



THE INFLUENCE OF SOWING DATES ON THE GROWTH AND DEVELOPMENT OF CHICKPEA VARIETIES “PALWAN” AND “IFTIKOR”

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ABSTRACT

Chickpeas produce ecologically clean products in the food industry. Chickpea fields enrich the soil with pure nitrogen, improving the soil microflora. Especially significant today, with global protein shortages, is the fact that chickpeas contain 19-33% protein, increasing their nutritional importance. The impact of sowing dates on the growth and development of chickpea varieties in the saline soils of Karakalpakstan was studied.

The research was conducted at the experimental site of the Institute of Agriculture and Agro-Technologies of Karakalpakstan. The “Palwan” and “Iftikor” varieties of chickpeas were sown in three different periods: the first, second, and third decades of April. The aim of the research was to study the impact of sowing dates on the growth characteristics of chickpea varieties and to conduct phenological observations. The studies were conducted according to the State variety testing methodology for field crops.

Introduction.

In the “Strategy of Actions” of the Republic of Uzbekistan for 2017-2021, special attention was given to the development of new selective varieties of agricultural crops suitable for soil-climatic and ecological conditions, particularly promoting cereal cultivation. This requires scientific research aimed at efficient land use and soil productivity preservation through intensive crop cultivation. Among the leguminous crops, chickpeas hold a significant position, with increasing attention in Uzbekistan in recent years.

Chickpeas have minimal production costs for protein, and yield significantly per hectare. Chickpea protein is used to produce ecologically clean food products. Chickpea fields improve soil productivity by enriching it with 50-70 kg of biological nitrogen through the activity of nitrogen-fixing bacteria on their roots. The objective of the research is to study the impact of sowing dates on the productivity and quality of chickpeas in saline soils of Karakalpakstan. The tasks of the research include studying the effect of sowing dates on the growth, development, yield, chemical composition, biometric indicators, and dry matter accumulation



ability of chickpea varieties; evaluating the effect of sowing dates on the yield and quality of chickpeas, and assessing their economic efficiency.

Given the limited research on leguminous crops in Karakalpakstan, selecting the right chickpea varieties and determining the optimal sowing dates require extensive scientific research. Therefore, we conducted a scientific study at the experimental site of the Institute of Agriculture and Agro-Technologies of Karakalpakstan, involving two chickpea varieties – “Palwan” and “Iftikor”, and three sowing dates – the first, second, and third decades of April.

Research Object and Methodology The research objects were the “Palwan” and “Iftikor” varieties of chickpeas. Methodology included assessing the field emergence, plant counts, biometric measurements of the plants according to the State variety testing methodology for field crops, soil salinity levels by the methods of A.E. Arinushkina (1970) and V.A. Kovda (1983), and leaf area measurement by the method of B.A. Dospekhov (1968).

Scientific Research Results Sowing dates significantly affected the vegetation period. In the “Palwan” variety, the germination phase occurred in 9-11 days, while in the “Iftikor” variety, it took 9-10 days. Delayed sowing reduced this process by 1-6 days. In the “Palwan” variety, the stem elongation phase consistently occurred in 20 days across all sowing dates, with no differences observed. In the maturation phase, some differences were noted. The first sowing date required 49 days for maturation, whereas the second sowing date (10 days later) required 47 days, and the third sowing date (20 days later) required 46 days. Delayed sowing shortened the maturation phase by 4-6 days (Table 1). The vegetation period lasted 88 days for the first sowing date, 84 days for the second (4 days shorter), and 82 days for the third (6 days shorter compared to the first). Sowing dates influenced the growth and development, and the vegetation period was reduced by 2-3 days in the “Iftikor” variety with delayed sowing.

Table 1. Duration of Developmental Stages of Chickpea Varieties (days)

№	Variants		Sowing dates				
	Types	Time of planting	Stem	Elongation	Flowering	Maturation	Vegetation period
1	«Palwan»	10.04	11	20	18	49	88
2		20.04	10	20	17	47	84
3		30.04	9	20	16	46	82
1	“Iftikor”	10.04	10	20	18	49	84
2		20.04	10	20	18	47	82
3		30.04	9	20	18	45	81

The influence of sowing dates on the growth of chickpeas was studied, and in the stem elongation phase, the height of the “Iftikor” variety sown on April 10th reached 20 cm. When sown on April 20th, the height reached 21 cm, 1 cm taller than the first sowing date. In the third sowing date, the plant height was 20 cm, the same as the first sowing date. During the flowering phase, the height of the “Iftikor” variety in the first sowing date was 36 cm.

When sown on April 20th, the height was 35 cm, 1 cm shorter than the first sowing date. In the third sowing date, the height was 34 cm, 2 cm shorter than the first sowing date. During the pod formation phase, the height of the “Iftikor” variety in the first sowing date reached 48



cm. When sown on April 20th, the height was 46 cm, 2 cm shorter than the first sowing date. In the third sowing date, the height was 44 cm, 4 cm shorter than the first sowing date. In general, from the stem elongation phase to the pod formation phase, the height of plants decreased in the later sowing dates.

The “Iftikor” variety showed better indicators in all parameters compared to other varieties studied in the experiment, proving its optimality against the “Palwan” variety.

Overall, sowing dates influenced the growth, development, and length of the vegetation period of chickpea varieties, with the optimal sowing time in Karakalpakstan being in the first decade of April.

Discussion Section The main goal of our experimental work was to determine the optimal sowing dates for chickpea varieties in saline soils. We conducted experiments with two varieties sown at three different dates to identify the optimal variant. As a result, it was determined that sowing chickpeas in the first decade of April in Karakalpakstan is most favorable, as the plants grow well, and yields are high. According to Popova E.V., Sergaliev H.X., and Vasilchenko S.A., chickpeas are currently considered a very promising leguminous crop. They are highly resistant to drought and heat.

The well-developed root system, small leaves, high osmotic pressure of cell sap, and efficient use of soil moisture make chickpeas highly adaptable to dry conditions.

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