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Resource-Saving Methods of Drying Large-Seeded, Raisin Grapes Varieties in the Conditions of Uzbekistan

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Abstract:

The article presents the results of the research conducted on the drying of the raisin grapes varieties by various methods. According to the drying method, outputs from raw materials and their quality indicators were analyzed. The quality of the finished product was evaluated by the tasting system in 10 points and according to its results, the best way of drying was recommended. It has been shown that the quality of the product depends not only on the method of drying but also on the grape variety.

Keywords

Grape, cluster of grape, raisin, staple, film, sunny weather, finished product, taste, color, consistency, ball.

1. Introduction

Uzbekistan is a land of origin of many types of grapes, where varieties are grown from very ancient times. The country's climatic conditions, especially in the foothill regions, are particularly advantageous for growing grapes, where grapes are distinguished by their sugar, high yields, high quality of kishmish (seedless grape) and raisins. Uzbekistan is one of the leading exporters of kishmish and raisin in Central Asia [1, 4].

The researches on the production of new varieties of grapes have been going on since very ancient times. In recent years, more attention has been paid to the production of such varieties. Especially its large bulk varieties are appreciated highly. Scientists of the Republic have recently issued some of these varieties, and the optimal drying technology is based on the deeper study of their technological properties are very actual. This allows increasing the capacity of products manufacturing and expands the potential of exports [5].

2. Materials and Methods

It is need to emphasize that the right choice of drying method is also important to expand quality of the product and accumulates efficiency of manufacturing products. Therefore, we have conducted research on innovative drying techniques of several varieties of grapes in our own experiments. Numerous scientific researches on product drying have been carried out in our country and abroad, and recommendations on products drying have been prepared on this basis. We have used the recommendations of scientists such as X.Ch.Buriev, R.M.Rizaev [2], Z.S.Iskandarov in the research [3]. Four different drying methods were investigated in the research work: drying in sunny weather, drying in staple that is covered with white and black film, and drying in ESPI-P artificial dryer [6].

3. Results and discussion

The research was conducted on grape varieties of large-scale Sultana, Kara janjal, Katta Kurgan and Khusayni Muskatnyi varieties. Several types of drying methods have been tested in order to determine the drying method that provides the best quality products.

The experimental results show that the longest duration of drying was recorded in the control version (drying in sunny weather) as expected.

ESPI-P artificial dryer was different with the shortest drying time. The duration of the drying process in staple drying methods had an intermediate amount period of the drying process (Table 1).

Consequently, the varieties if Sultoni differed from all drying methods, with the shortest duration of drying time the results of the researches show that the amount of finished product was directly related to the drying method.

All the drying methods that tested were relatively high and they were in the range of 23-27.2%.

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It should be noted that the effectiveness of drying is not determined by the amount of final product or duration of drying. The efficiency of the drying process is primarily dependent on the quality of the finished product.

Table 1

The drying time of the grape varieties and the output of finished products, depending on the drying method

Grape variety	Drying method	The duration of drying, (day)	Product output, (%)
Sultoni (Djaus)	Drying in staple that covered with white film.	13	24,3
	Drying in staple that covered with black film.	16	25,2
	Drying in ESPI-P dryer	5	25,6
	Drying in the sunny weather –control	30 + ripen	20,6
Kara janjal	Drying in staple that covered with white film.	19	23,0
	Drying in staple that covered with black film.	20	27,2
	Drying in ESPI-P dryer	6	25,0
	Drying in the sunny weather –control	30 + ripen	20,8
Katta Kurgan	Drying in staple that covered with white film.	14	24,1
	Drying in staple that covered with black film.	16	24,6
	Drying in ESPI-P dryer	7	24,6
	Drying in the sunny weather –control	32 + ripen	19,2
Husaini Muskatnyy	Drying in staple that covered with white film.	16	23,8
	Drying in staple that covered with black film.	18	24,6
	Drying in ESPI-P dryer	6	24,5
	Drying in the sunny weather –control	31 + ripen	22,6

In order to analyze the quality of the product according to the drying method, the raisins were evaluated in a 10-point system. Evaluation of dried final products indicates that the quality of the finished product was dried up by drying on ESPI-P dryers by drying in coated film was the highest. In this drying method, degustation points was respectively 8,5-9,2 in the range depending on the varieties and drying methods.

As expected, the grape varieties that dried in the sunny weather condition (control) were recorded in the lowest index of the quality of the product (see table 2 below).

Table 2

Tasting price of dried raisins in a 10-point system

Drying method	Appearance			Taste (2,0-3,0)	Consistency (0,5-1,0)	Seed separation (0,5-1,0)	Sulfur taste (0,5-1,0)	Overall value
	Size (1,5-2,0)	Uniformity (0,5-1,0)	Color (0,5-1,0)					
Sultoni (Djaus)								
Sunny weather –control	1,5	0,7	0,6	2,2	0,5	0,5	0,8	7,7
Staple with white film	1,8	0,9	0,9	2,8	0,9	0,8	0,5	8,7
Staple with black film	1,9	0,9	0,9	2,8	0,8	0,9	0,5	9,2
ESPI-P dryer	1,8	0,8	0,9	2,8	0,9	0,9	0,5	9,0
Kara janjal								
Sunny weather –control	1,6	0,8	0,7	2,5	0,8	0,7	0,8	7,6
Staple with white film	1,8	0,9	1,0	2,8	1,0	0,8	0,8	8,6
Staple with black film	1,9	0,9	0,9	2,8	0,8	0,9	0,9	9,1
ESPI-P dryer	1,9	0,8	0,9	2,8	0,8	0,9	0,9	9,0
Katta Kurgan								
Sunny weather –control	1,7	0,7	0,7	2,5	0,8	0,7	0,8	7,9
Staple with white film	1,8	0,8	0,8	2,7	0,9	0,8	0,6	8,4
Staple with black film	1,9	0,9	0,9	2,8	0,9	0,8	0,5	8,7
ESPI-P dryer	1,9	0,8	0,9	2,8	0,9	0,8	0,7	8,8
Husaini Muskatnyi								
Sunny weather –control	1,8	0,7	0,7	2,5	0,8	0,7	0,5	7,8
Staple with white film	1,9	0,8	0,9	2,8	0,9	0,8	0,6	8,5
Staple with black film	2	0,9	0,9	3,0	1,0	0,9	0,5	8,9
ESPI-P dryer	1,9	0,9	0,9	2,9	0,9	0,8	0,7	8,9

As can be seen from the table data, the taste value of the product depends on the drying method, as well as the varieties of grapes. In this case, the highest tasting prices (9.2) were put on Sultoni grape varieties seedlings. It was characterized by the beauty of appearance of the product, and high taste qualities. For drying methods, staple with black film and ESPI-P dryers were preferred high. Consistency and color of product were recorded high in these drying methods.

4. Conclusions

Drying of varieties of grapes in black film strips and dryer of ESPI-P gives the most effect. These drying methods provide a shorter the duration of drying, high quality and quantity of the finished product depending on the varieties of grapes. However, from the standpoint of resource-saving coherence, drying staple with black film is recommended for farmers. In order to take high-quality products for the export need to be used from the varieties of Sultoni.

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