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TECHNOLOGICAL CHARACTERISTICS OF APPLES GROWN IN THE NORTHERN REGION OF UZBEKISTAN

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Abstract. This article describes the results of research on the study of the technological characteristics and biochemical composition of apple varieties suitable for drying. Here, the main indicators of the apple varieties selected for the experiments were analyzed. As a result of the research, scientifically based conclusions were made.

Keywords. Apples, productivity, quality, varieties, acid, dry matter, sugar, moisture, degree of hardness, diameter

Enter. Fruits are important in the food diet of the population in the world and occupy one of the leading positions as an export commodity. Today, the total volume of apple cultivation in the world is more than 80.5 million tons, the leading places are China (respectively 44.45 million tons), USA (4.65 million tons), Poland (3.60 million tons), Turkey (2 93 million tons) and Uzbekistan (1.238 million tons). There is not enough research on the creation of high-quality commercial varieties of apples, their cultivation volume, fruit quality and shelf life. Therefore, storage and processing of apples is one of the relevant areas. Scientists have introduced new storable varieties of apples with different ripening periods for the climatic conditions of Uzbekistan, and it is necessary to expand the range of products that can be preserved and recycled. In the process of drying apples in industry, its technological features are very important. In particular, the degree of firmness, size and dry matter content of the fruit are factors that directly affect the quality of the dried product (see Table 1). As shown in the table, technological indicators of apple fruits differed depending on the variety. Since the amount of dry matter in apples is calculated from the main quality indicators, the changes in the indicators in 2021-2023 were analyzed in the experiments. According to the results of the analysis, the amount of dry matter of the studied apple varieties suitable for storage was 12.5% in 2021,

12.8% in 2022, and 14.8% in 2023. It is 13.3% on average, and the growth rate has been increased by 0.2-0.4% over the years. Similarly, in the Pink Lady variety, the average amount of dry matter was 13.0%, and an increase of 0.3-0.4% was achieved over the years. Among the studied apple varieties, the dry matter content of the Fuji variety increased by 0.3-0.8%, and it can be seen that it increased by 14.0% over the years. Table 1

Technical indicators of apple fruits (2020-2022)

T/p	Varieties	Dry matter content, %				Hardness, average	Diameter, mm, average
		2021	2022	2023	Ўртача		
1	Red Delishes	12,3±0,6	12,8±0,3	13,4±0,5	12,8	7,3±0,6	78,2±3,5
2	Golden Delishes	12,5±0,4	12,8±0,2	14,8±0,2	13,3	6,9±0,2	72±4
3	Renet Simirenko	10,2±0,5	11,3±0,6	12,1±0,8	11,2	7,4±0,5	73±3,5
4	Mantet	12,1±0,7	12,9±0,2	13,3±0,6	12,7	7,2±0,6	77±4,5
5	Granny Smith	10,6±0,3	11,4±0,5	12,6±0,3	11,5	7,6±0,3	78±3
6	Red apple	11,9±0,2	13,2±0,7	13,1±0,8	12,7	7,5±0,5	67±3,5
7	Pink Lady	12,5±0,4	12,8±0,2	13,7±0,3	13,0	7,7±0,2	79±2,5
8	Fuji	13,6±0,3	14,0±0,8	14,8±0,2	14,0	7,5±0,3	82±4,0
9	Farangiz	11,9±0,2	13,4±0,5	13,6±0,3	12,9	7,4±0,2	70±4,5
10	Jerome	12,2±0,6	12,4±0,5	13,1±0,8	12,5	7,5±0,4	71±4,5

One of the factors that extend the shelf life of the storable apple varieties in the analysis is the degree of hardness of the apples. Hardness studies of apple varieties intended for storage were carried out in field conditions using a penetrometer. FT 516 nozzle was used for apples. The study took up to 20 samples of apples from different contours and determined the average hardness. According to him, varieties with a high level of hardness (Pink Lady (7.7 kg/cm²), Greenie Smith (7.6 kg/cm²), Red Apple (7.5 kg/cm²), Fuji (7.5 kg/cm²), Jeromin (7.5 kg/cm²)) was determined. Among the selected varieties, Golden Delishes, Farangiz and Renet Simerenko had a slightly lower level of hardness, but these varieties were distinguished by a high level of suitability for storage and processing. Similarly, while the hardness of Red Delishes and Mantet varieties was 7.2-7.4, a decrease in organoleptic properties and marketability indicators was observed.

Based on the analysis of the results, the Pink Lady, Greenie Smith and Fuji cultivars showed slightly higher hardness levels than the other cultivars in the experiment. According to the analysis of the data in Table 1, it was observed that the diameter of the apple fruits differed from each other in the experimental period. Measurements were made on the samples obtained with the help of barbell rings, the data were processed and the average indicators were calculated. According to these calculations, the highest average diameter among the varieties of apples intended for storage and processing was recorded in the fruits belonging to the Fuji variety, and this indicator was 82 mm. Also, this indicator was 79 mm in the Pink Lady variety. Among the tested varieties, the fruits with the smallest diameter were reflected in the Farangiz and Jeromin varieties, and it was found that the average size was 70 and 71 cm, respectively. As a result of research and analysis of technological characteristics and biochemical composition of apple varieties suitable for storage and processing, the following conclusions can be drawn: The positive biochemical indicators of the freshness of apples are due to the suitability of the area for growing apples, the selection of apple varieties suitable for storage for cultivation, the correct implementation of agrotechnical measures in apple cultivation, the timely and qualitative approach to soil and climate conditions, fertilization and irrigation measures. Therefore, high-quality, marketable and suitable for processing apple fruits are grown.

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