# VALUABLE ECONOMIC CHARACTERISTICS AND PROTEIN CONTENT OF SOME RICE VARIETIES

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## Abstract

In this article, the valuable economic characteristics of the grains of some varieties of rice grown in Andijan region and the total amount of protein in the grain are analyzed depending on the conditions of cultivation and conclusions are given.

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## 1. Introduction

In the recent years there has been a growing focus on enhancing exports of agricultural products through the utilization of modern technologies and sustainable use of water resources. It is interesting to note that the President of the Republic of Uzbekistan has issued a decision numbered PD-4973 on February 2 2021 which emphasizes the need for an introduction of a land leveling system that operates via laser equipment. Additionally the government aims for a planting of at least 30% of rice fields with modern seed drills while at least 40% is targeted for planting using seedlings in 2022. Laser technology is also expected to be applied to around 70% of the total rice areas while no less than 50% of rice plantation should comply with the recommendations on seed planting using advanced drills.

Rice holds a significant role in Uzbekistan's agricultural landscape. With the nation's rice production on the rise the cultivation area has expanded leading to issues like environmental pollution and water scarcity which can hinder further progress. Pesticides and herbicides remain a significant contributor to these environmental problems. Therefore there is a need to increase rice production without causing harm to the environment or using water and chemicals excessively. Fortunately it is possible to achieve this goal with various innovative methods such as eco-friendly and water-saving cultivation techniques.

Oryza sativa L commonly known as rice is an essential grain crop that occupies one of the top three positions in the prioritized crop list globally. Its significance lies in the fact that over a third of the total world population relies on rice as their primary source of sustenance. However statistical analysis reveals that rice consumption is on a decline with a decrease of around 2.3 percent observed in the last 30 years [1; pp. 298-300].

## 2. The Main Findings and Results

With its long and rich history rice has become a staple food in many cultures across the globe. From China to India Japan to Vietnam rice remains a crucial part of many people's diets. Its nutritional value and easy digestibility have made it a highly sought-after crop. As the demand for rice continues to grow scientists and researchers are investing significant effort into developing drought-resistant and disease-resistant strains that boast high nutritional properties [2; 177 p.]

In recent years the focus on cultivating rice has been on producing varieties that can withstand harsh conditions including saline lands. This has led to numerous studies including A.G. Raus' "Rice Cultivation on Saline Lands in the Syr Darya Basin" which calculated the yield indicators of different strains grown in fields with mineral-rich soil and water. These efforts demonstrate the ongoing importance placed on the cultivation of rice and its potential to help feed a growing population [3; 217 p.]

Scholarly investigations conducted by Y.U. Lysenko and his contemporaries delve into the cultivation of rice in the Krasnadar region in Russia while also highlighting the importance of rice as a staple food for the local populations [4; 66-70 p.]. Similarly M.B. Nikolayevich's research explores the utilization of water resources such as canals and groundwater in the cultivation of rice [5; 1 p.]. Nur El-Banas's investigation offers valuable insights into the preparatory measures needed for growing high-yielding rice strains on agricultural land [6;].

Additionally studies conducted by G.L. Zelinskiy O.V. Zelinskaya and N.A. Ostapenko emphasize the advantageous

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properties of colored rice varieties that exceed those of regular strains [7; 296 p.].

Paraphrased content: The research conducted by P.I. Kostlev and E.B. Kudashkinas regarding the selection of rice varieties that can withstand high levels of salt is a crucial step in addressing the challenges associated with saline soils [8; 22 p.]. Equally significant is the work done by N. Hamrayev and other researchers in Uzbekistan who study rice varieties that can adjust to the different climates of the country while maintaining high levels of productivity [1; pp. 298-300].

Rice is an essential food source that provides vital nutrients to the body including protein which is essential in metabolism processes. Given its importance it is necessary to develop rice varieties that can thrive in different environmental conditions and meet the nutritional needs of people worldwide.

Jin-Woong Kim and colleagues conducted research on nine different types of rice to determine their protein content. Their findings showed that the protein content of each rice variety was affected by the growing conditions and amount of mineral fertilizers used during the planting season [9; 151-156 p.].

In her analysis of rice varieties and lines with high protein content and favorable qualities structural features and biochemical properties E. Yu. Papulova [10; 17-23 p.] studied promising strains extensively.

Regarding the number of grains in the furrow it was observed that the Tantana and Mustaqillik cluster cultivars had a higher number of grains per furrow than the Devzira and Iskandar varieties. Similarly the grain weight was found to be higher in the Tantana and Mustaqillik cluster cultivars compared to the other two varieties.

