

STUDIES ON THE MAIN FEATURES VARIABILITY AT 'PREMIER', (*SPINACEA OLERACEA*) VARIETY

STUDII PRIVIND VARIABILITATEA PRINCIPALELOR CARACTERE LA SOIUL DE SPANAC 'PREMIER' (*SPINACEA OLERACEA*)

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Abstract Extinction of species, varieties and cultivars impose conservation actions by scientific methods. Studies on uniformity, stability (DOS) and production performance are undertaken annually by breeders in order to maintain the variety within the normal variability that has been created. This paper presents the limits of variability depending on studied feature. The phenological observations and biometric measurements performed highlight that the variety of spinach "Premier" has medium variability (s% range 10-20) for characters: height and diameter of leaves rosette, plant height, seed weight / plant and large variability ($\% \geq 20$) for characters: weight of leaves rosette, number of branches / plant.

Key words: population, gene, genotype, coefficient of variability

Abstract Pericolul disparitiei unor specii, varietati si soiuri a determinat actiuni de conservare a acestora dupa metode stiintifice. Studii privind verificarea conditiilor de distinctibilitate, omogenitate si stabilitate (DOS) si a performantelor de productie se fac anual de către ameliorator, în vederea menținerii soiului în limitele de variabilitate normale prin care a fost creat. În lucrare sunt prezentate limitele de variabilitate funcție de caracterul studiat. Din observațiile fenologice și măsurătorile biometrice efectuate se relevă faptul că pentru soiul de spanac "Premier" variabilitatea a fost mijlocie (s% cuprins între 10-20) pentru caracterele: înălțimea și diametrul rozetei de frunze; înălțimea plantei semincere; greutatea semințelor/plantă si mare ($s\% \geq 20$) pentru caracterele: greutatea rozetei de frunze, numărul de ramificații/plantă.

Cuvinte cheie: populație, gene, genotip, coeficient de variabilitate

INTRODUCTION

Extinction of species, varieties and cultivars determined their conservation actions by scientific methods. Investigations of distinctibility, uniformity and stability (DOS) and studies on production performance are made annually by the breeder to maintain variety within the normal variability that has been created (Ambarus, 2010).

Spinach is considered quite rustic, meaning that germinate at relatively low temperatures from 3-5 ° C and resists quite well to the slight negative temperature (minus 8-10 ° C). The plant is sensitive to photoperiod and thermoperiod. Day long and / or low temperatures (6-10°C) causes early vernalization and flowering. In terms of sexuality, spinach is a dioecious species (with unisexual flowers on

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different plants of the opposite sex). The ratio of female and male plants usually is 1:1, but some environmental conditions can alter this ratio. Pollination is made by wind, male plants produce large amounts of 'easy' and dry pollen. Dioicous can be explored to obtain hybrids, knowing that this species has a significant somatic heterosis. Getting inbred lines can be solved by causing hermaphroditism or monoecious, or by self-pollinated full-sib (full sib) in the two plants brother + sister (Muresan 1986). The fruit is a round shaped pseudoachen (var. inermis) or round-corners (var. spinosa). Each fruit contains a single seed. A plant produces 200-300 seeds / fruit. Cultures of 'PREMIER' variety set up in early spring cover the following stages: the juvenile stage (about 30-40 days), postjuvenile phase (10-20 days), followed by prefloriferous phase (10-15 days), flowering stage (15-20 days), and finally, the seed stage (Brezeanu, 2010).

MATERIAL AND METHOD

Selection method used was individual selection as positive characters (choice of elites). Following characters were studied: height rosette of leaves – cm, diameter of the rosette of leaves – cm, weight of the rosette of leaves – g, number of branches / plant, seed plant height – cm, weight of seeds / plant – g.

Biometric measurements were performed on a sample of 100 individuals (random sample) taken at random on the diagonal field.

The experiments were conducted in condition of an alluvial soil, medium evaluated and sandy loam developed texture, pH value between 6.2 and 6.7 and humus content 2.5-2.7 %.

RESULTS AND DISCUSSIONS

Research methods in genetic, breeding and seed production find its real use when working is done with a suitable biological material. Choosing of material need to respect some general conditions: (1) to present distinct, clear and easy to follow features, from parents to descendants; (2) have a short life cycle; (3) to produce more descendants; (4) easy to produce mutagenic changes under the influence of muthagens factors; (5) maintain the valuable characters at the descendants.

In cultivation of spinach variety 'Premier' phenological observations and biometric measurements were made for each phenological phase as follows: (i) date of sowing - 22.09, (ii) the date of emergence - 10.10, (iii) date training rosette of leaves - 14.04, (iv) date of issue floriferous stems - 30.04, (v) flowering time - 20.05, (vi) reaching physiological maturity of seeds - 15.07.

