

INFLUENCE OF SOWING DATES AND RATES ON THE YIELD AND OIL CONTENT OF SUNFLOWER VARIETIES

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ABSTRACT

The article established that the yield and seed oil yield of sunflower varieties were higher in the Buzuluk variety when sown on April 15th and with a seeding rate of 60,000 seeds/ha compared to the Dilbar and Zarrin varieties. The yield of the Buzuluk variety was 38.3 c/ha, seed oil yield was 48.7%, and 1.9 tons of oil were obtained per hectare. The control Dilbar and the Zarrin varieties yielded high and oil yield was high during these periods and variants. It has been proven that sowing sunflower varieties on April 1 and May 1 can reduce yield and oil yield, and it has been established that increasing the sowing rate has a negative impact.

Keywords: Sunflower, variety, term, rate, oil quantity, yield, ton, centner, percent.

KUNGABOQAR NAVLARI HOSILI VA MOY MIQDORIGA EKISH MUDDATLARI VA MEYO'RINING TA'SIRI

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ANNOTATSIYA

Maqolada kungaboqarning navlari hosili va urug'idan moy chiqishi 15 aprel muddatda ekilganda va ekish me'yorini 60 ming dona gektariga sarflangan variantda Buzuluk navida Dilbar va Zarrin navlariga nisbatan yuqori bo'lishi aniqlandi. Buzuluk navidan olingan hosil 38,3 s/ga bo'lib, urug'dan moy chiqishi 48,7% ni tashkil qildi, hamda bir gektardan 1,9 tonna moy ajratib olingan. Dilbar nazorat navi va Zarrin navlarida ham ushbu muddat va variantlarda hosildorlik yuqori va moy chiqimi ham ko'p bo'lishi aniqlangan. 1 aprel va 1 may muddatlarda kungaboqar navlarini ekish nisbatan hosilning va moy chiqimining kamroq bo'lishi mumkinligi isbotlangan, shuningdek ekish me'yorini oshirish salbiy ta'sir ko'rsatishi aniqlangan.

Kalit so'zlar: kungaboqar, nav, muddat, me'yor, moy miqdori, hosil, tonna, sentner, foiz

INTRODUCTION

Abroad, agricultural diversification is one of the most important goals for achieving greening of agricultural production. In many European countries, sunflower crops are proposed to be used alongside other crops to change the existing structure, which is probably due to its potential adaptation to climate change, competitiveness and attractiveness for food and energy production [1,7, 8]. In Finland, biodiversity is considered to be a change in the composition of agricultural arable land by replacing wheat monoculture with fodder crops - corn, sunflower, sorghum and their mixed crops [3, 4, 5, 6]. One of the most important conditions for planting sunflower at the optimal time with intensive cultivation technology is plants. For a long time, sunflower was considered an early sowing crop. However, when planted in unheated soil, seeds of oilseed varieties and hybrids often suffer from fungal diseases and quickly lose their viability, which leads to severe thinning of crops and a significant decrease in yield. In this regard, the literature contains various data on the timing of sunflower planting (early, middle and late) and their effect on yield [2, 9].

Experimental method. The scientific research work was carried out in the fields of the experimental scientific research and educational experimental farm of Tashkent State Agrarian University for 2023 years.

The soil of the experimental farm is a typical non-saline gray soil, which has been irrigated since ancient times. This soil contains 0.715–0.920% humus, about 0.065–0.083% nitrogen, about 0.134–0.152% phosphorus and about 0.148–0.154% potassium. The active forms of nutrients in the experimental field are N–NO₃ 3.1–4.7 mg/kg, P₂O₅ 40.3–41.7 mg/kg and K₂O 140.0–180.7 mg/kg.

In the field experiment, sunflower varieties Dilbar and Buzuluk were planted in 24 variants, three replications. Each plot area was 56 m², of which the calculated area was 28 m². Sunflower varieties were planted at planting rates of 50, 60, 70, 80 thousand units/ha during the planting periods of April 1, April 15 and May 1.

Based on the goals and objectives of the experiments, phenological observations and calculations were carried out on the oilseed sunflower variety.

