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THE RESULTS IN HYBRID POPULATIONS GARDEN PEA *(Pisum sativum L.)* BY THE NUMBER OF VEGETATIVE NODEs

V.M. Strygun, *PhD in Agricultural*
L.V. Strygun, *assistant*
S.S. NUL&ES of Ukraine «Nizhyn Agrotechnical Institute»

The main method of selection garden pea is currently the hybridization followed by individual and mass selection. Hybridization involves crossing a specially selected varieties to obtain better form. Under these conditions, the crossing of two varieties breeder is important to know the limits and nature of variability in F2 and how the transition to full hybrid populations.

Introduction. During the breeding necessary condition for the selection of new varieties. Its effects in populations check the original parental varieties, selected progeny plants, hybrids of different generations. Therefore, it is important to find methods of reasonably estimating received distinctions. The availability of such data is necessary for the proper operation of hybrid populations.

Many researchers in different crops based quantify the parameters that characterize the types of action and interaction of genes in the inheritance of quantitative traits and considering the ratio of dominant and recessive genes, was made the forecast efficiency of selection on major quantitative traits [1, 3].

The aim of our study was to verify the forecast for garden pea.

Materials and methods. Experiments conducted research on Skvirsky experimental station of the Institute of Vegetables and Melons UAAS for four years. Laying and breeding areas evaluated biological economic valuable features according to conventional methods [2,4,5].

The paper used a well studied varieties collection garden pea with complex agronomic traits and properties and such individual traits. We investigated the effectiveness of selection on the basis of "the number of vegetative (not fertile) nodes" in combination of interbreeding №7019 / Alpha. Because this quantitative traits belong to relatively simple (controlled by a relatively small number of genes), selection was carried out in early generations F_2 and F_3. We determined: the arithmetic mean of the number of vegetative nodes and standard deviation of parental grades obtained hybrid populations and selection of them, as well as secondary features of the parents, the ratio of arithmetic values hybrid populations, selection of the middle and better parent selection differential, coefficient of variation.

Research results. The arithmetic mean of the number of vegetative nodes on the plant varieties in parental №7019 (11,8 ± 0,2 pcs.) and Alpha (7,6 ± 0,2 pcs.) In the first year of studies differed (see. Table and Figure). (Varieties belong to different maturity groups – middle-P_1, P_2 – precocious.

The growing season is positively correlated with the number of vegetative nodes on the plant). Variability signs appeared insignificant in P_1 and close to that of P_2, coefficient of variation was 9.3 and 12.5%, respectively. The arithmetic mean value of the number of units in a vegetative initial population F_2 (10,5 ± 0,4 pcs.) Relative to the average parent (9.7 pc.) was 108.2%, with better – 138.2%. The level of variation was average characteristics of the population – 22.2%.

Selection was carried out in the direction of reducing the number of vegetative nodes. Mean value selection in populations F_2 (8,1 ± 0,5sht.) 16.5% average prevailed both parents and 6.6% inferior to the best of parents. Selection spent with selective differential of 2.4 pc., or 22.7%. As a result, signs of reduced volatility relative to population by 3.4%.

In the second year of studies the arithmetic mean of the number of parent varieties vegetative nodes P_1 and P_2 (12,7 ± 0,3 and 8,9 ± 0,1) compared with the previous year increased slightly (by 1.0 and 1.3 pc.) that affected the average rate of parents (increased to 10.8 pcs.). The coefficient of variation in P_1 (10.2%) increased in relation to the previous year by 0.9% in P_2 (6.7%) on the contrary decreased by 5.8%. In both cases they prove insignificant level of variability of symptoms.

The level of population variability F_3 compared to F_2 decreased by 6.4%, with a selection of F_2 – by 3.0%. Regarding the average population average parents F_3 was lower by 12.1%, and higher than the better parent by 6.7%.

Selection of F_3 populations conducted with less selective differential – 0.7 pc., or 7.4%. The arithmetic mean value of the number of vegetative nodes (8,8 ± 0,3 pcs.) Was lower than the average 18.5% of parents, but better – by 1.1%, the low level of variability – 6.8%.

