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EFFECT OF SOWING SCHEMES SEEDLING THICKNESS ON THE NUMBER OF LEAVES AND LEAF SURFACE OF SUNFLOWER VARIETIES

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ABSTRACT

This scientific article presents the results obtained on the effect of seedling thickness on the formation of the leaf surface of sunflower varieties planted in different planting schemes. In the process of photosynthesis in plants, in all varieties used in the experiment, as the feeding area increased, the number of leaves increased, and the leaf surface of a single plant increased. However, the largest amount of leaf surface area per hectare was observed in variants with the smallest feeding area and correspondingly the highest density. In particular, the highest leaf surface per hectare was recorded in the Dilbar variety planted in the 70x20-1 scheme and was 21.6 thousand m ^{2}.

Keywords: repetition, economic characters, productivity, scheme, sunflower, leaf, crop, oil, photosynthesis, variety, yield, early, predecessor, seed, seedling, basket.

INTRODUCTION

Sunflower is one of the main oil crops, the oil of which is mainly used in food. It is yellow in color, clear, semi-dry (Iodine number 119-144), the seed contains 29-56% oil and 15% protein. Sunflower oil is rich in linoleic and oleic, unsaturated fatty acids. These oils are similar in quality to olive oil . Sunflower oil is used in the production of margarine, mayonnaise, fish and vegetable preserves, confectionery products, varnish - paint, soap. 25-50 kg/ha of honey is obtained from sunflower. Also, sunflower seeds and seed husks are used in the industry for the preparation of various products (hexose and pentose sugars, ethyl alcohol, feed yeast, plastic, artificial fiber, etc.), and the basket and stem are used for the production of animal feed.

When planting sunflower as a repeated crop, it is important to make efficient use of the land freed from autumn grain crops, to determine the planting dates correctly, to develop and implement methods of intensive use of land in order to get crops from cultivated fields several times a year.

METHODS AND MATERIALS

Experiments were conducted in 2015-2017 in the conditions of typical sierozem soils of the experimental field of the Tashkent State Agrarian University " Center for Innovative Developments and Consulting in Agriculture ". In the experiment, 4 varieties of sunflower "Jahongir", "Rodnik", "Dilbar" and "Navruz" were carried out in 4 schemes of sowing 70x20-1, 70x25-1, 70x30-1 and 70x35-1.

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The placement of field experiments, calculations, and observations were specified in Field Experiment Methods.

RESULTS AND DISCUSSION

According to the results of the research, the main part of the leaves grows only before flowering, and after flowering, the leaves of the baskets on the top of the stem grow. Leaves from 4 to 11-13 on the stem belong to the lower layer, from 12-13 to 23-25 to the middle layer, and the leaves located above belong to the upper layer.

Pulling off any healthy leaves will reduce the productivity of the plants. At the same time, the leaves in the middle and upper part of the stem are the most important in providing nutrients to the seeds at the end of the growing season.

Xeromorphic leaves in the upper and partly middle parts of the sunflower stem under severe drought conditions, the rapid death of the lower leaves can then be compensated by the reduction of the transpiration surface of the leaves in the upper part of the stem. However, the decrease in the level of leaves leads to a decrease in yield.

The high productivity of plants is determined by the process of photosynthesis, movement of substances, accumulation and growth. Organic matter is formed during photosynthesis in plants. One of the main organs of plants are leaves, which carry out the process of photosynthesis in plants and produce organic substances. Several factors affect the size of the absorptive surface of leaves, one of which is the feeding area. The formation of leaves in oil sunflower varieties can be seen in Figure 1.

