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INHERITANCE OF THE TRAIT OF THE WEIGHT OF 1000 SEEDS IN ORIGINAL SOURCES AND F1 HYBRIDS OF BEANS BELONGING TO *PHASEOLUS VULGARIS* L. TYPE

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ABSTRACT
This article presents the performances obtained on the weight of 1000 seeds of original sources and F_1 hybrids of common bean. According to the results of the study, the highest performance for the weight of 1000 seeds was found in the foreign "Vir" variety and in the combination F_1 Ravot x Solnyshko obtained on the basis of hybridization in positive superdominant inheritance, while the lowest performance was observed in the Solnyshko and Belaya fasol varieties, and in the combination F_1 Solnyshko x Baby Lima in negative superdominant inheritance.
KEY WORDS: *bean, Phaseolus vulgaris, yield, inheritance, genotype, dominant, biomass, hybrid, grain weight.*

Кириш
Common bean (*Phaseolus vulgaris* L.) is one of valuable protein-rich food crops. In order to obtain high yield of this plant, creation of high-yielding varieties, disease-resistant genotypes will serve to satisfy the population's need for protein deficiency.

Among the legume crops, beans are the most nutritious and are called "the poor's meat" because they compensate for the lack of protein found in low-income families [9].

As a result of the studies conducted on the physiology and biochemistry of the bean plant, it was determined that the supply of substances necessary for plant development, the correct application of element K, determining the application rate of fertilizers are important for obtaining a high yield from the common bean plant [6]. Treatments with N fertilizers helps to increase the yield of bean plant too [5].

The effect of water with different electrical conductivity on the biomass and productivity of bean plants was studied. As a result, it was known from the experiments that the height of the stem of the plant and the number of green leaves decreased in 35 days [8].

Also, genetic [2, 3] and physiological studies are being carried out in our country on local and foreign bean plant varieties [4, 10].

THE OBJECT AND THE METHODS OF RESEARCH

The research experiments were carried out in the experimental area of the Faculty of Natural Sciences of the Chirchik State Pedagogical University and in the scientific laboratory "Molecular Biology and Bioinformatics". Parental sources such as Solnyshko, Kalipso krasnaya, Baby Lima, Vir, Belaya fasol and Ravot and F_1 hybrids of bean plant belonging to *Phaseolus vulgaris* L. type were used as the research object.

From valuable economic traits – the weight of 1000 seeds was determined by generally accepted methods [1]

The degree of dominance of the traits in the studied hybrids of the first subgroup was calculated according to the formula of S. Wright presented in the works of G. E. Beil and R. E. Atkins [5]:

$$hp = \frac{F_1 - MP}{P - MP}$$

hp – dominance coefficient;
F_1 – the arithmetic mean of the hybrid;
MP –the arithmetic mean of both parent forms traits;
P – the arithmetic mean of the best parental or maternal form trait.

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hp = 0 – no dominance;
0 <hp<±1,0 – intermediate dominance;
hp = ±1,0 – complete dominance;
hp> ±1,0 – super-dominance.

