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The Effect Of The Sowing Scheme On The Harvest Elements Of Sunflower In The Conditions Of Karakalpakstan

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Abstract: This article presents an analysis of the influence of the sowing scheme on the yield elements of sunflower varieties. In this case, it was established that the weight of 1000 seeds obtained from the sowing schemes or feeding area of the KK-52 variety was greater compared to the control "KK-1" and "KK-60" varieties. In this case, according to the sowing scheme or feeding area, the weight of 1000 seeds was greater than that of the control variety "KK-1" in the following sequence; 17.8, 16.7 and 14.8 grams respectively to the KK-60 variety in the following sequence; 11.1, 10.9, and 10.1 grams.

Keywords: Sunflower varieties, sowing scheme, field observation, standard variety, comparison, crop elements, basket, productivity, 1000 seed weight.

Introduction: Currently, one of the important tasks of agriculture is the creation of crop varieties resistant to salinity, drought, and extreme natural conditions for obtaining high and quality yields of agricultural crops, as well as the development and improvement of appropriate agricultural technologies for these crops, increasing the volume of production, introducing leguminous and oilseed crops into short-rotation crop rotation systems that increase soil fertility.

According to Sh. Nurmatov, T. Azizov, L. Tursunov, I. Anarbayev [4] and others, sunflowers are planted in single rows with 70 cm between rows. Seedling density is 70x20, 70x30, 70x40 cm, with a planting rate of 28, 42, and 56 thousand viable seeds per hectare. According to long-term observations and analyses, it is possible to obtain a high yield of sunflower plants by planting them with a thickness of 70x30, 70x40.

According to D.T. Abdukarimov [1] and others, sunflowers were planted with row spacing of 60, 70 centimeters. Planting low-growing (0.8-1.2 meters tall) early-ripening varieties on stubble with a density of 70,000 plants per hectare yielded good results. It has been established that the optimal sowing rate for oilseed sunflower seeds is 5-10 kg/ha, for silage varieties 35-40 kg/ha, the sowing depth is 6-7 cm, and in light soils 8-10 cm.

One of the main elements of sunflower yield composition is the number of heads per hectare and

their mass. The mass of seeds in one basket, in turn, depends on the diameter of the basket and the number of seeds in one basket [2].

METHODS

Our research was conducted in field and laboratory conditions in the experimental farm of the Karakalpak Research Institute of Agriculture. All field observations were carried out according to the "Methods of Conducting Field Experiments" [3].

RESULTS AND DISCUSSION

The yield obtained from plants is one of its most important indicators. In our studies, it was noted that the influence of the feeding area on the formation of yield elements of sunflower varieties was significantly greater (Table 1).

According to the research results, the basket diameter of the control variety KK-1 was 16.1 cm in the variant with a small feeding area of 1200 cm2, 17.2 cm in the variant with a feeding area of 1500 cm2, and 18.6 cm in the variant with a large feeding area of 1800 cm2.

In the same feeding areas of the KK-60 variety, the basket diameter was 17.5, 18.8, and 19.9 cm, while in the KK-52 variety it was larger compared to the KK-60 and KK-1 varieties. In the variant with a small feeding area of 1200 cm2 of the KK-52 variety, it was 25.3 cm, in the variant with a feeding area of 1500 cm2 - 27.0 cm, and in the variant with a high feeding area of 1800 cm2 - 29.0 cm. In this variety, the control variety "KK-1" was 9.2 cm, 9.8 cm, and 10.4 cm larger than the basket diameter by variants.

The weight of the baskets taken from the counted plants was weighed on scales, and the total weight of one basket was determined. It was established that the feeding area has a positive effect on the weight of the baskets.

In the control variety "KK-1" with a sowing scheme of 60x20-1, the total weight of one basket averaged 68.9 grams, and after removing seeds from the baskets, the weight of the empty basket was 38.6 grams. In the 60x25-1 planting scheme, the total weight was 73.3 grams and the weight of the empty basket was 31.8 grams, in the 60x30-1 planting scheme - 84.6 grams and the weight of the empty basket was 34.6 grams.

In the "KK-60" variety, according to planting schemes, the weight of the baskets increased. In this case, compared to the "KK-1" variety, the total weight of the basket according to planting schemes was 6.3, 19.6, 18.3 grams, and the weight of the empty basket in the first variant was 1.8 grams lighter, in the second variant 10.7 grams, and in the third variant 4.9 grams heavier.

In the experiment, the "KK-52" variety was distinguished by large baskets, a large number of seeds in them, and heavy weight. In this case, compared to the control variety "KK-1," according to planting schemes, the total weight of the basket was 17.6, 39.4, 54.2 grams, and the weight of the empty basket was 2.7, 22.5, and 31.6 grams heavier. Compared to the "KK-60" variety, according to planting schemes, the total weight of the basket was 11.3, 19.8, 35.9 grams, and the weight of the empty basket was 4.5, 11.8, and 26.7 grams.

The number of seeds in one basket and their weight depended on the feeding area, and an increase in the feeding area led to an increase in the number and weight of seeds. The control variety "KK-1" in the first variant with a sowing scheme of 60x20-1 had an average of 422.1 seeds per plant, and its weight was 32.3 grams. In the second variant, with a sowing scheme of 60x25-1, 572.3 seeds were sown, and their weight was 38.5 grams. In the third variant, with a sowing scheme of 60x30-1, there were 742.8 seeds, and their weight was 47.0 grams.

