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AGROBIOLOGICAL CHARACTERISTICS OF APPLE VARIETIES SUITABLE FOR DRYING

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Abstract. *This article presents the results of studies on the agrobiological characteristics of apple varieties suitable for drying. The main indicators of the selected apple varieties for the experiments were analyzed, and scientifically grounded conclusions were drawn based on the research results.*
Keywords. *Apple, yield, quality, autumn and winter varieties*

Introduction. In recent years, observed climate changes and the increasing global population have necessitated the introduction of plant varieties that are resilient to external factors and have nutritional value. According to FAO data, 44% of the world's orchards consist of introduced plant species. Currently, leading countries in apple cultivation and export, such as the USA, Poland, Turkey, and Japan, are conducting scientific research on the quality and storability of apple fruits. Similarly, in our country, it is essential to develop effective methods for storing locally grown apples. In recent years, efforts have been made to improve the storability of apple varieties suitable for storage while maintaining their biochemical composition and quality indicators.

Purpose and Specific Objectives of the Study. The study aims to improve the quality of the final dried apple product by optimizing and refining the technological processes involved in apple drying.

Materials and Methods. The study was conducted on the following apple varieties: Borovenka Tashkentskaya, Golden Delicious, Jonathan, Kamola, Red Taram, G'zal, Mantet, Aydin, Pervenets Samarkanda, Renet Simirenko, Rozmarin Bely, Saratoni, Farangiz, and Feruza.

The research methodology included:

a) Observing apple fruits throughout their vegetative periods;

b) Determining the yield indicators of the apple fruits;

c) Assessing the technical maturity characteristics of the apple fruits.

Results and Discussion.

The study was carried out in Khiva district, Khorezm region, from 2021 to 2023. Observations were conducted on 10 hectares for all selected varieties. This district contains numerous large-scale apple orchards. The experiments were conducted at the "DAVRON" farm located in the Gandimyon neighborhood, focusing on autumn and winter apple varieties.

Autumn Varieties:

Observations of the autumn varieties were carried out from flowering to ripening. The earliest ripening among the studied autumn varieties was the Red Taram apple, ripening between 115–120 days, followed by Mantet at 139–140 days, and Golden Delicious at 140–143 days. Red Delicious ripened in 145–149 days. The Red Taram variety also stood out for its early ripening and smaller fruit size compared to other varieties.

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Yield analysis of autumn varieties over the years showed that Golden Delicious had the highest average yield, producing up to 49.6 tons per hectare. Red Taram also demonstrated high yield, producing up to 46.0 tons per hectare.

Regarding consumer suitability and drying potential, Red Delicious and Mantet varieties showed the highest proportion of unfit fruits relative to yield. For Red Delicious, out of 41.8 tons per hectare, 1.1 tons (2.6%) were unsuitable for consumption. Mantet had 40.9 tons per hectare with 1.2 tons (2.9%) unsuitable. Analysis over the years indicated that unfit storage fruit reached up to 3.1% in 2021, due to improper cultivation, soil, and climatic management, leading to quality and storage issues.

Thus, Golden Delicious was identified as a high-quality autumn variety suitable for storage, with 49.6 tons per hectare yield and only 0.8 kg (1.7%) of unfit fruit.

Winter Varieties:

Observations were conducted from flowering to ripening. Among the winter varieties, Rozmarin Bely ripened the earliest, in 168–170 days; Pink Lady in 226–227 days; and Fuji in 172–180 days. Jeromin ripened in 149–150 days. Rozmarin Bely stood out among winter varieties for early ripening and suitability for consumption and processing. Renet Simirenko and Farangiz had smaller fruit sizes relative to total yield, due to early ripening.

Yield analysis of winter varieties over the years showed that Pink Lady had the highest average yield of 52.6 tons per hectare, followed closely by Rozmarin Bely with 51.9 tons per hectare.

Among the winter apple varieties that showed lower yields compared to others, Farangiz and Jeromin had the highest proportion of fruits unsuitable for storage and processing relative to total yield. Specifically, for the Renet Simirenko variety, the yield was 44.4 tons per hectare, of which 1.3 tons (2.9%) were considered unfit for storage and processing. Similarly, for the Jeromin variety, the yield was 46.2 tons per hectare, with 1.5 tons (3.3%) being unsuitable for storage and processing.