In 2015-2017, the average number of leaves per plant was 23.7 leaves in the 70x20-1 planting scheme of Jahongir control variety, 24.0 leaves in the 70x20-1 planting scheme, 25.0 leaves in the 70x30-1 planting scheme and 70x30-1 it was observed that 25.2 units were produced in the planting scheme. The fourth variant with a high feeding area of 2450 m^2 produced more leaves than the variants with a small feeding area. This pattern was also repeated in the variants of Rodnik, Dilbar and Navruz varieties studied in the experiment. The number of leaves (25.2, 26.0, 29.2 and 28.1 pieces) was observed in the 70x35-1 planting scheme with a large feeding area of all three varieties (2450$m^{2)}$. Among the varieties, it was found that Dilbar and Navruz varieties produced more leaves than Rodnik and Jahongir varieties.

The leaf surface of one plant during the period of star formation in the control "Jahongir" variety is 2.6 thousand cm^2 in the 70x20-1 planting scheme, 2.9 thousand cm^2 in the 70x25-1 scheme, in the 70x30-1 scheme. 3,0 thousand cm^2 and 70x35-1 scheme was found to be 3,3 thousand cm^2. It can be seen that variants with small feeding area had less leaf surface area and higher in variants with large feeding area. In the variant with a planting pattern of 70x35-1, compared to the variants with a small planting pattern, the leaf surface was 0.3-0.7 thousand cm^2 higher. This pattern was repeated in the experimental varieties "Rodnik", "Dilbar" and "Navruz".

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Fourth option in the 70x35-1 planting scheme of the "Rodnik" variety , the leaf surface of one plant was 3.4 thousand cm², while in the 70x20-1 scheme with a small feeding area, it was 2.7 thousand cm² and 0.7 thousand cm² leaf surface was found to be low.
70x35-1 planting scheme of the "Dilbar" variety, in the options with a small feeding area, 0.2-0.8 thousand cm² and in the same option of the "Navruz" variety, the leaf surface is less by 0.2-0.8 thousand cm² was determined.
According to planting schemes, the "Dilbar" variety has a higher leaf surface per plant compared to the "Jahongir", "Rodnik" and "Navruz" varieties. In "Dilbar" and "Navruz" cultivars, indicators were observed close to each other, and the highest indicator in terms of leaf surface per bush was observed in the variant with planting scheme 70x-20-1 (3.8-3.6 thousand cm²/bush).
According to the average three-year research results presented in the table, one hectare of land in the control variety "Jahongir" was 18.3 thousand m²/ha in the option with the planting scheme 70x20-1, and 16.5 thousand m² in the option with the planting scheme 70x25-1 m²/ga; 14.2 thousand m²/ha in the option with planting scheme 70x30-1; in the option of planting scheme 70x35-1 was 13.3 thousand m²/ha. Compared to the variant with the highest index, it was determined that the leaf surface decreased to 5.0-3.2-0.9 thousand m²/ha, and the lowest index was observed in the planting scheme with 70x35-1.
This observed regularity was repeated in the experimental varieties "Rodnik", "Dilbar" and "Navruz". Compared to the variant with a 70x20-1 planting scheme in the "Rodnik" variety, in other planting schemes in the experiment, up to 5.3-3.8-1.4 thousand m²/ha, in the "Dilbar" variety It was found that it decreased up to 5.8-3.3-1.6 thousand m²/ha, and in "Navruz" variety up to 5.5-3.1-1.4 thousand m²/ha, and the lowest indicator was observed in the planting scheme with 70x35-1.
According to the results of the three-year average research on the parameters of the leaf surface per hectare during the star formation period of sunflower varieties, the highest indicator was observed in the varieties "Jahongir", "Rodnik", "Dilbar" and "Navruz" in the variant with a planting scheme of 70x20-1 (18.3 -19.1-21.3-20.6 thousand m²/ha). It can be seen that the leaf area per plant of sunflower was higher in the 70x35-1 planting scheme, while the number of seedlings per hectare was higher in the 70x20-1 planting scheme. When comparing the differences between the varieties according to the parameters of the leaf surface per hectare, "Dilbar" and "Navruz" varieties had similar indicators, and a significant difference was observed in the "Jahongir" control variety. According to the obtained results, it was found that "Dilbar" variety had a higher leaf surface of 0.7-2.2 thousand m²/ha compared to "Navruz" and "Rodnik" varieties.
It was found in the research results that when the development periods of sunflower changed, its leaf surface also increased (Table 1).
According to the average 3-year data obtained, the leaf surface of one plant during the flowering period varies according to the planting schemes, and the lowest indicator in the control variety "Jahongir" was observed in the variant with the planting scheme

