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CORRELATIVE RELATIONSHIPS BETWEEN SOME VALUABLE ECONOMIC TRAITS OF SOYBEAN FAMILIES

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Abstract. Enrichment of genetic resources of agricultural crops, including the soybean gene pool, allows us to provide our country's population with protein-rich food, nutritious feed in poultry and livestock farming, as well as improve soil microflora and increase productivity. The soybean gene pool preserved in Uzbekistan is the basis for the successful development of soybean farming, which is accompanied by an annual increase in attention to new crop varieties in the regions of our country. It is an inexhaustible source of their transfer to cultivated varieties and the creation of promising varieties on a new genetic basis.

This article presents data on the correlations between some valuable economic traits of the soybean family.

Keywords. Soybean, yield, valuable economic traits, series, variety, pattern, standard, superiority.

Аннотация. Обогащение генетических ресурсов сельскохозяйственных культур, в том числе генофонда сои, позволяет обеспечить население нашей страны богатыми белком продуктами питания, питательными кормами в птицеводстве и животноводстве, а также улучшить микрофлору почвы и повысить продуктивность. Сохраненный в Узбекистане генофонд сои является основой успешного развития соеводства, что сопровождается год от года возрастающим вниманием к новым сортам сельскохозяйственных культур в регионах нашей страны. Он является неисчерпаемым источником полезных признаков для переноса в культурные сорта и создания перспективных сортов на новой генетической основе.

В данной статье представлены данные о корреляционных связях между некоторыми ценными хозяйственно-ценными признаками семейства соевых.

Ключевые слова. Сое, урожайность, ценные хозяйственные признаки, сорт, рисунок, размер, превосходство.

The presence of rich genetic potential in the soybean gene pool and its study create opportunities for the development of new priority areas in soybean cultivation, the creation of varieties that meet the requirements of the national economy and are competitive in the world market.

Accordingly, using the gene pool, hybrids were obtained by crossing soybean varieties of local and Krasnodar selection. We selected families from the existing hybrids and analyzed their valuable economic traits. In this article, we present the correlations between some valuable economic traits.

As is known, the relationship between traits is carried out by pleiotropic effects, which cause changes in several traits due to changes in one gene, and by the combination of genes. The correlation coefficient of traits is indicated by r and varies from -1 to +1. If the correlation is weak, it ranges from 0 to 0.33, if it is medium, it ranges from 0.33 to 0.66, and if it is strong, it ranges from 0.66 to 1, and the correlation coefficient is given with positive (+) and negative (-) signs.

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According to the literature analysis, the correlations between protein and yield are of varying degrees and vary depending on the genotype of the organism and agrotechnical measures.

When analyzing the correlations between protein and yield in the selected families, our experiments mainly showed strong and moderate positive correlations (see Table 4.23). Strong positive correlations were observed in the families O-2/6 ($r=0.89$), O-11/6 ($r=0.84$), O 5/6 ($r=0.82$) and O-3/6 ($r=0.75$), and a strong positive correlation was observed in the Orzu variety, with the highest correlation indicator for the trait, $r=0.90$.

In the O-7/6 and O-17/20 families, moderate positive correlations were noted, $r=0.41$ and $r=0.37$, respectively, and it should be noted that it is advisable to conduct selection processes to improve the traits on them.

The results of the correlation analysis between protein and oil showed that the O-3/6 family showed a positive indicator compared to other families, and a strong positive correlation was noted between the traits ($r=0.72$, respectively). The criterion for the existence of a correlation of O-11/6, O-5/6 and $t \geq 1.01$.

In the O-2/6 families, moderate positive correlations were noted, $r=0.66$, $r=0.57$ and $r=0.49$, respectively. In the O-17/20 family, $r=0.33$ and in the O-7/6 family, $r=0.28$ were found, indicating a weak positive correlation. In the Andoz Orzu variety, the correlation between the traits was $r=0.41$, indicating a moderate positive correlation.

Table 1

Correlative relationships of isolated families

Families	Correlative relationship between protein and productivity		Correlative relationship between protein and fat	
	r=	tr	r =	tr
O-5/6	0,82	2,33	0,57	1,15
O-11/6	0,84	1,78	0,66	1,09
O-3/6	0,75	2,53	0,72	2,19
O-2/6	0,89	2,57	0,49	2,06
O-17/20	0,81	2,32	-0,57	1,14
O-7/6	0,83	1,77	0,28	1,02
Dream (quantity)	0,90	2,10	0,41	1,46

In conclusion, it should be noted that the correlation between protein content and yield, protein content and oil content in the selected families of soybean showed that the correlations between the traits in the O-3/6 family are strongly positive, and it is advisable to use this family in genetic selection processes to increase yield, protein and oil content. Also, the O-2/6, O-11/6, O-5/6 and O-9 families, which have a strong positive correlation in increasing protein and yield, are advisable to use in selection processes to improve the above traits.

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Along with the family O-3/6, which has a strong positive correlation in improving protein and oil content in soybean, it is advisable to use in selection processes O-11/6, O-5/6 and O-2/6, which have a medium positive correlation.

Among the Krasnodar and local selection varieties, it is advisable to use the O-5/6, O-7/6 family in terms of protein content, and the O-11/6 family in terms of oil content, as well as in genetic selection studies.

The analysis of the average indicators of clustering of the introduced varieties by economic characteristics, electrophoretic analyses confirmed each other, allowing to distinguish them by high protein content and drought tolerance. According to electrophoretic analyses, polymorphism was observed, indicating that the characteristics of the studied varieties and hybrids are diverse. Accordingly, it was revealed that the location of protein particles in the gamma (γ) regions, polymorphism was noted, and diversity in characteristics was detected. This makes it advisable to use the selected varieties as starting materials for improving characteristics.

To improve the number of pods per plant in families, it is considered appropriate to use O-3/6, O-5/6 families in genetic-selection studies.

It is advisable to use the O-3/6, O-2/6 families with a high seed weight per plant in genetic-selection studies to improve the trait.

It is reasonable to use the O-3/6 family for the location of the lower pods, the O-2/6 and O-3/6 families for improving the weight of 1000 seeds, and the O-3/6, O-17/20 and O-5/6 families for improving the traits of the number of seeds per plant. O-2/6 and O-3/6 families were dominant in terms of 1000 seed weight.

Among the selected soybean families, the O-17/20 and O-5/6 families showed relatively high resistance to soybean mosaic virus infection. The O-11/6, O-7/6, O-3/6 and O-2/6 families showed moderate resistance to this disease, and the O-17/20, O-5/6, O-3/6 and O-2/6 families were distinguished as families with moderate resistance to spider mites. The O-11/6 and O-7/6 families were characterized as relatively resistant families.

According to the correlations of the traits, the correlation between protein content and yield, protein content and oil content in the families showed that it is advisable to use the O-3 and O-14 families as breeding material to improve all three traits at the same time.

Along with the family O-3/6, which has a strong positive correlation in improving protein and oil content in soybeans, it is advisable to use O-11/6, O-5/6 and O-2/6, which have a moderate positive correlation, and also have a moderate correlation in breeding processes.

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