THE RESULTS OF THE RESEARCH

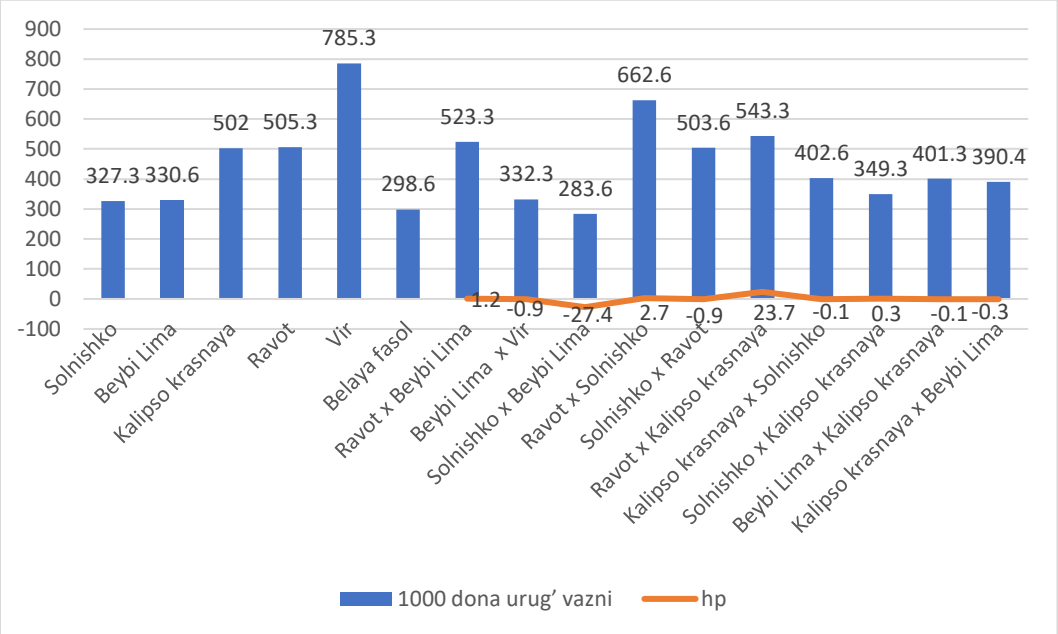
During the study, the inheritance of the trait of the weight of 1000 seeds was investigated in the original forms and F_1 plants of *Phaseolus vulgaris* L.type grown in a field experiment site.

When the experimental data were analyzed, it was observed that the parameters of the original forms involved in the hybridization were different from each other according to the trait of 1000 seeds weight. Relatively similar indicators (327.3 g, 330.6 g, 298.6 g, respectively) were recorded in the foreign Solnyshko, Baby Lima and Belaya fasol varieties. In the local Ravot variety the indicator was 505.3 g, and a similar figure was observed in the foreign Kalipso krasnaya variety, which was 502.0 g. The highest rate for the weight of 1000 seeds was found in the foreign Vir variety (785.3 g) from the parental forms.

In F_1 plants obtained by hybridization of domestic and foreign varieties belonging to *Phaseolus vulgaris* L.type, the highest result on the 1000 seeds weight trait was 662.6 g in the F_1 Ravot x Solnyshko combination, and the lowest result was 283.6 g in the F_1 Solnyshko x Baby Lima combination. F_1 Kalipso krasnaya x Solnyshko and F_1 Baby Lima x Kalipso krasnaya combinations showed no significant difference and were recorded as 402.6 g and 401.3 g, respectively.

Also, in the three F_1 combinations Solnyshko x Ravot, F_1 Ravot x Baby Lima, F_1 Ravot x Calipso krasnaya, where the local Ravot variety involved, the results were not significantly different from each other, and it can be seen that it was in the range of 503-543 g. From mathematical analysis, it was found that the coefficient of variation of F_1 plants was 0.46-2.38%.

In F_1 plants obtained as a result of crossing the original sources, the trait of 1000 seeds weight was observed to be inherited in negative and positive intermediate state, negative super dominant and positive super dominant states. For example, in F_1 Ravot x Kalipso krasnaya combination a positive superdominant condition (hp=23.7) was noted, while in F_1 Solnyshko x Baby Lima combination it was found to be inherited in super negative dominant condition (hp= -27.4). Positive intermediate inheritance was observed only in F_1 Solnyshko x Kalipso krasnaya combination (hp=0.3), and negative intermediate inheritance was observed in 5 F_1 combinations. A positive dominant inheritance (hp=1.2) was noted in the F_1 Ravot x Baby Lima combination where the local Ravot variety had been involved.



1-Diagram 1. Inheritance of the trait of 1000-seeds weight in original sources and F_1 plants of bean belonging to *Phaseolus vulgaris* L. type.

The analysis of the conducted studies showed that the highest indicator of the weight of 1000 seeds of the plants of *Phaseolus vulgaris* L.type was noted in the foreign variety Vir (785 g), and also in the combination Ravot x Solnyshko of F_1 hybrids, that is 662.6 grams, the inheritance in a positive super-dominant (hp=2.7) state was determined. Also, during the study, it was observed

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that the Belaya fasol variety (298.6 grams) from the parental sources had a low result, this trait had a lower performance in the F_1 Solnyshko x Baby Lima combination (283.6 grams) and was inherited in super negative dominant (hp= -27, 4) condition.

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