

Influence of Sowing Norm on Oily Sunflower Yield Elements

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ABSTRACT

The article states that the effect of sowing norms of oilseed sunflower on yield elements and productivity of local Dilbar and Russian Irtish, Skormas varieties was studied experimentally in the conditions of typical irrigated sierozem soils of Tashkent region. The number of yield elements and the yield in the variant with 50 thousand seeds / ha per hectare (43.5, 39.9 and 40.9 c / ha) and the weight of 1000 seeds in the variant with 40 thousand seeds per hectare (112.3, 106.8, 94.6 g) were found to be heavier than the options in which the planting rate was increased. Local Dilbar variety has been proven to have higher yield elements than Russian varieties.

KEYWORDS: *oily sunflower, variety, variant, sowing norm, yield, elements, basket, seed.*

Introduction

Currently, there is an increasing trend in the production of seeds of essential oilseeds due to the increasing demand for vegetable oil in the world. With its high nutritional value and dietary value, vegetable oil replaces animal fats in human food. On the planet, sunflower is grown on an area of 26.4 million ha (FAO) with an average yield of 19.3 t / ha and a gross yield of 51.5 million tons¹.

Resolution of the Cabinet of Ministers of the Republic of Uzbekistan "On efficient use of available land, rational allocation of agricultural crops for the harvest of 2021 and forecast volumes of production" dated March 4, 2021 № 121. It is planned to plant sunflowers on 55,223,000 hectares as a second crop.

The degree to which the problem has been studied. In the experiments of T.Azizov, I.Anarbaev, S.Tukhtaeva, sunflower gives good results if planted between rows 70-90 cm wide, between bushes 25-30 cm. When using a pneumatic seeder, 6-8 kg of seeds per hectare were used. After germination, the seeds were rarefied on the condition of leaving 3.5-4 seedlings per 1m². It states that the thickness of sunflower seedlings is 35-40 thousand pieces [2, 3, 4].

The data obtained by V.K. Morozov in the study of 3 plant density of sunflower plants (25, 50, 80 thousand / ha), the maximum yield was obtained at 50 thousand / ha. In years with insufficient moisture, it should be about 25 thousand / ha. Determination of the optimal planting density (from 20 to 60 thousand / ha) can be determined by the depth of the soil layer wetting before sowing [5].

According to G.S. Posypanov [9] "the recommended planting density at the time of harvesting for ultra-early ripening and early maturing varieties and hybrids should be 55 - 65 thousand plants per 1 ha, for early maturing 45 - 55 thousand, for mid-ripening - 40 - 50 thousand plants per 1 hectare".

Scientists of the Agricultural Research Institute of the South-East believe that the optimal plant density at the time of harvesting for ultra-early and early-maturing varieties and hybrids should be 55-60 thousand pieces / ha, for early-maturing - 50-55 thousand pieces / ha [6,7 , 8.10].

METHODS AND MATERIALS

Field experiments were conducted in the experimental field of Tashkent State Agrarian University in the conditions of typical irrigated sierozem soils. The methods of "Field experiments" (UzPITI 2007), "Methods of field experiment" (B. Dospekhov, 1985) were used in the research.

In the experiment, local varieties of oily sunflower "Dilbar" and Russian "Skormas", "Irtish" were planted in 2020 and early 2021 in early April.

The number of replications are 3, the number of options is 12, systematically placed, the planted area is 0.15, the number of counted plants is 20. The area to be taken into account is 28 m². The soil was plowed to a depth of 30 cm in autumn, before plowing mineral fertilizer was applied in the amount of P₈₀K₆₀ and nitrogen N₅₀ kg per hectare along with planting, 75 kg in the budding phase and 75 kg in the flowering phase.

During the growing season it was cultivated 2 times, watered 4 times: in the phases of budding, flowering, basket forming and grain filling.

RESULTS AND DISCUSSION

As a result of the experiment, the width of the baskets of the local Dilbar variety was 37.2 cm in the variants planted with 40 and 50 thousand seeds per hectare, and the sowing rate was 2.2 and 3.6 cm larger than in the variants with increased sowing rate.

This pattern was also observed in the Irtish and Skormas varieties. In the Irtish variety, large baskets were observed in variants with low planting rates (22.0 and 20.0 cm), while in the Skormas variety, baskets were found to be larger in all variants. At the same time, according to the variants, large baskets of 20.0-22.6 cm were formed.

In the experiment, it was found that in the variant with increased sowing rate (70 thousand pieces / ha), the baskets form smaller baskets than in the variant with lower sowing rate.

Among the varieties, local control differed from the Russian varieties by the size of the baskets of the Dilbar variety.

In Local control Dilbar variety in the experiment the number of seeds in the basket was greater than in the Irtish and Skormas varieties. Seeds in baskets of the Irtish variety were lower than those of the Skormas and Dilbar varieties. In terms of sowing options, in the variants of all three varieties with 40 and 50 thousand seeds per hectare, the number of seeds in the baskets was higher than in the variants that increased the sowing rate by 60 and 70 thousand seeds.

