

THE PHENOTYPIC EVALUATION OF SOME OILSEED RAPE (*BRASSICA NAPUS*) CULTIVARS USING THE MAIN MORPHOLOGICAL TRAITS

EVALUAREA FENOTIPICA A UNOR UNOR CULTIVARE DE RAPITA (*BRASSICA NAPUS*) CU AJUTORUL PRINCIPALELOR CARACTERELOR MORFOLOGICE

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Abstract. Oilseed rape is considered to be nowadays one of the most important oilseed plant due to its large utilizations in human nutrition, animal feed and biofuels production (Rygulla și colab., 2007). The aim of this study was to analyze the main morphological traits at 65 oilseed rape cultivars in order to make their morphological characterization. For this purpose, the studied material was sown in the field in the year 2011-2012 at SCDA Secuieni. During the vegetation period, some observations had been made in order to determine: the plant height, the number of branches, number of pods per plant and weight of a thousand grains. The obtained results showed that the studied material has a large phenotypic diversity.

Key words: oilseed rape, morphological traits, phenotypic evaluation

Rezumat. Rapița (*Brassica napus* L.) este considerată în prezent una dintre cele mai importante plante oleaginoase datorită multiplelor sale întrebuințări în alimentația umană, furajarea animalelor sau la obținerea de biocombustibil (Rygulla și colab., 2007). Scopul acestui studiu a fost evaluarea principalelor caractere morfologice a 65 de cultivare de rapiță de toamnă în vederea caracterizării fenotipice. Pentru realizarea acestui lucru, cele 65 de cultivare de rapiță au fost semănate în câmp, în anul agricol 2011-2012 la SCDA Secuieni. În timpul perioadei de vegetație s-au făcut observații pentru a determina următoarele caractere morfologice: înălțimea plantelor, numărul de ramificații, numărul mediu de silicve pe planta și masa a o mie de boabe. În urma observațiilor efectuate s-a constatat o diversitate fenotipică ridicată a cultivarelor studiate

Cuvinte cheie: rapiță, caractere morfologice, evaluare fenotipică

INTRODUCTION

Brassica napus is a young species that originating through a spontaneous hybridization between turnip rape and cabbage (Kimber and McGregor 1995).

Due to its many uses oilseed rape started to be one of the most cultivated crop worldwide. The information about the phenological traits, yield components and seed yield of *Brassica* are very important in the breeding program to develop

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oilseed rape varieties that are better adapted to target production areas (Rameeh, 2010; Ali et al., 1995; Malik et al., 2004).

The aim of this study was to analyze the main morphological traits at 65 oilseed rape cultivars which will provide valuable information for the future studies to obtain some oilseed rape cultivars which are better adapted to the climatic conditions from our country.

MATERIAL AND METHOD

The biological material used for the researches which were conducted in the present study was represented from 65 oilseed rape cultivars originating from Centre for Genetic Resources Netherlands – CGN. The details about this are presented in table1.

The oilseed rape cultivars were sown in the field in the year 2010-2011 in order to make the necessary observation regarding the morphological traits. The experience was sown in randomized blocs in three repetitions.

During the vegetation period, we made some observations to determine the plant height, the number of branches, number of pods per plant and weight of a thousand grains.

Table 1

Details about the studied oilseed rape cultivars

Nr. Crt.	Name of accession	Country of origin
1.	Libritta	Germany
2.	Skriverskii	Lithuania
3.	B. napus group 1	Ukraine
4.	Kievskii 216	Ukraine
5.	Kievskii 18	Ukraine
6.	Kombi	Ukraine
7.	SKR. II Kormovoi	Lithuania
8.	Uspekh	Ukraine
9.	Blagodatnyi	Ukraine
10.	Fedorovskii	Ukraine
11.	Snityskii	Ukraine
12.	Diana	Germany
13.	Ksaverovskii	Ukraine
14.	Kodakskii	Ukraine
15.	Lictor	Germany
16.	Liglandor	Germany
17.	Ligora	Germany
18.	Lindora	Germany
19.	Lingot	France
20.	Link	-
21.	Liquanta	Germany
22.	Lirabon	Germany
23.	Lirajet	Germany
24.	Lirakotta	Germany
25.	Lirama	Germany
26.	Lirastern	Germany
27.	Lirektor	Germany
28.	Liropa	Germany
29.	Madora	Germany
30.	Maras	Poland
31.	Marens	France
32.	Marex	Germany
33.	Matador	Sweden
34.	Mirander	Germany
35.	Niederarnbacher	Germany
36.	Norli	Germany
37.	Octavia	-

38.	Olimpiade	Italy
39.	Olymp	Germany
40.	Panther	Sweden
41.	Perle	Germany
42.	Andol	France
43.	Arabella	Germany
44.	Bienvenu	France
45.	Brilland	Poland
46.	Bristol	France
47.	Buko	-
48.	Capricorn	Great Britain
49.	Cobra	Germany
50.	Collo	Germany
51.	Planet	Germany
52.	Prominj	Russia

53.	Ridana	Germany
54.	Samourai	France
55.	Score	Great Britain
56.	Silesia	Czechoslovakia
57.	Silvia	Germany
58.	Sollux	Germany
59.	Susana	Germany
60.	Tamara	Germany
61.	Tapidor	France
62.	Tor	Sweden
63.	Veronika	Germany
64.	B. napus group 2	Ukraine
65.	B. napus group 3	Moldavian Republic

The plant height was determined in the field in July, when all the oilseed rape plants were at the flowering stage, by measuring the plant height at 10 plants for each cultivar and each repetition. The number of branch for each cultivar was determining also in the field, by counting it at 10 plants for each cultivar and repetition.