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70x20-1, 4.3 thousand cm² /plant; 4.4 thousand cm² /bush in the option with planting scheme 70x25-1; 4.5 thousand cm²/bush in the option with planting scheme 70x30-1; In the 70x35-1 planting scheme, it was 4.6 thousand cm ²/bush, and it was found that as the feeding area increases, the leaf surface exceeds 0.1 thousand cm²/bush.

This regularity was repeated in other varieties studied in the experiment and was observed in the planting scheme with the highest leaf level of 70x35–1. It was found that in the option with planting pattern 70x20-1, in all varieties (4.3, 4.5, 5.1 and 4.8 thousand cm² /plant), one plant has less leaf surface. According to the varieties, a high rate was observed in the "Dilbar" variety. In this case, the lowest indicator is 5.1 thousand cm²/bush observed in the variant with planting pattern 70x20-1; 5.3 thousand cm ²/bush in the option with the planting scheme 70x25-1; 5.4 thousand cm²/bush in the option with the planting scheme 70x30-1; In the planting scheme of 70x35-1, it was found to be 5.6 thousand cm ² /bush, which had the lowest indicator, and compared to the first option, it increased by 0.2-0.5 thousand cm²/bush.

In "Jahongir" variety, in which the planting scheme was 70x20-1, the surface of leaves on one hectare was 30.7 thousand m² /ha, and as the area of nutrition increased, the surface of leaves decreased. Compared to the first option with the highest indicator, the feeding area increased by 5 cm in the following options, it was found that it decreased to 2.6-6.3-11.7 thousand m²/ha, and the lowest indicator was observed in the planting scheme with 70x35-1.

This observed regularity was repeated in the studied varieties and planting schemes in the experiment, and it was found that the "Rodnik" variety decreased to 3.1-6.8-12.0 thousand m²/ha in the following sequence compared to the variant with the planting scheme 70x20-1.

The planting pattern of "Dilbar" variety was 36.6 thousand m² /ha in the 70x20-1 variant, and 30.1 thousand m² /ha in the 70x25-1 variant; 25.9 thousand m² /ha in the option with planting scheme 70x30-1; in the option of 70x35-1 planting scheme, it was 22.8 thousand m²/ha.

The planting scheme of the "Navruz" variety was 34.5 thousand m²/ha in the 70x20-1 variant, and 29.1 thousand m²/ha in the 70x25-1 variant; 24.9 thousand m²/ha in the option with planting scheme 70x30-1; planting scheme was 22.0 thousand m ² /ha in the option of 70x35-1.

According to the results of the average three-year study of sunflower varieties on the parameters of the leaf surface per hectare, the highest index was observed in the varieties "Jahongir", "Rodnik", "Dilbar" and "Navro'z" in the variant with the planting scheme 70x20-1 (30.7-31, 8-36.6 and 34.5 thousand m ² /ha). It can be seen that leaf area per plant was higher in 70x35-1 planting scheme, whereas it was observed that leaf area per plant was higher in 70x20-1 planting scheme in terms of number of seedlings per hectare. When comparing the differences between the varieties according to the parameters of the leaf surface per hectare, "Dilbar" and "Navruz" varieties had similar indicators, and a significant difference was observed in the "Jahongir" variety. According to the obtained results, it was found that "Dilbar" variety

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had a higher leaf surface of 2.1-5.9 thousand m²/ha compared to "Navruz", "Jahongir", "Rodnik" varieties.