After two shot selection breeding offspring in the third year of research, the results have been checked in the population F_5. The arithmetic mean of the parental varieties in its fourth year as follows: P_1 – 12,9 ± 0,2 pcs., P_2. – 8,4 ± 0,1 pcs., An average of 10.7 pc parents. The average population F_5 (8,0 ± 0,4 pc.) was less than the average parent to 25.2, better

Table. Consequences selection in hybrid populations Pea by the number of vegetative nodes in combination №7019 x Alpha

Years of research	F	$\bar{O} \pm S\ \bar{x}$	Ave-rage of par-ents, pieces	The ratio in %		Selective differential		V, %
				to ave-rage of parents	to the best of parents	pieces	%	
First	P_1 (№7019) P_2 (Alpha)	11,8±0,2 7,6±0,2	9,7	- -	- -	- -	- -	9,3 12,5
	F_2	10,5±0,4		108,2	138,2	2,4	22,7	22,2
	Selection	8,1±0,5		83,5	106,6			18,8
Second	P_1 P_2	12,7±0,3 8,9±0,1	10,8	- -	- -	- -	- -	10,2 6,7
	F_3	9,5±0,3		87,9	106,7	0,7	7,4	15,8
	Selection	8,8±0,3		81,5	98,9			6,8
Third	Reproduction of selections (breeding nursery)							
Fourth	P_1 P_2	12,9±0,2 8,4±0,1	10,7	- -	- -	- -	- -	8,6 7,0
	F_5	8,0±0,4		74,8	95,2			8,0

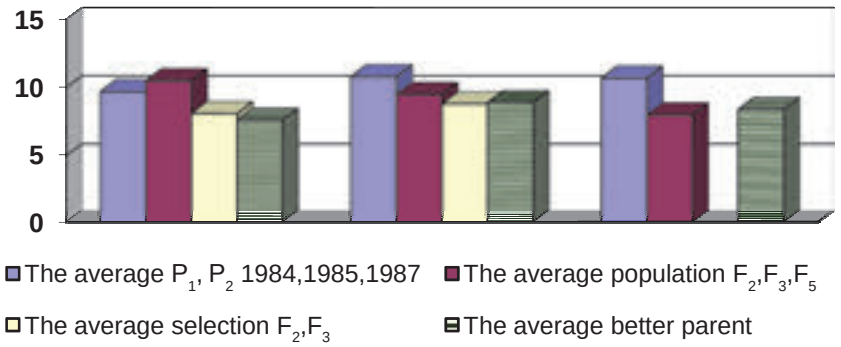

Fig. The results by the number of vegetative nodes the beginning of the selection in F_2

– by 4.8%. The coefficient of variation indicates a weak population variability – 8.0%.

Conclusion. Thus, two shot selection for "number of vegetative nodes" in early hybrid populations F_2 and F_3 in combination garden pea varieties №7019 / Alpha was achieved positive results. The coefficient of variation indicates a low level of variability of 8.0%. It was lower in relation to the population F_2 14,2, F_3 – by 7.8%. Therefore, to achieve selective effect and steady, uniform of its manifestation, just one or two selections.

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АНОТАЦІЯ

Стригун В.М., Стригун Л.В. *Результати добору в гібридних популяціях гороху овочевого (Pisum sativum L.) за кількістю вегетативних вузлів // Біоресурси і природокористування. – 2015. – 7, № 5–6. – С.11–13.*

Наведено результати добору в гібридних популяціях гороху овочевого (Pisum sativum L.) за кількістю вегетативних вузлів. Показано, що кінцева популяція F_5 за рівнем прояву ознаки переважає вихідну популяцію, середнього з батьків та кращого із них. Встановлено, що для досягнення селекційного ефекту та стійкого, однорідного його прояву, достатньо одного або двох доборів.

АННОТАЦИЯ

Стригун В.М., Стригун Л.В. *Результаты отбора в гибридных популяциях гороха овощного (Pisum sativum L.) по количеству вегетативных узлов // Биоресурсы и природопользование. – 2015. – 7, № 5–6. – С.11–13.*

Представлены результаты отбора в гибридных популяциях гороха овощного (Pisum sativum L.) по количеству вегетативных узлов. Показано, что конечная популяция F_5 по уровню проявления признака превышает исходную популяцию, среднего из родителей и лучшего из них. Установлено, что для достижения селекционного эффекта и устойчивого, однородного его проявления достаточно одного или двух отборов.