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Research Article

ECONOMIC AND BIOLOGICAL INDICATORS OF FOREIGN SUNFLOWER VARIETIES AND HYBRIDS

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ABSTRACT

The article provides information on the yield of sunflower varieties Umnik, Buzuluk and hybrids Natalie, Mercury, Fakel, Elion, Epsilon, Nord, Revansh, Typhoon, Arneb, Aris, grown as a re-crop on fields freed from grain crops, as a result of studying their adaptability to soil and climatic conditions of irrigated lands in Uzbekistan.

KEYWORDS

Sunflower, variety, hybrid, growth, development, growing season, feed, yield.

INTRODUCTION

Every day the role and importance of the agricultural sector in ensuring the food security of the world's population is increasing. In particular, an urgent task is to use the resources and opportunities available in our country to provide the population with agricultural products, further increase productivity and introduce scientific achievements and modern approaches to the sphere.

Sunflower is one of the main oilseeds in the world. Sunflower oil plays an important role in meeting the needs of the population in vegetable oil. Sunflower seeds contain up to 55% oil, of which vegetable oil is mainly used for food. Margarine is made from sunflower oil. The low-quality part of sunflower oil is used for technical purposes. Cake obtained by processing seeds into oil is very nutritious, contains

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about 20-35% protein and is a good feed for dairy cows. Oily sunflower varieties do not branch.

Sunflower silage is well eaten by all kinds of animals. Silage is much more nutritious, contains easily digestible protein, carbohydrates, mineral salts and vitamins. In 100 kg of silage there are 16.2 feed units and 0.7 kg of digestible protein. Varieties intended for animal feed branch well. When sowing forage, it is recommended to sow in combination with corn.

As part of the development strategy of the new Uzbekistan for 2022-2026 and the "Year of Human Dignity and Active Neighborhood", tasks were set to develop a program for 2022 and to increase the range of processed meat, milk, fruits, vegetables, oils and fats for industrial use from 898 up to 1100 items.

The innovative technology of sunflower cultivation is based on the integrated use of the biological potential of the productivity of modern hybrids and varieties in different agro-ecological growing conditions, optimization of water and nutrient regimes in soils, the use of an integrated plant protection system against weeds, diseases and pests, modern complexes of machines for cultivation and harvesting.

The cultivation of oilseeds in the country, along with the creation of opportunities for the rational use of land, opens up a wide path to solving the problem of meeting the needs of the population in food, i.e. fat and oil products.

In the conditions of irrigated lands of the Republic of Uzbekistan, it is effective to sow sunflower as a feed in areas freed from grain crops, and the best time for sowing sunflower is from June 15 to July 15.

Purpose of the study: The study of sunflower varieties and hybrids imported from Russia in the framework of bilateral cooperation at the Research Institute of Grain and Leguminous Crops is the purpose of this study.

Results of the study: Twelve varieties and hybrids of sunflower were brought from the Russian Federation to the Research Institute of Grain and Leguminous Crops, planted and tested in 2021 on a field freed from grain crops to study adaptability to irrigated soil and climatic conditions of Uzbekistan.

Long-term experience shows that sunflower in a crop rotation should return to its former field no earlier than after 8-10 years. Violation of the return principle can lead to mass damage by broomrape, downy mildew, white, gray, ashy rot, Fusarium, Phomopsis and other pathogens, and ultimately to a decrease in yield.

Field experiments were carried out in conditions of irrigated meadow-serozem soils. In the experiment, the seeds of sunflower varieties and hybrids were sown to a depth of 5-6 cm with an SCh-4 pneumatic seeder according to the scheme 60 cm x 30 cm x 1 as a repeatedcarrying out technological measures that provide optimal conditions for the formation of a high yield and its quality.

Sunflower has a high ecological plasticity. It develops a powerful root system, penetrating to a depth of 150-300 cm, which makes it possible to use the moisture of deep soil layers that are inaccessible to many other field crops.

Since sunflower develops a powerful root system, it should not be placed directly after crops with a deep-penetrating root system - sugar beet, alfalfa, Sudanese grass. These precursors strongly desiccate the soil to a great depth, which leads to a moisture deficit during the critical flowering-seed-filling period for sunflowers.

In irrigated soils, sunflower after these crops can be sown in 1-2 years. Sunflower should not be placed

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earlier than 3-4 years after soybeans, peas, rapeseed, beans, as these crops have a number of common diseases. The best predecessors of sunflower are winter crops, a good one is corn for silage.