By analyzing the proportion of female plants, male and hermaphrodite, 100 individuals included in the study, resulted: 71% of plants were female, 27% of plants were male and 2% of plants were hermaphrodite.

In the conservative selection of "Premier" spinach variety a sufficiently large number of elites (typically plants) have chosen in purpose to avoid the genetic drift. Statistical and mathematical processing of data drawn from the measurements, showed the following ranges of variation at spinach variety "PREMIER" (table 1).

Table 1

Variability study of some traits at "Premier" spinach variety

No	Features	X	s	s%	Limits of variation	Signification %
1.	Height of rosette leaves - cm	15.19	1.93	12.71	13.26-17.12	10-20
2.	Diameter of rosette leaves - cm	38.70	4.02	10.39	34.68-42.72	10-20
3.	Weight of rosette leaves - g	198.40	44.26	22.31	154.14-228.66	>20
4.	Number of branches / plant	11.42	2.36	20.67	9.06-13.78	>20
5.	Height of plant seed - cm	108.94	19.69	18.07	89.25-128.63	10-20
6.	Weight of seeds / plant - g	9.07	1.35	14.88	7.72-10.42	10-20

- 10-20 - medium level of variability
- >20 - high level of variability

From the data presented in Table 1, it appears that the variability differ depending on studied character. It's middle at height and diameter of rosette leaf, plant height seed and seed weight / plant and high at leaf rosette weight and number of branches / plant. Histograms of variation (Gaus's curve) for each studied traits present variation of : height rosette of leaves – cm, diameter rosette of leaves – cm, weight rosette of leaves - g, weight of seeds / plant - g. (Fig.1-4).

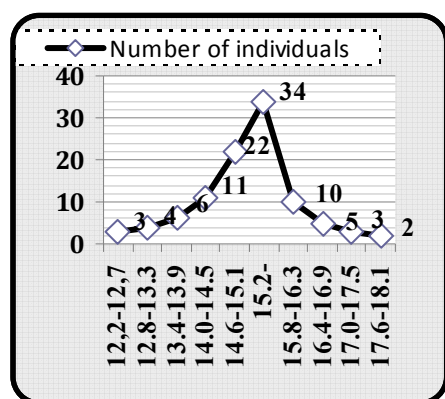


Fig. 1 - Histogram of leaf rosette's height variation (cm)

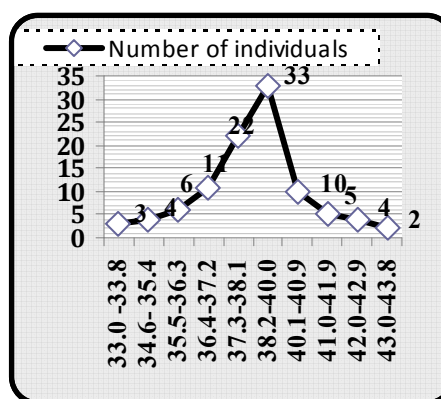


Fig. 2 - Histogram of leaf rosette's diameter variation (cm)

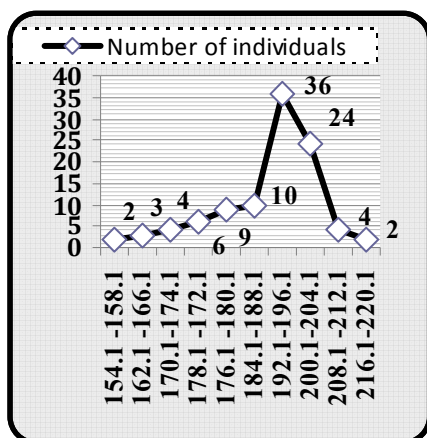


Fig. 3 - Histogram of leaf rosette's weight variation (cm)

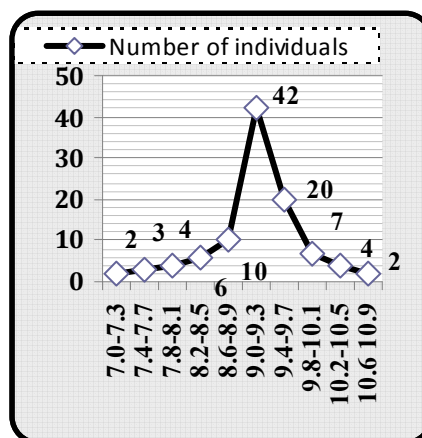


Fig. 4 - Histogram of seed's weight/ plant variation (g)

CONCLUSIONS

“PREMIER” variety was within the normal range of variation behaving in culture as a kind distinct, uniform and stable.

The variability of features like height and diameter of rosette leaf, plant height seed and seed weight / plant was middle and high at leaf rosette weight and number of branches / plant.

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