In the "KK-60" variety, the number of seeds and their weight were higher than the indicators of the control variety "KK-1," in the sowing scheme 60x20-1, the number of seeds was greater by 67.8 pieces and the weight was greater by 6.1 grams, and in the sowing scheme 60x25-1, the number of seeds was greater by 95.7 pieces and the weight was greater by 11.9 grams, and in the sowing scheme 60x30-1, the number of seeds was greater by 122.9 pieces and the weight was greater by 14.4 grams.

In the experiment, the yield indicators of the "KK-60" variety were higher than those of the "KK-1" and "KK52" varieties. In the 60x20-1 sowing scheme of the KK-52 variety, the average number of seeds per plant was 517.2 pieces, and its weight was 44.2 grams. In the second variant, there were 685.4 seeds, and their weight was 56.4 grams. In the third variant, there were 901.9 seeds, the weight of which was 71.6 grams. In this variety, the number of seeds and their weight according to the planting schemes of the control variety "KK-1" was greater by 95.1, 112.8, and 159.1 units, and the weight was greater by 11.9, 17.9, and 22.6 grams. According to the sowing schemes of the "KK-60" variety, it was 80.8, 95.7, and 122.9 units more, and the weight was 6.8, 8.0, 9.2, and 17.3 grams heavier.

The increase in the nutritional area of the sunflower led to a decrease in underdeveloped seeds in the middle part of the baskets. In the control variety "KK-1," underdeveloped seeds with a sowing scheme of 60x20-1 were 12.2%, and with a sowing scheme of 60x25-1 - 12.0%, a decrease of 0.2% was observed. With a sowing scheme of 60x30-1 or a feeding area of

1800 cm2, undeveloped seeds amounted to 11.0%, and compared to the variant with a small feeding area of 1200 cm2, they decreased by 1.2 and 1.9%, respectively. In the "KK-60" variety with a sowing scheme of 60x30-1 or with a feeding area of 1800 cm2, it was 10.3 %, which is 1.0 % less compared to the variant with a small feeding area of 1200 cm2. It was established that the number of undeveloped seeds in baskets in the "KK-52" variety was very low compared to the experimental varieties "KK-1" and "KK-60," among the varieties, the percentage of undeveloped seeds in baskets according to the sowing schemes in the "KK-52" variety was lower than in the control variety "KK-1" in the following sequence: by 6.3, 6.6, and 6.9, and compared to the "KK-60" variety, it decreased by 0.9, 1.0, and 0.7%.

According to the data obtained from the conducted research, it was established that with an increase in the feeding area in all varieties, the percentage of undeveloped seeds in the middle part of the basket increased. In this case, when the nutritional area of the sunflower is large, it receives more necessary resources, such as light, moisture, and nutrients, and forms large leaves and baskets, but as the baskets grow larger, it becomes more difficult for nutrients to reach the center of the basket, which leads to the fact that the seeds in the center do not develop and become empty.

The weight of 1000 seeds depended on the number of plants, that is, when planted densely, it was heavy, when planted sparsely, it was light. The control variety "KK-1" in the first variant with a feeding area of 1200 cm2 was 68.7 grams, in the second variant with a feeding area of 1500 cm2 - 67.5 grams, in the third variant with a feeding area of 1800 cm2 - 66.7 grams. From this it can be seen that compared to the variant with a small feeding area, in the variants with an expanded feeding area, a decrease of 1.2, 1.8, and 0.8 grams was observed.

It was established that the weight of 1000 seeds of the "KK-60" variety by feeding area was 75.4, 73.3, and 71.4 grams. This pattern was also observed in the "KK-52" variety studied in the experiment. The nutritional area of the "KK-52" variety was 86.5, 84.2, 81.5 grams.

Table 1

Influence of the sowing scheme on the yield elements of sunflower varieties

№	Varieties	sowing scheme	Basket diameter, cm width	Difference from control	One basket Total weight of gi, g	Empty basket weight, cm	Productivity per plant			Underdeveloped seeds %	Difference from control	1000 units seed weight, g	Difference from control
							Number of seeds, grain	Difference from control	Seed-Weight, g				
1	KK-1 (con)	60x20-1	16,1	-	68,9	38,6	422,1	-	32,3	12.2	-	68,7	-
2		60x25-1	17,2	-	73,3	31,8	572,6	-	38,5	12,0	-	67,5	-
3		60x30-1	18,6	-	84,6	34,6	742,8	-	49,0	11,0	-	66,7	-
4	KK-60	60x20-1	17,5	+1,4	75,2	36,8	502,9	+80,8	38,4	11,3	-0,9	75,4	+6,7
5		60x25-1	18,8	+1,6	92,9	42,5	668,3	+95,7	50,4	11,0	-1	73,3	+5,8
6		60x3	19,9	+1,3	102,9	39,5	865,	+122	63,	10,3	-	71,	+6,

		0-1					7	,9	4		0,7	4	7
7	KK-52	60x20-1	25,3	+9,2	86,5	41,3	517,2	+95,1	44,2	5,9	-6,3	86,5	+17,8
8		60x25-1	27,0	+9,8	112,7	54,3	685,4	+112,8	56,4	5,4	-6,6	84,2	16,7
9		60x30-1	29,0	+10,4	138,8	66,2	901,9	+159,1	71,6	4,1	-6,9	81,5	+14,8

CONCLUSION

From these experiments, it can be concluded that the weight of 1000 seeds obtained from the "KK-52" variety according to sowing schemes or feeding area was higher than that of the control varieties "KK-1" and "KK-60." In this case, according to the sowing scheme or feeding area, the weight of 1000 seeds was higher than that of the control variety "KK-1" in the following sequence; 17.8, 16.7, and 14.8 grams. for the "KK-60" variety in the following sequence; It was established that they weigh up to 11.1, 10.9, and 10.1 grams.

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