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VARIATION CHANGE OF VALUABLE ECONOMIC CHARACTERS OF F_3 SIMPLE AND COMPLEX HYBRIDS OF SUNFLOWER

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ABSTRACT
The main goal of our research is to increase the speed, productivity and quality of plants. In our research, sunflower F_3 simple and complex hybrids were studied. The most fast-ripening plants were found in complex hybrids, and the plants with the highest productivity were also found in complex hybrids according to the sign of productivity.
KEYWORDS: ***sunflower, hybridization, disk, fast-ripening, productivity, simple and complex hybridization, adaptability.***

INTRODUCTION

In the world's leading sunflower-growing countries, special attention is paid to increasing seed yield and quality due to the development and application of advanced methods of soil conditions, variety characteristics, planting time, planting scheme and cultivation technologies.

In many countries, the demand for vegetable oil compared to butter is increasing more and more for the use of oil products for food. Because compared to the oil of livestock, vegetable oil has many advantages for human health. In Uzbekistan, in order to produce vegetable oil for the consumption of the population, plants that store oil in their seeds, such as sunflower, sorghum, soybean, oil flax, and sesame, are planted.

It should be noted that in order to improve the standard of living of the population, ensuring the need for ecologically clean products, including vegetable oil, used for consumption has always been considered an urgent issue.

The Republic of Karakalpakstan is considered to be one of the most important directions for obtaining a high-quality, high-fat harvest from sunflowers in different soil and climate conditions. Today, one of the main directions of plant genetics and selection is the creation of drought-resistant agricultural crops, in particular, sunflower varieties. In our republic, comprehensive measures are being implemented to create quick-ripening, high-fat and productive varieties of sunflower and to improve seed yield. There is an increasing demand for the creation of varieties with stable genetic traits in sunflower breeding using new breeding methods. Also, the role of oil crops in the national economy of our country is very important. The oils obtained from them are the most important food products necessary for the daily life of our people.

According to D.T.Abdukarimov, M.K.Lukovs, harvesting is usually started when the back side of the disk is 90% yellow-brown, and the humidity of the seeds in the disk is 12-14%. It is required that the moisture content of the seed does not exceed 7%, if it is stored in bags, it does not exceed 8-10%.

The productivity of agricultural crops is not only related to the variety, the technology of its cultivation, but there is a correct connection between the yield of the crop and the level of leaves, the duration of its operation. Leaf level, duration of operation, dry mass accumulation determine the photosynthetic productivity of the crop field [1].

According to the researches of M.K.Lukov, A.A.Makhmadaliev, N.Ergasheva, 25-30 c/ha are grown in a short period of time (75-85 days) due to the planting of early-season varieties of sunflower on the land freed from grain crops. 1.1-1.3 tons of oil and 1.2-1.5 tons of press cake are extracted from this harvest. The seeded disk contains 31 nutritional units and is a strong feed for livestock. The green stem left in the field after harvesting can be used to make silage with straw [3].

According to the researches of Kh.Egamov, K.S.Komilov, I.Kimsanov, the productivity of sunflower depends on the productivity of individual disks and the number of plants per hectare. The productivity of an individual disk is determined by the number of seeds inside it and the mass and weight of each seed. Here, the output of the seed kernel is of great importance. This indicator depends on the output of the seed pod from the total mass. A 10% increase in kernel size leads to an increase in oil content by 6-7%. As a result of the selection process, the yield of seed pods was reduced from 40-45% to 20-25% in zoned varieties and hybrids [2].

RESEARCH RESULTS AND THEIR ANALYSIS

In the conditions of the Republic of Karakalpakstan, the sign of fast-ripening is considered the main sign of all plants, because the harvest harvested on time is of high quality and in an extremely ripe state. In addition, fast-ripening varieties provide an opportunity to harvest twice in one season. That's why we focus on speed in our research. In our research, 3 complex and 6 simple hybrids were kept after analysis for all studied characters. According to their variation analysis, classes ranged from 68 days to 82 days. Each class interval was 2 days. In complex hybrids, the separation process was observed in 7

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classes, i.e. from 68 to 78 days. The fastest growing plants matured in 68-70 days and were placed on the left side of the variation line. In general, such fast-growing plants are rare in sunflowers and have come to this state only through complex hybridization. In the 7th hybrid, there were 22 very fast-growing plants, in the 8th hybrid, there were 21, and in the 9th complex hybrid, the number of such fast-growing plants reached 25.

Thus, thanks to complex hybridization, we were able to separate extremely fast-growing plants. In normal hybrids, there were 23 plants in the 2nd hybrid and 13 in the 5th hybrid. In normal hybrids, the process of separation was observed in a large amount, but they were observed in the late direction. The vegetation period was observed in them up to 82 days. The left side of the line of variation in the sign of speed for selection is noteworthy Table 1.

Table 1
Variational analysis of sunflower F_3 hybrid families for fast-ripening (2022).