In the variant where 40,000 seeds were sown per hectare of the local Dilbar variety, the total number of seeds extracted from one basket was 1443.9, of which the number of empty seeds was 364 or 27.1%. The total number of seeds was 1079.9. The second option, which consumed 50,000 seeds per hectare, had 1406.8 seeds, of which 286 or 23.7% of the seeds were found to be unfertilized and the total number of seeds was 1120.8. It can be seen that the total number of seeds in all varieties was observed in the variants with 40 and 50 thousand seeds per hectare, while in the variants with increased sowing rate of 60 and 70 thousand seeds, the total number of seeds decreased.

The total number of seeds was observed in the local Dilbar variety with 50,000 seeds / ha per hectare (1120.8 units) after the separation of empty seeds, while in the Irtish and Skormas varieties with 40,000 seeds / ha per hectare (1222.5 and 1306.9 seeds).

The most common and complete number of seeds among the varieties was obtained from the baskets of the Skormas variety.

Table 1: Influence of sowing rate on yield elements of sunflower varieties (2020-2021)

№	Varieties	Sowing norms, thousand/ha	Basket diameter, cm	Number of seed in one basket, pieces				Productivity of one plant, g	Mass of 1000 seeds, g	Compared to control ±
				Total	Completes from them	Empty seeds				
						pieces	%			
1	Dilbar (st)	40	37,2	1443.9	1079.9	364	27, 1	147,2	112,3	
2		50	37,2	1406.8	1120.8	286	23. 7	136,8	104,2	
3		60	35,0	1256.0	1058.0	198	15. 0	130,7	91,5	
4		70	33,6	1248.2	890.2	358	26. 0	124,2	89,1	
1	Irtish	40	22,0	1256.5	1222.5	34	5,0	81,8	106,8	-5.5
2		50	20,0	1247.5	1211.5	36	5,1	79,8	88,8	-15.4
3		60	18,6	1129.0	1075	54	5,0	56,8	79,6	-11.9
4		70	18,0	1009.5	942.5	67	6,1	55,2	77,6	-11.5
1	Skormas	40	22,6	1392.9	1306.9	86	11, 0	86,8	94,6	-17.7
2		50	21,0	1331.7	1239.7	92	10, 0	79,6	90,5	-13.7
3		60	21,0	1207.0	887.0	320	18, 6	73,8	81,4	-10.1
4		70	20,0	1100.3	975.3	125	10, 0	73,4	78,2	-10.9

In the local varieties of Dilbar, 40,000 and 70,000 seeds were sown per hectare, seeds per basket was 27.1 and 26.0% , respectively, and it was higher by 3.4; 12.1 and 2.3; 11.0% respectively compared to 50 and 60,000 sown per hectare.

In the Irtish variety, empty seeds were found to be less than in the Dilbar variety, and decreased by 10.0–22.1% in the variants. In this cultivar, the sowing rate was 5%, but in the variant with a higher sowing rate, it was observed to be 1.1% higher.

In the Skormas variety, it was found that the number of empty seeds was 6.0–13.6% higher than in the Irtish variety. Dilbar produced 13.7–16.1% fewer seeds than the control variety. In this variant, where 60,000 seeds were used per hectare, there were a lot of empty seeds (18.6%).

The productivity of one plant was found to be higher in the control local Dilbar variety. At the same time, high productivity was observed in the first variant (147.2 grams), where the sowing rate was less than 40 thousand seeds per hectare, and in the variants with increased sowing rate, the productivity of one plant decreased. The yield in the second variant was 136.8 g, in the third variant was 130.7 g and in the fourth variant was 124.2 g.

The high productivity of one plant was observed in the Skormas variety after the local Dilbar variety. The same result was observed in the third and fourth variants, while in the first variant of this variety it was 86.8 g, in the second variant was 79.6 g.

Irtish variety was found to be a low-yielding variety. In the first variant of this variety, the yield of

one plant was 81.8 grams, in the second variant - 79.8 grams, in the third and fourth variants - 56.8 and 55.2 grams.

In the Control Dilbar variety, 1,000 seeds were found to be heavier among the experimental varieties. In the first variant, where 40,000 seeds were sown per hectare, it weighed 112.3 grams, 50,000 seeds was 104.2 grams, 60,000 seeds was 91.5 grams and 70,000 seeds was 89.1 grams.

The weight of 1000 seeds in the Irtish variety is in the following order compared to the Dilbar variety: 5.5, 15.4, 11.9 and 11.5 grams, and in the following sequence compared to the Skormas variety Were found to be 17.7, 13.7, 10.1 and 10.9 grams lighter.

Yields were higher in the local Dilbar variety than in the Russian varieties studied experimentally. Control Dilbar variety yielded 40.5 c / ha from the variant with 40 thousand seeds per hectare, 43.5 c / ha from the variant with 50 thousand seeds per hectare, and the yield from this variant was 3.0, 1.2 and 3.4 c / ha in sown 40, 60 and 70 thousand seeds per hectare.

