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INFLUENCE OF DIFFERENT FACTORS ON SUNFLOWER PRODUCTIVITY

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Abstract:

The article highlights the influence of the timing of sowing sunflower varieties "Jahongir" and "Diyor" and the norms of mineral fertilizers on the amount of oil in seeds in light gray soils of the Kashkadarya region. When sowing sunflower seeds early (June 15-20) in the light gray soil conditions of the Kashkadarya region, the plants grow normally, the oil content of the Jahangir and Diyor varieties is high (up to 40.3-42.3%) compared to other periods. An increase in the rate of mineral fertilizers, especially nitrogen, by 120 kg/h leads to plant thirst, early ripening compared to other fertilizer rates and a decrease in oil content by 8-12 percent.

Keywords: sunflower, variety, Jahangir, Diyor, mineral fertilizer, planting time, oil content

INTRODUCTION

The level of study of the topic.

In the current economic conditions, in which the price of equipment, energy resources and other material resources necessary for the cultivation of agricultural crops is constantly increasing, the high economic efficiency of sunflower cultivation can be ensured only by constantly increasing the productivity of this crop. The priority direction of solving the problem of stabilization and increase of sunflower cultivation and obtaining a high, stable yield from high-quality seeds is to further improve the elements of cultivation technologies depending on specific soil-climatic conditions [3, 6]. The main elements of sunflower cultivation technology are, in particular, the main processing and the use of fertilizers [1].

Compared to other agricultural crops, sunflower is demanding on the nutrient regime of the soil. To grow one ton of seeds, it consumes 2.5 times more nitrogen, 3.6 times more phosphorus, and 16.3 times more potassium per hectare than winter wheat [4]. The nutrient requirements of plants at different times of the growing season also vary.

It was found that sunflower grows slowly and consumes relatively small amounts of mineral nutrients before budding, and after budding, the growth rate increases and absorption of mineral elements from the soil increases. In adulthood, this process slows down and even stops completely [2].

The period from budding to the end of flowering absorbs the largest amount of biosynthesized organic biomass, and the accumulation of dry matter in the next period is weakened due to a decrease in the rate of absorption of nutrients and their partial flow through the roots to the soil (Makoveev A. V. 2016) [5].

The nature of the supply of nutrients to the sunflower plant and their absorption by the sunflower according to the phases of plant growth and development is determined by the physiological and biochemical functions of individual nutrients during the formation of the seed crop. Dyakov and others found that sunflower absorbs a small amount of nitrogen from germination until the appearance of 8 leaves; In the period from 8 to 18 leaves, the need for this element increases; later, until full flowering, plants absorb the largest amount of nitrogen. At the beginning of flowering, about 48 mg of nitrogen per day is needed for the normal development of a plant, and in other periods of growth and development, the intensity of consumption of this element decreases by 2-3 times [4].

The purpose of the study. Development of agrotechnology of sunflower cultivation in conditions of irrigated light gray soils of the southern region of the republic.

Research methods. Researches were conducted at the central experimental farm of the Southern Agricultural Research Institute. In the field experiments, different planting standards and mineral fertilizers were used in the cultivation of "Diyor" and "Jahongir" varieties of sunflower. Soil samples for analysis were taken according to the methods of "Metody agrokhimicheskih, agrofizicheskih i mikrobilochicheskih issledovaniy v polivnyx khlopkovyx rayonakh" (1963).

Amount of humus according to the method of I.V. Tyurin (GOST-26213); nitrate nitrogen-ion selective method, GOST-13496-10; total nitrogen, phosphorus and potassium in one sample I.M. Maltseva, L.P. Gritsenko's method;

