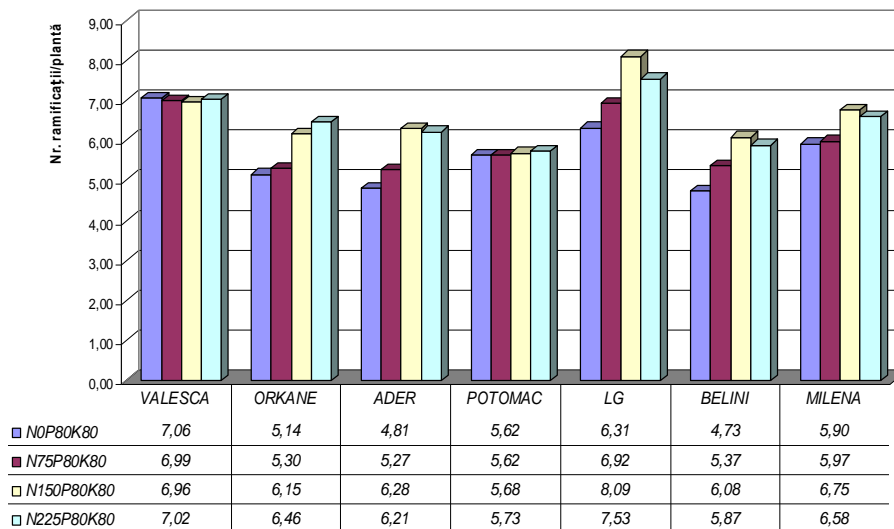


Figure 2. The variation of the ramifications number/plant determined in 2008 in the experimental field from Checea

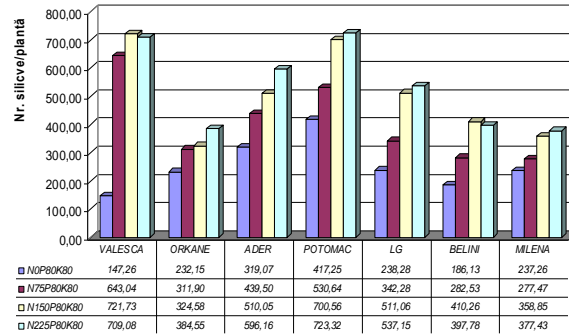


Figure 3. The variation of the silique number/plant determined in the year 2008 in the experimental field from Checea

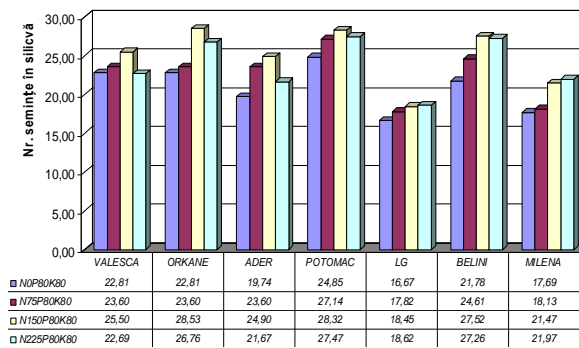


Figure 4. The variation of the seeds number in silique determined in the year 2008 in the experimental field from Checea

CONCLUSIONS

Plants height was favorable influenced by the nitrogen fertilizers that were applied, and which had determined the height increase once with the increase of the doses.

The ramifications number /plant varied between the limits 4.7 (Belini variety N0 P80 K80) and 8,0 (LG variety fertilized with N150 P80 K80).

With over 700 silique/plant were registered Potomac variety fertilized with N225 P80 K80, and Valesca variety, fertilized with N150 – 225 P80 K80.

The number of seeds/ silique in the researched domain had an amplitude between 16-28, the highest number on all the varieties being registered on the varieties fertilized with N150 – 225 P80 K80.

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