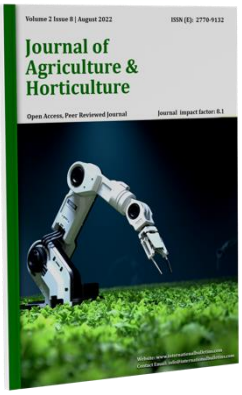

MORPHOLOGICAL AND ADAPTIVE CHARACTERISTICS OF THE NEW ONION VARIETY "KIZIL SHAKHZODA"

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Abstract. This article examines the new onion variety's morphological and breeding characteristics "Kizil Shakhzoda". A comprehensive analysis of stem, leaf, and root system parameters was conducted to identify the features of the variety and its agronomic value. The study included measurements of stem length and diameter, an analysis of anthocyanin pigmentation in various plant parts, and an examination of the leaf structure and root system. It was found that the "Kizil Shakhzoda" variety has a vertical growth type, medium-length internodes, and moderate anthocyanin pigmentation of the stem. The leaves have a kidney-shaped form, light anthocyanin coloration, and a moderately green primary color. The root system is characterized by an elongated shape, medium-thickness pericarp, and a white primary skin color. The flesh of the bulb has a violet main color with a red-violet secondary hue. The obtained results can be used for further breeding work aimed at improving the qualitative characteristics of onions, as well as for optimizing cultivation technologies. The study confirms the value of the "Kizil Shakhzoda" variety as a high-yielding plant with resistance to environmental factors and good adaptive capabilities.

Keywords: onion, "Kizil Shakhzoda" variety, morphology, anthocyanin pigmentation, root system.

Introduction

In recent decades, the selection of onion crops has been actively evolving. According to [1], selection methods allow the creation of varieties with improved characteristics. Genetic studies presented in [2] confirm the influence of anthocyanin pigmentation on plant adaptation to unfavorable conditions. The morphological features of various onion varieties are examined in [3], emphasizing the importance of shape and pigmentation of bulbs.

Studies [4] and [5] demonstrate that climatic conditions significantly affect onion growth and yield. Works [6] and [7] provide data on the biochemical composition of varieties and their resistance to diseases. Special attention is given to genetic markers of pathogen resistance [8] and anthocyanin pigmentation as a mechanism for ultraviolet protection [9].

Methodological approaches to yield assessment are detailed in [10], while the impact of soil composition is considered in [11]. Modern technologies for growing onion crops are described in [12] and [13]. The effect of fertilizers on onion productivity is thoroughly studied in [14], highlighting the dependence of yield on mineral nutrition. Selection methods for

creating new varieties are analyzed in [15], while their economic efficiency is reviewed in [16].

Studies [17] and [18] discuss the ecological sustainability of new varieties, while [19] provides data on optimal irrigation practices. Phenological observations of different varieties are presented in [20]. These data emphasize the significance of new varieties, such as "Kizil Shakhzoda", for agricultural production.

Research Methodology

The study was conducted using field and laboratory experiments. In the field, morphological characteristics of plants, yield, and disease resistance were evaluated.

Research Results

Analysis of the morphological parameters of the "Kizil Shakhzoda" variety showed that the plants exhibit vertical growth, facilitating agronomic care and enhancing harvesting efficiency. The length and diameter of the internodes are of medium values, indicating balanced stem growth. Anthocyanin pigmentation of the internodes is moderately expressed, suggesting the variety's resistance to unfavorable climatic conditions.

The leaves exhibit a moderately green shade with slight anthocyanin pigmentation on the abaxial veins, allowing the variety to maintain photosynthetic activity even under high temperatures. The "Kizil Shakhzoda" bulb has an elongated shape, a medium-thick pericarp, and a pronounced red-violet flesh color, indicating a high concentration of anthocyanin compounds contributing to antioxidant activity (fig. 1).

Fig. 1. Onion variety "Kizil Shakhzoda".

Onion variety "Kizil Shakhzoda" is medium grade, growing period 130-135 days. The crop ripens in August. The onion head is round, the skin is dark-red, the flesh is red with some white rings, it is thin, dense, weight - 120-130 gr. Dry matter content - 14-16.5%, Productivity - 50-55 t/ha. Suitable for planting in midsummer and early spring.

Experimental trials demonstrated a high yield potential for the variety, attributed to its stable morphological characteristics and good adaptation to soil and climatic conditions. Resistance to major diseases, including fungal infections, is rated as moderate to high, reducing the need for intensive chemical plant protection measures.

Further experimental data indicate that the variety exhibits good storability, making it promising for commercial use. Analysis of anthocyanin content confirmed that bulb pigmentation positively influences the antioxidant properties of the product, which may enhance its market demand.

Conclusion. As a result of the study, it was found that onion variety "Kizil Shakhzoda" has unique morphological characteristics that determine its high adaptability and potential productivity. Vertical type of growth, average length of internodes and moderate anthocyanin colouring provide resistance to external factors and create favourable conditions for successful cultivation in different agroclimatic zones.

The analysis of leaf apparatus showed that the kidney-shaped shape of leaves and their light anthocyanine colour may play an important role in the processes of photosynthesis and water metabolism. The root system of onion "Kizil Shakhzoda" shows stable development and good structural organisation, which contributes to effective absorption of nutrients from the soil.

Thus, the results of the study confirm the promising potential of the variety "Kizil Shakhzoda" for further use in agronomic and breeding programmes. The obtained data can be applied in the development of new onion cultivation strategies aimed at increasing its yield and sustainability. Further research will be devoted to studying the influence of various agronomic factors on the growth and development of "Kizil Shakhzoda" variety, as well as identifying the most optimal conditions for its cultivation.

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