№	Simple and complex hybrids	K=2								n	M±m	δ	V%
		68	70	72	74	76	78	80	82				
1.	F_3 (Tels x KK-1)	-	-	2	5	13	8	6	1	35	76,8±0,4	2,3	3,1
2.	F_3 (C-Alstor x KK-1)	2	9	12	8	5	-	1	-	37	72,4±0,4	2,5	3,5
3.	F_3 (C-HS-H-2011g x KK-1)	-	-	1	7	11	9	5	3	36	77,0±0,4	2,5	3,3
4.	F_3 (Jant lower x KK-1)	-	-	3	5	12	7	4	2	33	76,6±0,4	2,6	3,4
5.	F_3 (Sor Gollips x KK-1)	1	3	9	10	7	2	-	-	32	73,5±0,4	2,3	3,2
6.	F_3 (Ak-12/95 x KK-1)	-	-	1	6	14	12	2	1	36	76,6±0,3	2,0	2,6
7.	F_3 [F_1 (Jant lower x KK-1)x (F_1(Ak-12/95 x KK-1)]	3	9	10	8	3	1	-	-	34	72,1±0,4	2,4	3,4
8.	$_3$ [F_1 (C-HS-H-2011г. x KK-1)x F_1 (C-Alstor x KK-1)]	1	8	12	6	4	-	2	-	33	72,7±0,4	2,7	3,8
9.	F_3 [F_1 (Sor Gollips x KK-1)x (F_1(Tels x KK-1)]	2	10	13	4	3	2	-	-	34	72,1±0,4	2,5	3,4

It is known that the goal of every work in the breeding process is to increase the productivity and quality of plants. In our research, the productivity of sunflower depended on the diameter of the disk, the number and size of the seeds in it. Table 2 shows the productivity of F_3 simple and complex hybrids.

As can be seen from the table, the average value of complex hybrids exceeded 92 grams, that is, from 107 to 110 grams. In ordinary hybrids, the highest figure was 95.2 grams. The segregation process also differed dramatically between simple and complex hybrids. In complex hybrids, some plants showed a yield of 135 grams. The highest rate of plants of ordinary hybrids did not exceed 125 grams.

The line of variation shifted to the right in complex hybrids, and to the left in simple hybrids. Thus, we were able to select high-yielding plants on the basis of complex hybridization, and it became the basis for obtaining high-yielding families.

Among the most effective complex hybrids, F_3 [F_1 (Jant lower x KK-1) x (F_1 (Ak-12/95 x KK-1)] and F_3 [F_1 (Sor Gollip x KK-1) x (F_1 (Tels x KK-1)] combinations were distinguished and among them, most of the plants showed higher productivity than 105 grams.

Table 2
Variational analysis of sunflower F_3 hybrid families for the yield trait per plant (2022).

№	Simple and complex hybrids	K=10									n	M±m	δ	V%
		55	65	75	85	95	105	115	125	135				
1.	F_3 (Tels x KK-1)	1	6	11	7	6	4	-	-	-	35	81,5±2,2	13,4	16,5
2.	F_3 (C-Alstor x KK-1)	-	1	3	9	12	6	5	1	-	37	95,2±2,2	13,4	14,1
3.	F_3 (C-HS-H-2011g x KK-1)	2	3	11	10	4	4	2	-	-	36	83,6±2,4	14,9	17,8
4.	F_3 (Jant lower x KK-1)	1	4	7	9	6	5	-	1	-	33	85,6±2,6	15,1	17,7
5.	F_3 (Sor Gollips x KK-1)	-	3	3	14	5	4	3	-	-	32	89,0±2,4	13,6	15,3
6.	F_3 (Ak-12/95 x KK-1)	1	6	9	11	5	2	2	-	-	36	82,5±2,3	14,2	17,2
7.	F_3 [F_1 (Jant lower x KK-1)x (F_1(Ak-12/95 x KK-1)]	-	-	2	3	4	10	8	5	2	34	107,3±2,6	15,3	14,3
8.	$_3$ [F_1 (C-HS-H-2011г. x KK-1)x F_1 (C-Alstor x KK-1)]	-	3	3	5	13	6	2	1	-	33	92,8±2,4	14,3	15,4
9.	F_3 [F_1 (Sor Gollips x KK-1)x (F_1(Tels x KK-1)]	-	-	-	2	4	12	8	5	3	34	110,5±2,2	13,0	11,8

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CONCLUSION

As a result of the above research, it can be concluded that the hybridological analysis of the speed and productivity of the F_3 hybrid plants showed that the separation process was observed in the complex hybrids more widely than in the simple hybrids. According to the sign of early ripening, the fastest plants ripened in 68-70 days in complex hybrids, and in simple hybrids, very early ripened plants in the second hybrid were 23.

In complex hybrids, the average indicator of productivity was more than 92 grams, i.e. from 107 to 110 grams. In ordinary hybrids, the highest figure was 95.2 grams. In complex hybrids, some plants showed a yield of 135 grams. The highest rate of plants of ordinary hybrids did not exceed 125 grams.

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