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DURATION OF GROWTH PHASES AND BIOMETRIC INDICATORS OF CHICKPEA

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ANNOTATION

This article analyzes the duration of growth phases and biometric indicators of chickpea. The research was conducted in the light sierozem soil conditions of Kushrabod district, Samarkand region, focusing on the Yulduz and Uzbekistan-32 varieties. The study examined the duration of germination, budding, flowering, and physiological maturity under different sowing dates (February 25 and March 15). Biometric observations revealed that the Uzbekistan-32 variety grew taller and had a higher first pod height from the ground compared to the Yulduz variety. Early sowing (February 25) showed more favorable growth parameters in both varieties. These results highlight the importance of selecting appropriate sowing times and taking varietal characteristics into account in chickpea cultivation.

KEYWORDS:

chickpea, growth stages, biometric indicators, sowing date, Yulduz variety, Uzbekistan-32 variety, pod height, drought resistance, mechanized harvesting.

Chickpea has been cultivated since ancient times mainly in Eastern countries and the Central Asian republics, including Uzbekistan. Various nutritious, energy-rich, and healing dishes have been traditionally prepared from chickpea seeds.

The demand for chickpeas is increasing day by day. However, the current production of chickpeas in our republic does not meet the existing demand. In order to ensure the availability of such products, it is necessary to significantly expand the areas sown with chickpeas and increase their yield.

Chickpeas are mainly cultivated in rainfed lands and are distinguished from other leguminous crops by their resistance to drought and heat. This feature of the plant is well suited to the natural climatic conditions of Uzbekistan. Chickpea seeds are nutritious and rich in protein, and the plant residue serves as a valuable feed for livestock.

Additionally, it acts as a good precursor for other crops and helps to improve soil fertility. Therefore, in recent years, great attention has been paid to expanding the areas allocated for chickpea cultivation.

The composition of chickpea seeds includes up to 30% protein, up to 8% fat, up to 48% starch, sugars, mineral substances, and vitamins. In terms of energy value and nutritional content, chickpeas are close to meat. In recent years, chickpeas have also been cultivated in irrigated lands, where their productivity is significantly higher compared to rainfed fields.

Field experiments were conducted in the light sierozem soil conditions of Kushrabod district, Samarkand region. In this study, the Yulduz and Uzbekistan-32 varieties of chickpea were investigated.

According to the conducted observations, the growth and development stages of chickpea were studied in relation to the sowing dates. The duration of developmental phases, growth dynamics, and biometric indicators of the varieties were analyzed.

Under rainfed conditions in the Samarkand region, chickpea varieties were sown in late February and mid-March. Depending on the varietal characteristics and climatic conditions, variations were observed in the germination rates. When seeds were sown on February 25, both varieties germinated by March 20. When sown on March 15, germination occurred on March 29–30 in both varieties.

In both varieties, the duration from sowing to emergence was 25 days for the February planting, and 14–15 days for the mid-March planting. The duration from emergence to budding in the Yulduz variety was 42–44 days when sown in late February, and 33–35 days when sown in mid-March.

The duration from budding to flowering varied from 3–4 days, depending on the sowing date, variety characteristics, and weather conditions. The flowering period lasted 14 to 20 days. The duration from flowering to physiological maturity in the Yulduz variety was 30–32 days, while in the Uzbekistan-32 variety, it ranged from 34 to 36 days.

In addition, during the vegetation period of chickpea, the plant height was measured every month. In both sowing dates, it was determined that the Uzbekistan-32 variety was taller compared to the Yulduz variety.

When sown on **February 25**, the height of the **Yulduz variety** ranged from **44 to 50 cm**, while the **Uzbekistan-32 variety** reached **52 to 58 cm**. When sown on **March 15**, the height of the Yulduz variety was **41–45 cm**, whereas the Uzbekistan-32 variety measured **50–54 cm**.

Greater plant height, in turn, had a significant effect on the **First Pod Height from the Ground (FPHG)** — the distance from the soil surface to the lowest pod. The taller the plant, the higher the pod formation above the ground, which is important for **facilitating mechanized harvesting**.

Before harvesting, biometric assessments were carried out, during which the **number of pods per plant** and **FPHG** were measured. Depending on the sowing date, the following results were observed:

When sown on **February 25**:

In the **Yulduz variety**, FPHG ranged from **21.0 to 25.2 cm**.

In the **Uzbekistan-32 variety**, it ranged from **23.0 to 27.0 cm**.

When sown on **March 15**:

In the Yulduz variety, FPHG was **19.0 to 22.1 cm**.

In the Uzbekistan-32 variety, it was **20.2 to 23.4 cm**.

When comparing the varieties, the **Uzbekistan-32** variety consistently showed greater **plant height** than the Yulduz variety. As a result, this led to a **higher positioning of the lower pods**, which enhances the crop's suitability for **mechanized harvesting**.

Expanded Conclusion

In conclusion, the study revealed that the growth parameters of chickpea varieties — including plant height, number of branches, and the height of the first pod from the ground — are significantly influenced by **sowing dates**, **varietal characteristics**, and **climatic factors**, particularly rainfall levels.

The **Uzbekistan-32** variety consistently demonstrated superior results in terms of **plant height** and **first pod height**, regardless of the sowing period, when compared to the **Yulduz** variety. These traits are agronomically important,

especially for optimizing **mechanized harvesting**, as taller plants with higher pod placement reduce harvest losses and improve efficiency.

It was also observed that **earlier sowing (February 25)** generally led to better biometric outcomes, including increased plant height and higher positioning of the first pods. This suggests that adjusting sowing times in alignment with favorable climatic conditions can **enhance chickpea productivity** under both rainfed and irrigated conditions.

References

Otaboyev, G., Korobov, V., et al. (1972). *Chickpea*. In **Agrotechnology of Rainfed Crops** (p. 95). Tashkent: Uzbekistan Publishing House.

Shukurullaev, P. Sh. (1982). *Chickpea*. Tashkent: Uzbekistan Publishing House, p. 47.

Ernazarov, I., Abdiev, A., Alikulov, G. (2006). *Rainfed farming technology*. In: Proceedings of the Scientific-Practical Conference Dedicated to the 15th Anniversary of the Independence of the Republic of Uzbekistan and the 2700th Anniversary of the City of Karshi. Karshi Institute of Engineering and Economics, June 23–24, p. 93.

Norov, F., Egamberdiev, Kh. T., Abdiev, A. A., Alikulov, G. N. (2006). *Recommendations on Chickpea Cultivation Technology in Rainfed Lands*. Karshi, p. 14.