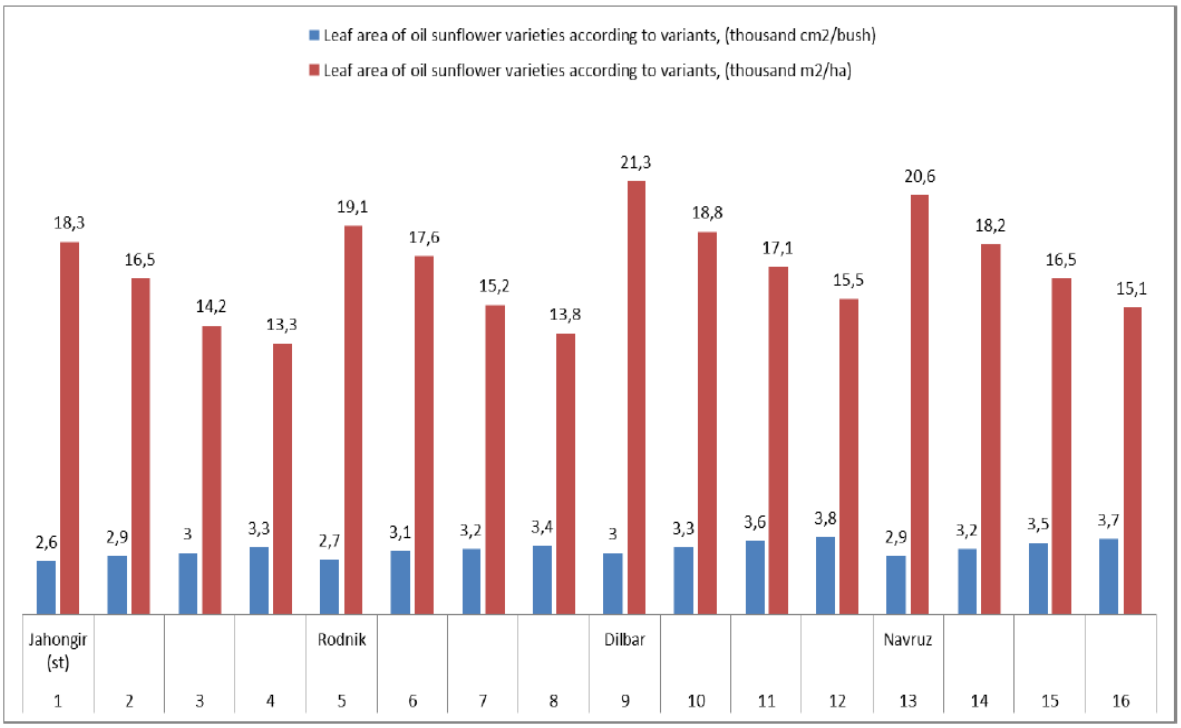

Figure 1 Indicators of leaf surface of oilseed sunflower cultivars during budding period according to variants (2015 - 2017)

Table 1 Indicators of leaf surface of oilseed sunflower cultivars during flowering period according to variants (2015 - 2017)

