

Technological Evaluation of New Large Grape Varieties under Various Drying Methods

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ABSTRACT

This article presents data on the study of the technological evaluation of new large-berry seedless grape varieties with various drying methods "Aftobi", "Obzhush" and "Stack". The studies were carried out at the Central Experimental Base of the Samarkand Research and Experimental Station of the Research institute of horticulture, viticulture and winemaking academician M.Mirzaev.

KEYWORDS: grapes, seedless, large-berry varieties, sultanas, drying method, aftobi, obzhush, stacked

Introduction

Uzbekistan has exceptionally favorable natural and climatic conditions for the production of dried products and other types of processing of raw materials, has excellent varieties of grapes and fruit crops.

The republic has every opportunity to provide the population with dried products, as well as to supply them to the foreign market.

According to the Decree of the President of the Republic "On additional measures for the accelerated development of fruit and vegetable growing in the Republic of Uzbekistan" №. 5388 dated March 29, 2018, comprehensive measures are being implemented in the republic aimed at expanding the production, storage, processing and export of fruit and vegetable products.

To date, new large-berry seedless grape varieties are widely introduced and distributed in farms and dekhkan farms of the Republic.

Depending on the grape variety, the type of dried product and the pre-treatment of berries, various methods of natural, air-solar drying of aftobi, obzhush, stacked, soyagi, etc. grapes are used.

Dried grapes are a valuable food product and are in high demand among the population. Providing the population throughout the year with fresh and processed grapes, as well as supplying confectionery enterprises with raisins, exporting raisins abroad is a national economic problem. The fruit and canning industry of the republic has been given the task of expanding and improving the range of canned products produced. Including raisins. Breeders of the Samarkand Scientific and Experimental Station of the Research institute of horticulture, viticulture and winemaking academician M.Mirzaev in recent years, a number of new seedless large-berry grape varieties have been bred by selection, valuable varieties of folk selection have been identified. To introduce a new variety into the

standard assortment, a technological assessment of this variety is necessary, which determines the possibility of its use as a feedstock for obtaining one or another type of product.

Most seedless new varieties are generally suitable for drying, according to a preliminary assessment. At the same time, a certain scientific and practical interest is the study of the yield and quality of dried products of new varieties with various main most common drying methods.

Research methodology: the experiment was carried out at the Samarkand Scientific and Experimental Station of the Research institute of horticulture, viticulture and winemaking academician M.Mirzaev.

Drying objects: grape varieties Kishmish black and Kishmish white control, Kishmish Sogdiana, Kishmish Khishrau, Kishmish Samarkand and Kishmish Botir.

The grapes were dried on drying sites using the "Aftobi" method without preliminary processing of raw materials and "Roasting" with raw material blanching in a 0.2-0.3% alkaline solution. Grape varieties with light berries White Kishmish, Kishmish Khishrau, Kishmish Samarkand and Kishmish Botir were dried in "stack" methods on trays with shading with preliminary blanching of raw materials in an alkaline solution and fumigation with sulfur in fumigation chambers for 1.5 hours. Результаты исследований.

Grape varieties Kishmish black, Kishmish Sogdiana, Kishmish white, Kishmish Khishrau, Kishmish Botir and Kishmish Samarkand laid out for drying from 9 to 23 September with a sugar content of berries 18.9-22.8%. For drying the dark-colored varieties Kishmish black and Kishmish Sogdiana, on average, it took 9 days less in comparison with "aftobi" (table 1).

In white berry varieties (White Kishmish, Kishmish Botir and Kishmish Samarkand and Kishmish Khishrau), it took an average of 7 days less for drying by the "stack" method than when drying them by the "stack" method and 11 days faster than with "Aftoby".

The duration of drying of grapes is influenced by drying methods, weather conditions, as well as the mass and size of the dried raw material.

The drying period of new tested varieties (Kishmish Sogdiana, Kishmish Khishrau, Kishmish Botir and Kishmish Samarkand) is relatively longer compared to standard varieties (Kishmish black and Kishmish white) when drying them in the "Aftobi" and "Stack" methods. When drying with the "Brush" method, the drying time is reduced.

Table 1 The main indicators of the technological assessment of new large-berry seedless grape varieties with various drying methods, 2021

№	Varieties	Shushka method	Sugar content of fresh grapes, %	Duration of drying, days	Exit, %	
					Actual	For standard humidity (18 %)
1.	Kishmish black (st)	Oftobi	21,7	22	19,9	19,9
2.	Kishmish Sogdiana	Oftobi	18,9	31	18,8	18,1
3.	Kishmish white (st)	Oftobi	21,8	21	19,4	19,3
4.	Kishmish Botir	Oftobi	22,7	23	21,9	22,0
5.	Kishmish Khishrau	Oftobi	22,5	28	20,9	20,9
6.	Kishmish Samarkand	Oftobi	22,2	24	21,7	21,8
7.	Kishmish black (st)	Obzhush	21,7	14	20,1	20,2
8.	Kishmish Sogdiana	Obzhush	18,9	21	18,8	18,8
9.	Kishmish white (st)	Obzhush	21,8	11	21,2	21,2
10.	Kishmish Botir	Obzhush	22,7	12	22,5	22,7
11.	Kishmish Khishrau	Obzhush	22,5	15	21,8	21,9
12.	Kishmish Samarkand	Obzhush	22,2	13	22,3	22,4
13.	Kishmish white (st)	Stacked	21,8	18	22,0	22,0
14.	Kishmish Botir	Stacked	22,7	20	23,5	23,6
15.	Kishmish Khishrau	Stacked	22,5	23	22,8	22,8
16.	Kishmish Samarkand	Stacked	22,2	21	23,2	23,2

