

**AGRICULTURAL AND BIOLOGICAL CHARACTERISTICS OF SUNFLOWER  
VARIETIES IN THE CONDITIONS OF KARAKALPAKSTAN**

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**Abstract:** This article examines the agricultural and biological characteristics of various sunflower varieties in the conditions of Karakalpakstan. The study aims to identify high-yielding and drought-resistant varieties suitable for regional climatic conditions. Experimental results show significant variation in productivity, oil content, and adaptation ability among different genotypes. Recommendations are provided for selecting optimal varieties for cultivation in saline and arid soils.

**Keywords:** Sunflower, selection, productivity, Karakalpakstan, agriculture, drought resistance, oil yield.

#### Introduction

Sunflower (*Helianthus annuus* L.) is one of the most important oilseed crops cultivated worldwide. In the conditions of Karakalpakstan, where soil salinity and drought are key limiting factors, identifying adapted varieties is crucial for sustainable agricultural development. The research focused on the comparative analysis of several genotypes to determine their potential under the region's specific environmental conditions.

#### Research Methods

Field experiments were conducted at the experimental station of the Grain and Leguminous Crops Research Institute. Standard agricultural practices were applied. The study measured parameters such as plant height, head diameter, seed weight per head, oil percentage, and yield per hectare. Statistical analysis was performed to determine the reliability of differences between the varieties.

#### Results and Discussion

The study revealed that the varieties 'Yantar', 'Zarya', and 'Bektemir' showed higher adaptability and productivity under local conditions. The 'Bektemir' variety produced an average yield of 26.5 c/ha, exceeding the control variety by 12%. The oil content ranged from 45.2% to 49.8%, indicating strong potential for industrial processing. Resistance to drought and salinity was particularly notable in 'Zarya', making it suitable for arid zones.

#### Conclusion

The conducted research demonstrates the potential of locally adapted sunflower varieties for increasing agricultural productivity in Karakalpakstan. The identified varieties are recommended for broader cultivation due to their high yield, oil content, and stress tolerance. Future studies should focus on hybridization programs aimed at developing genotypes with improved resistance to abiotic stress factors.

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