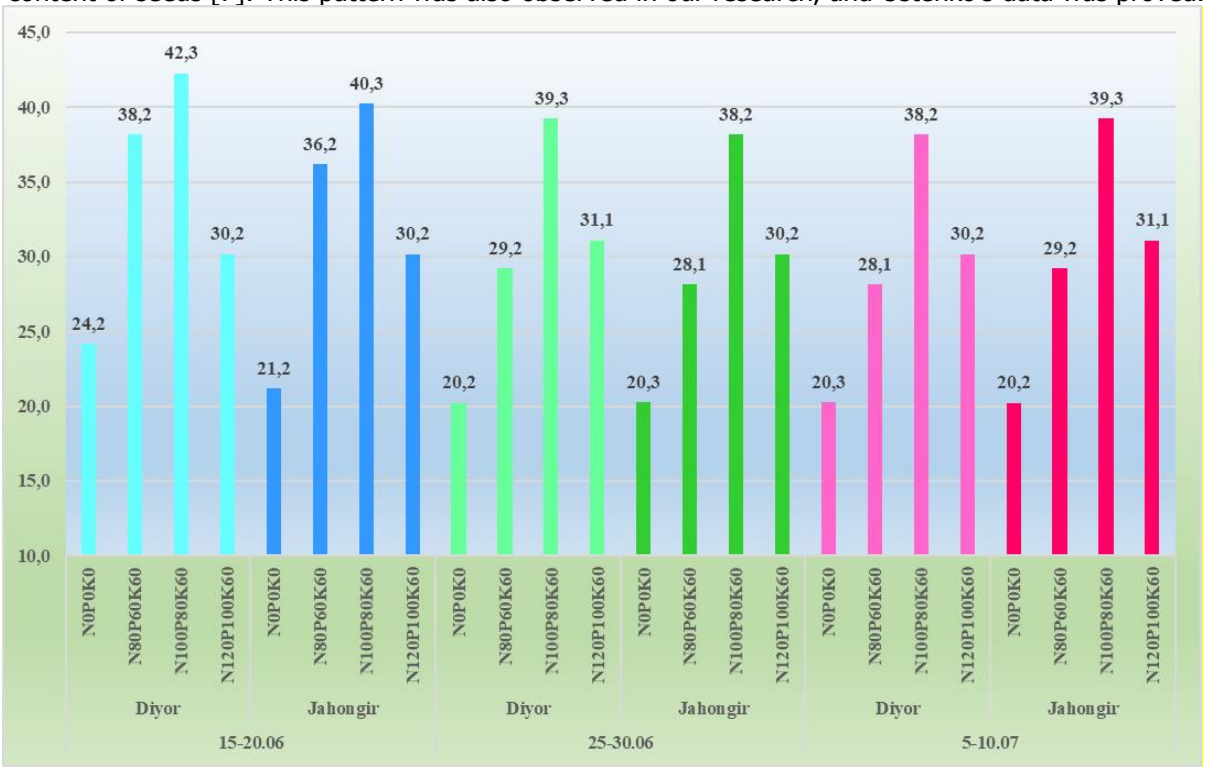
mobile phosphorus in 1% ammonium carbonate solution by the method of B.P. Machigin; by the method of P.V. Protasov in an alternating potassium flame photocalorimeter; water-soluble salts and dry residue were determined by the generally accepted method, GOST-26423-85, using a potentiometer in pH aqueous absorption.

The density of the soil in field conditions is determined by the Kachinsky method using a 500 cm3 cylinder; specific mass by pycnometric method; soil porosity in the calculation method; water permeability of the soil was performed by the Kaczynski method. Field and laboratory experiments were carried out on the basis of the methodological manual of the All-Russian Research Institute of Plant Science (1985). Phenological observations and biometric analyzes were carried out according to the methodological manual of the State Commission for Testing Agricultural Crops (1989).

Research results. In 2022 and 2023, when the research was carried out, the oil content of sunflower varieties was influenced by the characteristics of the variety, the planting dates, and the applied mineral fertilizers.

In Diyar and Jahangir varieties of sunflower, the amount of oil in the seed when planted early (June 15-20) was 24.2% and 21.4% in the control (without fertilizer) variant, respectively, while the highest value was 42.3% in the N100P80K60 variant and It was 40.3%. The highest feeding was found to be 30.2% or 12.1-10.1% less in both cultivars in the variant N120P100K60.

When the seeds were sown in the middle term (June 25-30), the control (without fertilizer) variant was 20.2% and 20.3%, respectively, the highest value was 39.3% and 38.2% in the N100P80K60 variant, in the late term (July 5-10) when planted, it was 20.3% and 20.2% in the control (without fertilizer), respectively, while the highest rate was 38.2% and 39.3% in the N100P80K60 variant. Ustenko (2009) noted that the excess of fertilizers, especially nitrogen, in sunflower cultivation makes plants less resistant to drought, more susceptible to diseases, and reduces the oil content of seeds [7]. This pattern was also observed in our research, and Ustenko's data was proved.



Picture 1. Effect of various factors on sunflower fertility

In conclusion, it can be said that in the conditions of the light gray soil of Kashkadarya region, sowing sunflower seeds in the early period (June 15-20) in the fields freed from grain - the normal growth of the plant, compared to other periods, the oil content of Jahangir and Diyor varieties is high (40.3-42 up to .3%). The increase of mineral fertilizer, especially the rate of nitrogen by 120 kg/h, leads to the thirst of the plant, early ripening compared to other rates of fertilizer, and the reduction of oil content by 8-12 percent.

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