No	Sowing scheme	Varieties	Leaf surface of oil sunflower varieties according to variants, (thousand cm²/bush)							Leaf surface of oil sunflower varieties according to variants, (thousand m²/ha)			
			number of leaves, pcs	2015 year	number of leaves, pcs	2016 year	number of leaves, pcs	2017 year	Average	2015 year	2016 year	2017 year	Average
1	70x20-1	Jahongir (st)	23,6	4,3	24,5	4,5	23,0	4,1	4,3	30,4	31,8	30,0	30,7
2	70x25-1		23,9	4,5	24,7	4,6	23,5	4,2	4,4	25,7	26,3	24,0	25,3
3	70x30-1		24,7	4,6	25,2	4,7	25,0	4,3	4,5	21,9	22,3	20,5	21,6
4	70x35-1		24,9	4,7	25,4	4,8	25,2	4,5	4,6	19,1	19,5	18,3	19,0
5	70x20-1	Rodnik	23,6	4,5	24,7	4,6	24,2	4,3	4,5	32,0	32,7	30,6	31,8
6	70x25-1		24,8	4,7	25,4	4,8	25,0	4,5	4,7	26,8	27,4	25,7	26,6
7	70x30-1		25,3	4,8	26,6	4,9	25,7	4,7	4,8	22,9	23,3	22,4	22,9
8	70x35-1		25,4	4,9	26,7	5,1	25,9	4,6	4,9	20,0	20,8	18,7	19,8
9	70x20-1	Dilbar	27,1	5,2	28,2	5,3	28,0	4,9	5,1	37,1	37,8	34,9	36,6
10	70x25-1		27,4	5,3	28,4	5,4	28,1	5,1	5,3	30,3	30,9	29,1	30,1
11	70x30-1		28,6	5,4	29,5	5,6	29,0	5,3	5,4	25,7	26,7	25,2	25,9
12	70x35-1		28,7	5,6	29,7	5,7	29,2	5,5	5,6	22,8	23,3	22,4	22,8
13	70x20-1	Navruz	24,6	4,8	25,7	5,0	25,1	4,7	4,8	34,2	35,7	33,5	34,5
14	70x25-1		26,5	5,1	27,4	5,2	27,0	5,0	5,1	29,1	29,7	28,5	29,1
15	70x30-1		27,3	5,2	28,5	5,4	28,2	5,1	5,2	24,7	25,7	24,2	24,9
16	70x35-1		27,4	5,4	28,6	5,5	28,4	5,3	5,4	22,0	22,4	21,6	22,0

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CONCLUSION

The following conclusions can be drawn from the research results:

1. All the cultivars used in the experiment, the number of leaves increased as the feeding area increased, and the highest index was observed in the planting pattern of 70x35–1.

2. Due to the fact that the leaves of the sunflower variety "Dilbar" were large and produced a lot, it produced more leaves than all three varieties in terms of the number of leaves (27.8-29.2 pieces/bush) in all planting schemes.

3. As the feeding area of sunflower varieties increased, the leaf surface of one plant increased. Among the sunflower varieties, the highest rate was observed in the "Dilbar" variety (5.6 thousand cm^2/plant). "Jahongir" was 0.2-1.0 thousand cm^2/bush higher than "Rodnik" and "Navruz" varieties. According to the data obtained on the leaf surface per hectare during the sunflower flowering period, due to the decrease in the number of plant stems per hectare, the highest leaf surface index in all varieties was observed in the variant with the planting scheme 70x20-1 (30.7-31.8-36.6-34.5 thousand m^2/ha).

4. Among the sunflower varieties, the highest rate was observed in the "Dilbar" variety (36.6 thousand m^2/ha). It was found that "Jahongir" was higher than "Rodnik" and "Navruz" varieties by 5.9-2.1 thousand m^2/ha.

REFERANCES

1. Amanova M. Important aspects of sunflower seed production//J.Agro Ilm. 2014. No. 1(22). B. 35-39.
2. Abdukarimov D.T., Khalilov N.Kh., Lukov M.Q., Yuldasheva Z.K. and others. "Recommendation for farmers on sunflower cultivation technology", Tashkent-2019. B.11-14.
3. Azizov T., Anarbaev I., Balkibekova R., Fayziev O. Effect of mineral and biofertilizers on the development of sunflower, peanut, sesame from oilseeds // J.Agro Ilm. 2013. No. 3(27). B. 27-28
4. Anorboev I., Orolov Kh. Oil crops // Sunflower. Agriculture of Uzbekistan. J. 2009. No. 2. B.10-11
5. Methods of conducting field experiments T-2007. B. 133-138.
6. Dospekhov B.A. Methodology polevogo opyta. M.: Kolos, 1985. 416 p.
7. Lukov M. Repeated sunflower care//J. Agriculture of Uzbekistan. 2013. No. 7. B. 29.
8. Nichiporovich A.A. Photosynthesis and plant productivity. - M.: Nauka, 1963. P.457.

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