EXPERIMENTAL RESULTS

The experiment determined the yield, seed oil content, and oil yield per hectare of Dilbar (control), Buzuluk, and Zarrin varieties. The Buzuluk variety stood out from other varieties in the experiment with its high yield. It was found that the yield was higher when planted on April 1 and May 1 than when planted on April 15. When seeding rates were studied, the highest yield was obtained from the variant with a seed rate of 60 thousand seeds per hectare. The Buzuluk variety was sown early on April 1 and the seed rate of 50 thousand seeds per hectare was 32.2 c/ha, the seed yield was 34.0 c/ha, which is 1.8 c/ha more than the first option, the seed rate of 70 thousand seeds per hectare was 32.9 c/ha, and the yield decreased by 1.1 c/ha from the second option, which was 60 thousand seeds per hectare, and the seed rate was increased to 80 thousand seeds per hectare, which was 32.0 c/ha, which is 2.0 c/ha less than the second option.

The variant with 60,000 seeds per hectare sown on April 15 yielded 38.3 t/ha, which is 3.8 t/ha less than the first variant, 2.9 t/ha less than the variant with 70,000 seeds per hectare, and 2.2 t/ha less than the one with an increased sowing rate of 80,000 seeds per hectare.

The variant with 60,000 seeds per hectare sown on May 1 yielded 29.2 t/ha, which is 1.6 t/ha less than the first variant, 1.2 t/ha less than the one with an increased sowing rate of 80,000 seeds per hectare, and 1.6 t/ha less than the one with an increased sowing rate of 80,000 seeds per hectare.

When the Dilbar variety was planted on April 1, the variant with 60 thousand seeds per hectare yielded a high yield of 32.2 centners/ha, 3.6 centners/ha more than the first variant with 50 thousand seeds per hectare, 0.8 centners/ha more than the third variant with 70 thousand seeds per hectare, and 2.7 centners/ha more than the fourth variant with 80 thousand seeds per hectare. When the Dilbar control variety was planted on April 15, the yield was 32.4, 34.6, 32.5, and 31.5 centners per hectare, according to the planting standards. Compared to this period, the yield per hectare was 3.8, 2.4, 1.1, 2.0 centners less than the sowing rate when sowing 15 days early, and 6.2, 3.5, 4.6, 3.7 centners less than the sowing rate when sowing 15 days late.

The yield of the Dilbar variety planted on April 1 compared to the Buzuluk variety was 3.6 centners/ha less in the variant with 50 thousand seeds per hectare, 1.8 centners/ha less in the second variant with 60 thousand seeds per hectare, 1.5 centners/ha less in the third variant with 70 thousand seeds per hectare, and 2.5 centners/ha less in the fourth variant with 80 thousand seeds per hectare.

When planted on April 15, the yield was 2.0 s/ha, 3.7 s/ha, 2.9 s/ha, and 3.6 s/ha less than the Buzuluk variety, while when planted on May 1, the yield was 2.6 s/ha, 0.3 s/ha, 0.1 s/ha, and 0.2 s/ha less than the Buzuluk variety.

When the Zarrin variety was planted on April 1, the yield was 32.7 s/ha higher in the variant with 60 thousand seeds per hectare, 1.4 s/ha higher than the first variant with 50 thousand seeds per hectare, 2.0 s/ha higher than the third variant with 70 thousand seeds per hectare, and 2.7 s/ha higher than the fourth variant with 80 thousand seeds per hectare.

When the Zarrin variety was planted on April 15, the yield was 32.3, 35.4, 32.6, 33.2 centners per hectare according to the planting standards. Compared to the planting 15 days earlier, the yield was 1.0, 2.7, 1.9, 3.2 centners per hectare according to the planting standards, and compared to the planting 15 days later, the yield was 6.2, 7.5, 6.5, 8.2 centners per hectare according to the planting standards.

The yield of the Zarrin variety planted on April 1 was 0.9, 1.3, 2.2, 2.0 centners per hectare less than the Buzuluk variety.

When planted on April 15, the yield was 2.2, 2.9, 2.8, 1.9 t/ha less than that of the Buzuluk variety, while when planted on May 1, the yield was 2.7, 1.3, 1.9, 2.6 t/ha less.

The oil content in sunflower seeds It was observed that the oil accumulation in the seeds of the varieties studied in the experiment in 2023 varied depending on the sowing dates and sowing standards.

The oil content in the seeds of the Buzuluk variety was higher than that of the Dilbar and Zarrin varieties in terms of sowing dates and standards. The effect of sowing dates on the oil accumulation in the seeds of the Buzuluk variety was not noticeable, but the effect of sowing

standards was clearly visible. In the second variant, where 60 thousand seeds were used per hectare, the oil content in the seeds was 48.7, 48.7, and 48.5% depending on the sowing dates, while increasing the sowing rate to 70 thousand seeds was 47.3, 48.6, and 48.5%, and increasing to 80 thousand seeds was almost the same in all three terms: 45.8, 45.9, and 45.7%.