Fertilizers are one of the effective means of increasing the yield of sunflower. The effectiveness of their application depends on the biological characteristics of varieties and hybrids, the provision of soils with available forms of nutrients, the timing and methods of application.

The main fertilizer provides the need for sunflower plants in nutrients throughout the growing season. Organic and mineral fertilizers are used as the main ones. Of the organic manure, the effectiveness of which depends on the conditions of moisture and the temperature regime of the soil is of the greatest importance. The optimal rate of manure is 20 t/ha applied in autumn.

In the ongoing experiments, the annual norm of phosphorus and potassium from mineral fertilizers for sunflower is given at the rate of 90 kg of pure phosphorus and 60 kg of potassium per hectare during the period of land preparation before sowing.

During the period of crop care, the first top dressing was carried out with nitrogen fertilizers in the phase of 4-6 leaves of the plant to a depth of 10-12 cm between rows of 90 kg/ha of urea in its pure form. During the period of formation of 10-12 leaves in the plant, the second top dressing was carried out with ammonium nitrate in the amount of 70 kg/ha with pure fertilizer by the cultivator to a depth of 14-16 cm between the rows.

The crops were irrigated after each feeding. Also, during flowering and grain filling, regular watering was carried out, depending on soil moisture and the state of the crop.

During the growing season of sunflower, with the help of a cultivator, row-spacings were treated 3 times, chemical treatments were carried out against diseases and pests.

According to Table 1, the height of the Umnik and Buzuluk varieties is 185 and 188 cm, respectively, and in the hybrids Natalie, Mercury, Fakel, Elion, Epsilon, Nord, Revansh, Arneb and Typhoon, the height was 185, 180, 186, 193, 190, 170, 179, 175, 175 and 180 cm respectively. In general, it was noted that all varieties and hybrids in the test completely went through the phases of growth and development.

According to the results of field trials, varieties Umnik and Buzuluk fully ripened in 90 and 95 days, respectively, and hybrids Natali, Mercury, Fakel, Elion, Ersilon, Nord, Revansh, Typhoon, Arneb and Aris in 98, 93, 90, 99, 100, 88 , 85, 100, 92 and 95 days respectively.

According to the results of the experiments, the highest yield was obtained from 2 varieties and 4 hybrids of sunflower grown as a re-crop in the fields freed from grain crops. The yield of sunflower varieties and hybrids was as follows: varieties Umnik 28.9 c/ha, Buzuluk 27.8 c/ha and hybrids Elion 27.5 c/ha, Arneb 27.1 c/ha, Aris 26.7 c/ha, Typhoon 26.5 q/ha.

Table 1

Economic and biological indicators of varieties and hybrids of sunflower

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No.	Name of varieties and hybrids	Sowing date, number	Plant height, see	Vegeta ration period, days	Yield, c/ha
1	Umnik	21.06.21 y	185	90	28,9
2	Buzuluk	21.06.21 y	188	95	27,8
3	Natalie	21.06.21 y	185	98	25,0
4	Mercury	21.06.21 y	180	93	25,6
5	Torch	21.06.21 y	186	90	25,9
6	Aelion	21.06.21 y	193	99	27,5
7	Epsilon	21.06.21 y	190	100	25,9
8	Nord	21.06.21 y	170	88	24,3
9	Revenge	21.06.21 y	179	85	25,8
10	Typhoon	21.06.21 y	175	100	26,5
11	Arneb	21.06.21 y	175	92	27,1
12	Aris	21.06.21 y	180	95	26,7

This means that if the average yield of cereals planted as the main crop per hectare is 6.0-7.0 tons per hectare, then from the variety and hybrids of sunflower planted on this area as a secondary crop, you can get a yield of 2.5- 3.0 t/ha. As a result, 8.5-10.0 t / ha of crop is obtained from 1 ha due to the double harvest from one area.

Due to re-sowing, the amount of agricultural products grown from 1 ha will increase by 1.5 times. This is certainly important for ensuring food security.

CONCLUSION

In conclusion, we can say that when growing sunflower varieties Umnik, Buzuluk and hybrids Elion, Arneb, Aris, Typhoon on plots freed from grain crops in the soil and climatic conditions of Uzbekistan, it is possible to productivity is about 2,5-2,9 c/ha

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