The use of blanching with an alkaline solution caused a reduction by an average of 1.7 times in the control varieties (Kishmish black, Kishmish white), respectively, by 1.7 times in new tested varieties (including 1.5 times in Kishmish Sogdiana in 1, 9 times in varieties Kishmish Botir, Kishmish Khishrau, and 1.8 times in Kishmish Samarkand).

As a result, the shortest drying time (12 days) with the “obzhush” method was noted for the Kishmish Botir variety.

Thus, products with the “Aftobi”, “Obzhush”, “Stack” methods of the Kishmish Botir and Kishmish Samarkand varieties were distinguished by a relatively shorter drying time.

It should be noted that the duration of drying was to a certain extent influenced by the thickness of the skin, the weight and size of the berries, as well as meteorological conditions, because in the reporting year, there were precipitations during the drying period. In terms of weight and size of berries, Kishmish Sogdiana surpasses all other tested varieties, these parameters were one of the main reasons for the lengthening of the drying period for fresh products. The duration of drying of berries of the Kishmish Khishrau variety is also determined by the thickness of the skin.

Depending on the variety and method of drying, the yield of dried products at a standard moisture content of 18% ranged from 18.1 to 23.6%.

The yield of dried products with the “aftobi” method for dark-colored varieties is on average 0.5% lower than when they are dried using the “roasting” method. The yield of dried products when dried by the “Aftobi” method in white berry varieties Kishmish white, Kishmish Botir, Kishmish Khishrau, Kishmish Samarkand is on average 1.5% lower than when they are dried by the “obzhush” method, respectively, by 1.9% of the stack method.

Among the new tested varieties, the variety Kishmish Botir stands out in terms of output. its yield during drying by the “Aftobi” method was at the level of 22.0%, by “cooking” method – 22.7%, with “Stack” drying, the yield was 23.5% (Table 1).

Mechanical analysis of dried grapes showed that the weight and size of berries in the dark-colored variety Kishmish Sogdiana were larger, and among the white berries in the variety Kishmish Botir. But it was noted that among the tested varieties (the largest) for all mechanical indicators, the Kishmish Sogdiana variety stands out. This is due to the varietal feature (Table 2).

Table 2 Mechanical composition of dried grapes, 2021

№	Varieties	Shushka method	Average weight, volume and size of 100 berries			
			mass, g	volume, sm ³	Length, sm	width, sm
1.	Kishmish black (st)	Oftobi	51,5	45	141	96
2.	Kishmish black (st)	Obzhush	52,0	47	97	115
3.	Kishmish Sogdiana	Oftobi	96	85	177	121
4.	Kishmish Sogdiana	Obzhush	100	90	179	126
5.	Кишмиш белый (st)	Oftobi	46	38	120	90
6.	Kishmish white (st)	Obzhush	48	40	123	88
7.	Kishmish white (st)	Stacked	51	44	124	82
8.	Kishmish Botir	Oftobi	97	81	165	104
9.	Kishmish Botir	Obzhush	99	83	166	116
10.	Kishmish Botir	Stacked	106	86	178	118
11.	Kishmish Khishrau	Oftobi	89	80	157	113
12.	Kishmish Khishrau	Obzhush	90	83	162	116

13.	Kishmish Khishrau	Stacked	92	85	163	118
14.	Kishmish Samarkand	Oftobi	94	68	147	113
15.	Kishmish Samarkand	Obzhush	96	70	150	117
16.	Kishmish Samarkand	Stacked	98	72	160	119

The organoleptic evaluation of dried products on the tested varieties is in the range of 8.0-8.8 points. Table 3 shows that the dark-colored varieties Kishmish Sogdiana, Kishmish black received good scores of 8.78-8.35 points when dried using the "Aftobi" method. And the white-berry varieties Kishmish Samarkand, Kishmish Botir, Kishmish Khishrau, White Kishmish received good marks of 8.8-8.2 points, when dried using the "Obzhush" method. Among the white-berry varieties with a high organoleptic evaluation, new varieties Kishmish Samarkand and Kishmish Botir stand out.

When studying the technological assessment of new large-berry seedless grape varieties with various drying methods, it was found that the varieties Kishmish Khishrau (22.8%), Kishmish Samarkand (23.2%) and Kishmish Botir (23.5%) had a relatively high actual yield.

The highest indicators in the tasting assessment of dried products were the Kishmish Khishrau varieties (8.72 points) when dried by the "Obzhush" method, the Kishmish Samarkand variety with all the studied methods was estimated at 8.65-8.8 points. These indicators make it possible to use new large-berry, white-berry varieties of grapes for drying by the methods of "roasting" and "Stack".

Literature review.

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