Table-1 Yield and yield of oilseed sunflower varieties, 2023

Varia nts	Varieties	Sowing dates, dates	Planting rate thousands of plants/ha	Average yield, s/ha	Oil content in seeds, %	Oil yield from 1 hectare, t/ha,
1.	Dilbar	1.04	50	28,6	43,8	1,3
2.			60	32,2	45,0	1,4
3.			70	31,4	44,0	1,4
4.			80	29,5	43,6	1,3
5.		15.04	50	32,4	43,8	1,4
6.			60	34,6	45,2	1,6
7.			70	32,5	44,1	1,4
8.			80	31,5	43,5	1,4
9.		1.05	50	26,2	43,9	1,2
10.			60	28,9	45,1	1,3
11.			70	27,9	44,0	1,2
12.			80	27,8	43,5	1,2
13.	Buzuluk	1.04	50	32,2	46,1	1,5
14.			60	34,0	48,7	1,7
15.			70	32,9	47,3	1,6
16.			80	32,0	45,8	1,5
17.		15.04	50	34,5	47,6	1,6
18.			60	38,3	48,7	1,9
19.			70	35,4	48,6	1,7
20.			80	35,1	45,9	1,6
21.		1.05	50	28,8	47,8	1,4
22.			60	29,2	48,5	1,4
23.			70	28,0	48,5	1,4
24.			80	27,6	45,7	1,3
25.	Zarrin	1.04	50	31,3	45,5	1,4
26.			60	32,7	48,3	1,6
27.			70	30,7	47,5	1,5
28.			80	30,0	44,6	1,3
29.		15.04	50	32,3	45,6	1,5
30.			60	35,4	48,4	1,7
31.			70	32,6	47,6	1,6
32.			80	33,2	44,8	1,5
33.		1.05	50	26,1	45,4	1,2
34.			60	27,9	48,2	1,3
35.			70	26,1	47,4	1,2
36.			80	25,0	44,5	1,1

The oil content of Dilbar variety seeds sown early on April 1 and April 15 was slightly higher (0.1-0.2%) than that of late May 1. In the variant with increased sowing rates, it was found that the oil content in the seeds was almost the same in all three terms (43.6, 43.5 and 43.5%). The oil content of Zarrin variety seeds sown early on April 1 and April 15 was slightly higher (0.1-0.3%) than that of late May 1. In the variant with increased sowing rates, it was found that the oil content in the seeds was almost the same in all three terms (44.6, 44.8 and 44.5%). The amount of oil accumulated in the seeds of the Buzuluk variety is higher than that of the Dilbar and Zarrin varieties, and when planted on April 15, it was found that according to the sowing standards, it pays off by 2.4, 3.5, 4.5 and 2.4% more than the Dilbar variety, and by 2.0, 0.3, 1.0 and 1.1% more than the Zarrin variety.

The Buzuluk variety was planted on April 15 and 60 thousand seeds per hectare were used, and 1.9 tons of oil was obtained from the crop obtained from one hectare. When planted on April 1, 1.7 tons, or 0.2 tons less oil, were obtained from this option. When sunflower was planted later, on May 1, the oil obtained from one hectare decreased to 1.4 tons, or 0.5 tons compared to planting on April 15 and the same amount of oil was obtained from the amount planted on April 1.

In the Dilbar control variety, 1.6 tons of oil were extracted from one hectare of land in the variant where 60 thousand seeds were used when planted on April 15, while 1.4 tons, or 0.2 tons less, were obtained from this variant when planted on April 1, and 1.3 tons, or 0.3 tons less, were obtained when planted on May 1. Compared to the Buzuluk variety, 3.5 tons less oil was obtained from the Dilbar control variety when planted on April 15 than from the above variant.

In the control variety Zarrin, when planted on April 15, 60,000 seeds per hectare were used, and 1.7 tons of oil were extracted from the crop obtained from one hectare of land, while when planted on April 1, 1.6 tons, or 0.1 tons less, were obtained from this variant, and when planted on May 1, 1.3 tons, or 0.4 tons less. Compared to the Buzuluk variety, when planted on April 15, 0.3 tons less oil was obtained from the Zarrin variety than from the above variant.

Conclusion. The effect of sowing dates and rates on the yield and oil yield of oilseed varieties of oilseed sunflower is significant. Compared to those sown on April 1 and May 1, sowing on April 15 and using a sowing rate of 60 thousand seeds per hectare showed positive results, resulting in higher yields per hectare and higher oil yield per hectare, while increasing the sowing rate had a negative effect. Of the varieties, the Buzuluk variety was found to have higher all indicators.

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