



STORAGE OF THE “MUROD” VARIETY OF RADISH

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Abstract

The storability of the root crop of the new *Murod* variety of radish was evaluated in comparison with the control varieties *Andijan-9* and *Oltinko 'l Local*. The weight of all samples remained unchanged until the second ten-day period of January. From the third ten-day period of January, a reduction in total weight was observed in the control varieties *Andijan-9* and *Oltinko 'l Local*. Between the second half of February and March 1, the decrease in total weight amounted to 10.5% in control variety 1 (*Andijan-9*) and 12.0% in control variety 2 (*Oltinko 'l Local*). In the *Murod* variety, this indicator was only 3.5%.

Keywords: Radish, variety, weight, storage, natural weight loss.

Introduction

In recent years, as a result of the decrees and resolutions adopted by the Government of the Republic of Uzbekistan on the radical reform of agriculture and on meeting the population's demand for vegetable products throughout the year in a balanced manner, the cultivation areas of radish have expanded, and yields have been steadily increasing [1].

The value of vegetable products and their invaluable role in human nutrition lie in the fact that they contain large amounts of vitamins, enzymes, proteins, fats, carbohydrates, and mineral salts essential for the normal growth and activity of the human body. Although vegetables cannot fully meet the body's energy requirements as food, their importance in human life is extremely high [2].



International Conference on Educational Discoveries and Humanities

Hosted online from Moscow, Russia

Website: econfseries.com

16th September, 2025

To meet the daily requirement of an adult for vitamins, carbohydrates, proteins, acids, and salts, it is necessary to consume 70 g (37%) from livestock products and more than 1200 g (63%) from plant-based products, including 500 g of vegetables. According to medical standards, every person should consume at least 113 kg of vegetables per year.

Root vegetables are considered highly valuable food products due to their high content of carbohydrates, easily digestible nitrogenous compounds, vitamins, enzymes, aromatic substances, and mineral salts such as calcium and phosphorus. Radish, turnip, and radish varieties, in addition to containing carbohydrates and vitamins, also possess quality vegetable oils and physiologically alkaline salts that improve digestive activity and prevent the accumulation of harmful salts in the body. Moreover, they are rich in minerals and phytoncides. A mixture of radish juice and honey serves as an effective remedy against cough and helps alleviate rheumatic pain. In general, the medicinal value of many root vegetables has been known since ancient times.

The energy value of 1 kg of radish root is 1507 kJ. Its composition includes 88.6% water, 1.9% protein, 0.2% oil, 1.5% sugar, 1.5% fiber, and 1.0% ash. Additionally, it contains 0.03 mg% carotene and 25 mg% vitamin C.

One of the important tasks in vegetable production is to extend the consumption period of root vegetables, including radish, by storing them in modern refrigerated warehouses in order to meet the population's demand for radish products. For this purpose, experiments were conducted at the artificial refrigeration storage facility of the Andijan Scientific-Experimental Station of the Research Institute of Vegetable, Melon Crops, and Potato on storing the new *Murod* radish variety [3].

The studies were carried out in accordance with the methodologies of "Technology of Storage and Primary Processing of Agricultural Products" (2011).

The objects of research were the local varieties *Andijan-9* and *Oltinko'l Local*, as well as the *Murod* variety of radish.

Results of the Experiment

To determine the storability of the root crop of the new *Murod* variety of radish, it was compared with control variety 1 (*Andijan-9*) and control variety 2 (*Oltinko'l*

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Local), and placed in the artificial refrigeration storage facility of the Andijan Scientific-Experimental Station of the Research Institute of Vegetable, Melon Crops, and Potato in four replications.

In each variant, 20 kg of radish roots were placed on December 1 at a temperature of 0 to +1 °C. The samples were reweighed every fifteen days. The weight of all samples remained unchanged until the second ten-day period of January. From the third ten-day period of January (January 30), a decrease in total weight was observed in control variety 1 (*Andijan-9*) and control variety 2 (*Oltinko 'l Local*). In the *Murod* variety, no weight loss was detected at that time.

From the second half of February until March 1, the decrease in total weight reached 10.5% in control variety 1 (*Andijan-9*) and 12.0% in control variety 2 (*Oltinko 'l Local*). In the *Murod* variety, this indicator amounted to only 3.5% (Table 1).

Table 1. Storage indicators of the *Murod* variety of radish, kg.

Varieties	Date						Total weight loss (%)
	December 15	December 30	January 15	January 30	February 15	March 1	
Andijan 9 (control 1)	20	20	20	19,2	18,6	17,9	10,5
Altinkol local (control 2)	20	20	20	19,4	18,7	17,6	12,0
Murad	20	20	20	20	19,8	19,3	3,5

Furthermore, the phenomenon of biological aging (hollowness of the root) was also observed starting from the second half of February: up to 15–20% in control variety 1 (*Andijan-9*) and control variety 2 (*Oltinko 'l Local*), while in the *Murod* variety it was only 6%. From the last ten-day period of February, biological aging reached up to 25% in control variety 1 (*Andijan-9*), up to 29% in control variety 2 (*Oltinko 'l Local*), and only 11% in the *Murod* variety (Table 2).

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Table 2. Indicators of biological aging in the *Murod* variety, %

Varieties	Date		
	December 1-January 30	February 15	March 1
Andijan 9 (control 1)	0	15	25
Altinkol local (control 2)	0	20	29
Murad	0	6	11

Based on the results of the experiments, it was observed that weight loss during the storage of radish roots is directly correlated with their biological aging. The causes of weight loss in radish roots include improper agronomic practices during the growing season, water-related stress, the impact of diseases, as well as biological aging. As a result of these factors, cells die, starch within the cells breaks down, water is released, and lignin is secreted, which further contributes to the degradation of starch. As this process continues, the loss of internal water leads to the hollowing of the root. In the *Murod* variety, this process developed more slowly, and therefore hollowing of the root was observed less frequently compared to other varieties.

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