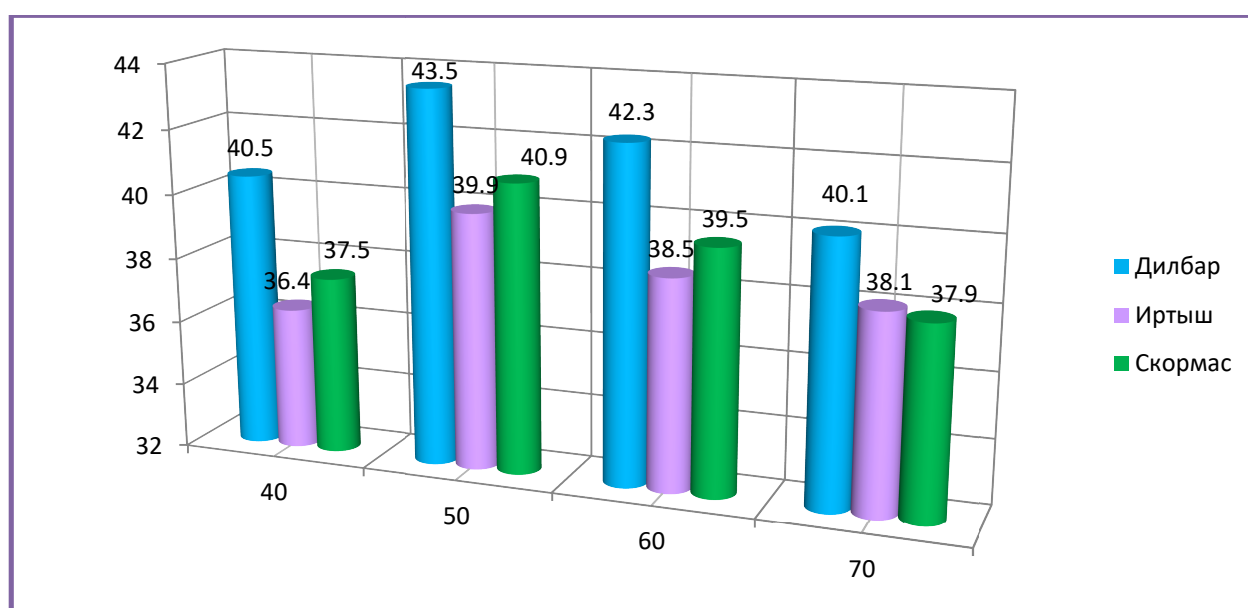


Figure-1

The same pattern was observed in Russian varieties, and the Irtish variety yielded 39.9 c / ha from the variant with 50,000 seeds per hectare, and was found to be more than 3.5, 1.4 and 1.8 c / ha from the variant with 40, 60 and 70 thousand seeds per hectare.

The Skormas variety yielded 40.9 c / ha from the variant with 50,000 seeds per hectare, which is 3.4, 1.4 and 3.0 c / ha more than the variants with 40, 60 and 70 thousand seeds per hectare.

Yield control from the variant with 50,000 seeds per hectare was 3.6 c / ha higher in the Dilbar variety than in the Irtish variety and 2.6 c / ha higher than in the Skormas variety.

CONCLUSION

The Russian varieties Skormas and Irtish are well adapted to the conditions of irrigated lands in Tashkent region.

REFERENCES

1. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated March 4, 121 "On the efficient use of available land, rational allocation of agricultural crops for the harvest of 2021 and the forecast volumes of production"

2. Azizov.T., Anarbaev I., Tukhtaeva S.// J. Agriculture of Uzbekistan. 2013. №6. P.5-6.
3. Atabaeva X., Khudaykulov J. Plant Science. Textbook. - Т .: “Science and technology”, 2018. - 407 p.
4. Yormatova D. "Plant Science". Toshkent-2000 y. P. 167-172
5. Морозов, В.К. Подсолнечник в засушливой зоне. - Саратов: Прив.кн. изд-во, 1978. - 148 с.
6. Пимахин, В.Ф. Биологические и агротехнические основы возделывания подсолнечника / В.Ф. Пимахин, В.М. Лекарев, Н.М. Соколов / Рекомендации – Саратов: НИИСХ Юго-Востока, 2000. - 64 с.
7. Пимахин, В.Ф. Биологические и агротехнические основы возделывания подсолнечника по интенсивной технологии / В.Ф. Пимахин, В.М. Лекарев, П.Н. Соловов и др. – Саратов, 1991. – 57 с.
8. Пимахин, В.Ф. Подсолнечник / В.Ф. Пимахин, С.П. Кудряшов, В.М. Лекарев и др. // Пути увеличения производства растениеводческой продукции в Саратовской области – Саратов, 1998. – С.80-90.
9. Растениеводство / Г.С. Посыпанов, В.Е. Долгодворов, Г.В. Коренев и др.; Под ред. Г.С. Посыпанова – М.: Колос, 2006 – 620 с.
10. Шевцова, Л.П. Полевые культуры Поволжья / Л.П. Шевцова, Н.И. Кузнецов - Саратов: Изд-во ФГОУ ВПО «Саратовский ГАУ им. Н.И. Вавилова», 2004. – Часть 1. – С.248-260.