Furthermore the productivity of the rice plant was measured and it was found that Tantana and Mustaqillik cluster had the highest level of productivity followed by Iskandar and Devzira. Lastly the protein content of the rice plants was analyzed and it was found that all four varieties had similar levels of protein content.

The study was conducted in the experimental field of Andijan State University where researchers grew Tantana Iskandar Mustaqillik cluster and Devzira varieties of rice plants. The phenological and biochemical indicators were monitored throughout their growth cycle. Further observations were carried out on the parameters such as the length of the furrow number of grains in the furrow grain weight productivity and protein content of the different rice plant varieties. The findings showed that each variety had its unique characteristics indicating the need for further research in this regard.

Furthermore a thorough analysis was conducted on the number of grains in the furrows of the different rice varieties in order to determine their fullness or emptiness. It was evident from the research that the cluster consisting of Iskandar Tantana and Independence displayed significantly more full grains when compared to the other varieties studied.

To further explore the quality of the rice the weight of the grains found in one bushel of each variety was also evaluated. The resulting data indicated that the Iskandar variety had relatively heavier grains with an average weight ranging from 2.72 g to 9.12 g. From this significant finding it was concluded that the Iskandar variety is characterized by a higher number of grains with relatively greater weight making it a promising candidate for further study and cultivation.

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1-Table Valuable economic characteristics of rice varieties

| № | Varietal name | Rovak length (cm) | The number of grains in 1 Rovak | | | Grain weight in 1 plant (g) | Weight of 100 grains (g) | Productivity (s/ha) |
|---|---|---|---|---|---|---|---|---|
| | | | hollow | Full | General | | | |
| 1 | Tantana | 22 | 12 | 212 | 224 | 7.38 | 3.2926. | 45.52 |
| 2 | Iskandar | 25 | 8 | 266 | 274 | 9.12 | 3.3212 | 39.12 |
| 3 | Mustaqillik (Klaster) | 19 | 2 | 139 | 141 | 5.87 | 4.1762 | 28.30 |
| 4 | Devzira (Kora kiltiriq) | 24 | 12 | 73 | 85 | 2.72 | 3.2952 | 59.20 |

After conducting our experiment we calculated the weight of 100 grains from different rice varieties. We found that Independence (cluster) had the highest weight while Devzira (Kora kiltiriq) had the lowest.

Additionally we determined the protein content of the rice varieties using the Keldal method [11;].

Figure 1. Total protein content of rice grains.
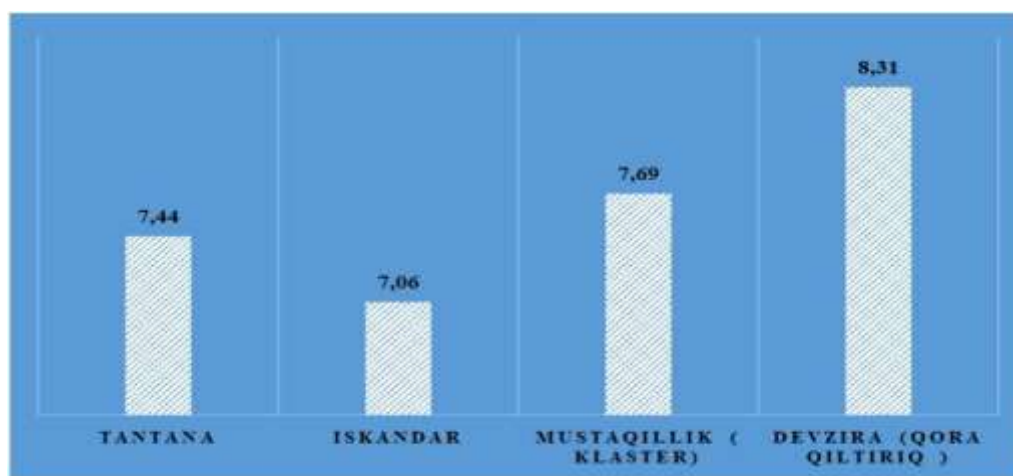


Therefore based on the findings of our study that aimed at determining the protein content in rice grains it was concluded that the Devzira (Kora

kiltiriq) variety exhibited the highest protein content while the Iskandar variety showed the lowest.

However it is important to note that the results for each variety were influenced by several factors such as cultivation conditions and individual traits of the varieties. Therefore it is imperative to conduct further research and expand the study in order to derive a more comprehensive conclusion regarding the varieties in relation to the region.

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