The number of pods and MMB were determined in laboratory, by collecting the pods from 10 plants from each cultivar and repetition. The number of pods was determined by counting and the MMB was determined by weighting the seeds.

For each trait the observations were determined in three repetitions and the results were statistically calculated using the analyze of variance method (Săulescu et al., 1967; Leonte, 1997). The significance of the differences between the variants were interpreted using the limit difference method (DI 5%, DI 1% și DI 0,1%).

RESULTS AND DISCUSSIONS

After the observations that were made during the year 2010-2011 in the condition from SCDA Secuieni, the plant height varied between the analyzed cultivars. The plant height varied between 144.97 cm recoded at genotype "Maras" and 59.99 cm at "Manshlots Hambourger" with an average of 113.82 cm (figure 1). The average of the experience was used as control.

The value was generally higher than the mean value of the experience and 29 cultivars had positive significant differences compared to the control (such as Collo", "Prominj", "Helena") and also 29 had significant negative differences than the control, for example "Doral", "Herkules", "Lecor".

The number of branches per plant ranged from 13.67 at "Liglandor" cultivar and 4 "Olympiad" with an average of 8.49 (figure 2). In this case, 4 cultivars had positive significant differences than the control („Lesira”, „Ridana”,

„Brassica napus group 4”) and just one cultivar significant negative differences („Marex”).

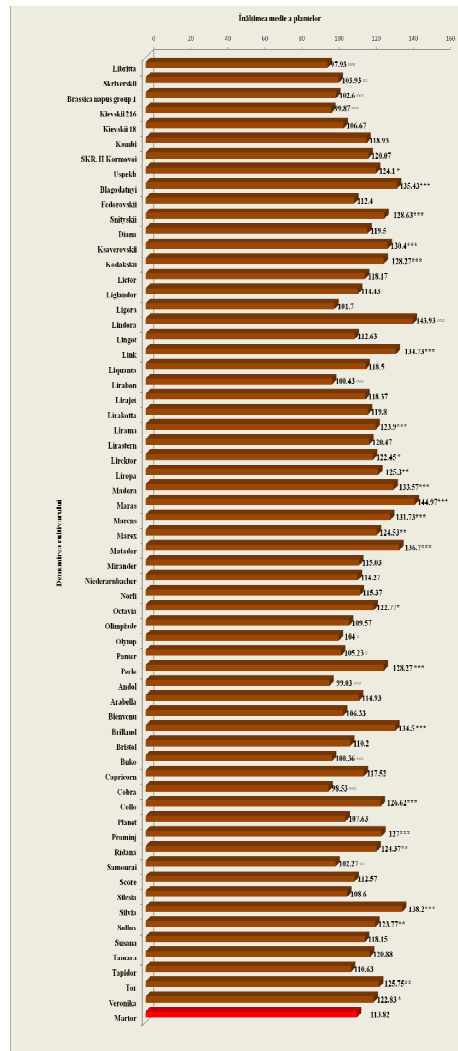


Fig. 1 - Plant height values of the studied oilseed rape cultivars

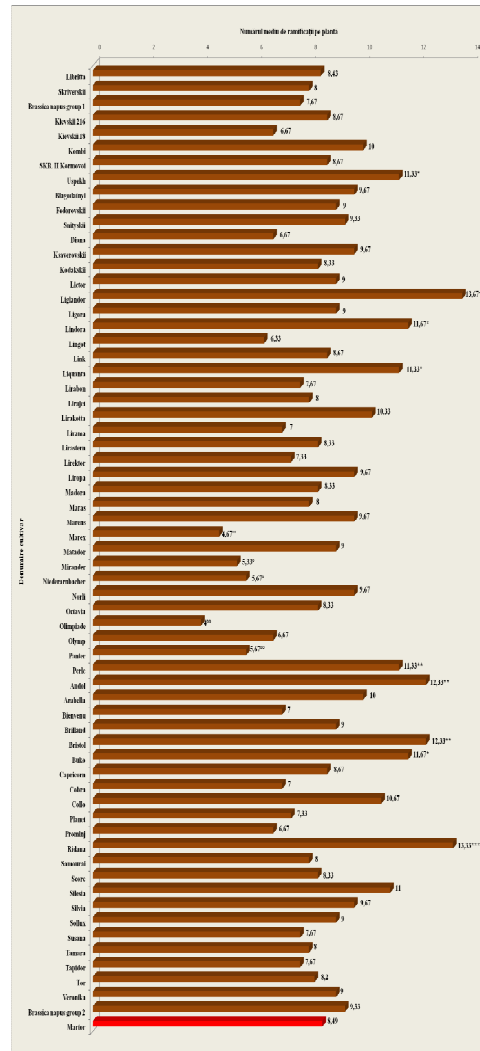


Fig. 2 - The number of branches of the studied oilseed rape cultivars

The number of pods per plant for each cultivar ranged between 1283 to "Libraska" and 115 to "Brassica napus group 9" with an average of 115 silicve per plant (figure 3).

For this character, 33 genotypes had positive significant differences than the control („Collo”, „Prominj”, „Fiona) and 63 were with significant negative differences than the control („Diamant”, „Janetzki”, „Kurander”, etc.)

The character “plant height” recoded an amplitude variation of 84,98 cm and the number of branches had an amplitude variation of 9,67 compared with the control.

The number of pods registered an amplitude variation of 1198 pods/ plant and the MMB had an amplitude variation of 4,05 grams.

The obtained results regarding the phenotypic evaluation of the studied *Brassica napus* material gave valuable information to the breeders that can be used in the future studies in the selection process.

Acknowledgments: The financial support for our work is from the project POSCCE ID714/1268 funded by EU.

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