Table 2

Agrobiological characteristics of winter apple varieties (2021–2023)

№	Variety Name	Years	From Flowering to Ripening, Days	Yield, t/ha	Yield Suitable for Drying		Unfit Yield	
					т/га	%	т/га	%
1.	Renet Simirenko	2021	168±3	44,6±3	43,3±2	97,1	1,3	2,9
		2022	169±2	43,3±3	42,1±2	97,2	1,2	2,8
		2023	167±3	45,2±2	43,8±3	96,9	1,4	3,1
		Average	168,0	44,4	43,1	97,1	1,3	2,9
2.	Rozmarin Bely	2021	169±4	50,1±2	49,4±3	98,6	0,7	1,4
		2022	168±2	51,4±4	50,8±2	98,8	0,6	1,2
		2023	170±3	54,2±3	53,4±3	98,5	0,8	1,5
		Average	169,0	51,9	51,2	98,7	0,7	1,3
3.	Pink Lady	2021	225±4	50,6±2	49,9±4	98,6	0,7	1,4
		2022	228±3	52,4±4	51,6±3	98,5	0,8	1,5

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		2023	226±4	54,9±3	54,0±4	98,4	0,9	1,6
		Average	227,0	52,6	51,8	98,5	0,8	1,5
4.	Fuji	2021	171±3	43,6±3	42,5±3	97,5	1,1	2,5
		2022	172±3	45,7±3	44,5±2	97,4	1,2	2,6
		2023	180±2	47,1±2	45,8±2	97,2	1,3	2,8
		Average	174,0	45,5	44,3	97,4	1,2	2,6
5.	Farangiz	2021	145±3	40,2±2	39,2±4	97,5	1	2,5
		2022	146±2	41,1±4	39,9±2	97,1	1,2	2,9
		2023	148±3	40,3±3	39,1±3	97,0	1,2	3,0
		Average	146,0	40,5	39,4	97,2	1,1	2,8
6.	Jeromin	2021	150±2	45,1±3	43,7±3	96,9	1,4	3,1
		2022	152±2	46,8±4	45,1±2	96,4	1,7	3,6
		2023	149±3	46,8±3	45,3±2	96,8	1,5	3,2
		Average	150,3	46,2	44,7	96,7	1,5	3,3

If we analyze this over the years, the proportion of unfit yield produced in 2021 increased up to 3.1% for the Renet Simirenko variety, 3.0% for Farangiz, and 3.2% for Jeromin. This low-quality production is caused by improper cultivation practices, soil management, and climatic conditions, leading to problems in storage.Based on the study and analysis of the agrobiological characteristics of apple varieties suitable for drying, the following conclusions can be drawn:

Among the winter varieties, **Pink Lady** and **Rozmarin Bely** produce high-quality fruits suitable for storage and processing. In these varieties, the lowest proportion of unfit yield was observed, with total yields of 51–52 tons per hectare and unfit fruits of only 0.7–0.8 tons, representing 1.3–1.5% of the total yield.

List of References

1. Islamov S., Namazov I. Determination of Apple Harvesting Time in Intensive Gardens // International Journal of Biological Engineering and Agriculture (Sep, 2023). – USA, 2023. – Volume 2. – Issue 9. – P. 48-50 (ISSN: 2833-5376; IF 9.51/2023)

2. Umidov Sh. E., Berdiev J. N. Varieties of Quince (Cydonia Oblonga Mill.) Grown in Uzbekistan and the Importance of Their Storage and Processing // Texas Journal of Agriculture and Biological Sciences 23, 44-48

3. Polegaev V.I. Method of Quality Assessment of Fruits and Vegetables (Metodicheskie razrabotki). Moscow, 1978. – 66 p

4. Khaitov B., Karimov A.A., Toderich K., Sultanova Z., Mamadrahimov A., Allanov Kh., Islamov S. Adaptation, Grain Yield, and Nutritional Characteristics of Quinoa (Chenopodium quinoa) Genotypes in Marginal Environments of the Aral Sea Basin // Journal of Plant Nutrition, 21 Dec 2020. – London, 2020. – P. 1365-1379 (doi.org/10.1080/01904167.2020.1862200)