

Effect of the Interval of Application of Artificial Ventilation System on Drying Duration of Seedless Grapes in Shield Drying

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Abstract: This article describes the results of research on the agrobiological characteristics of kishmishbop grape varieties suitable for drying. In this, the main indicators of the kishmishbop grape varieties selected for the experiments were analyzed. As a result of the research, scientifically based conclusions were made.

Keywords: Grapes, raisins, productivity, dry matter, quality, autumn and winter varieties, drying technology, ventilation system, shade.

Enter. Currently, about 73 million tons of grapes are grown in the world every year. The People's Republic of China, Italy and Spain are world leaders in terms of production volume, and in these countries, 11.2 million, 8.1 million and 6.1 million tons of grapes are harvested each year, respectively. Also, countries such as the USA, France, Turkey, and India are among the largest producers of grapes. More than 1.7 million tons of grapes are grown in Uzbekistan every year. For the rational use of all of them, it is necessary to establish the cultivation of varieties intended for consumption, export, and industry. Our country has unique experiences in the preparation of dried grape products, and the production of dried products by the Soyaki method is a unique method of the region. Improving this method and introducing it into production is one of the requirements of the present time.

The purpose and specific issues of the research. In order to increase the quality of the finished product in the drying of seedless varieties of grapes, it is necessary to study the importance of the technological properties and biochemical composition of raw materials.

Material and methods. Seedless grape varieties such as "Kishmish belyy", "Kishmish Botir", "Kishmish rozovy", "Kishmish Sogdiana", "Kishmish chyornyy" were selected for research.

According to the method of conducting research:

Research was carried out to investigate the effect of the ventilation system on the duration and quality of the finished product in the drying of seedless grapes in the shade method.

In this experiment, the amount of product output, the organoleptic evaluation of the finished product was studied, and the optimal mode of using the ventilation system was developed.

RESEARCH RESULT AND DISCUSSION

Experiments were carried out in a drying area with a capacity of 60 tons, designed for special shade drying. Here, 100 kg samples of each variety were taken, and separate batches were formed for each experiment and experiments were carried out.

Shirokov and Polegaev methods were used for organoleptic assessment of dried grape products. Initially, all indicators were evaluated in a 5-point system, and then converted into a 100-point evaluation. In this case, the importance coefficient of each indicator was developed.

Also, the parameters of the duration of drying in each method were determined, and scientifically based conclusions were drawn up regarding the most optimal mode.

Table 1 The effect of the use of artificial ventilation system on the duration of the drying interval in shade drying of seedless grapes, days (2020-2022)

№	Varieties	Normal shadow (control)	Ventilation system application mode, interval			
			1 hour	2 hours	2 hours	4 hours
1	Kishmish Botir	48	40	35	32	28
2	Kishmish Rozovy	46	39	34	29	26
3	Kishmish chyornyy	46	42	35	31	24
4	Kishmish bely	45	41	36	32	25
5	Kishmish Sogdiana	50	42	37	33	28

In the analysis table (Table 1) of the influence of the artificial ventilation system on the duration of drying in the shade drying of seedless grapes, it is aimed at accelerating the air movement in the chamber by installing an artificial ventilation system in a specially built shade house, in which the construction periods were studied, taking the simple shade method as a control. According to it, the construction days of the product were determined using a ventilation system of 1 hour per day. For example: Kishmish Botir variety dried in 48 days in normal shade rooms, and in a special shade room, our product dried in 40 days after using the wind system in the amount of 1 hour per day. The finished product was dried in 35 days when a 2-hour ventilation system was used, 32 days when a 3-hour ventilation system was used, and 28 days when a 4-hour ventilation system was used. Compared to drying in a normal shade room, drying was achieved 20 days earlier when drying with a ventilation system for 4 hours a day.

Kishmish rozovy variety dried in 46 days in normal shade rooms, and in a special shade room, our product dried in 39 days after using the wind system in the amount of 1 hour per day. The finished product was dried in 34 days when a 2-hour ventilation system was used, 29 days when a 3-hour ventilation system was used, and 26 days when a 4-hour ventilation system was used. Compared to drying in a normal shade room, drying time was achieved 20 days earlier when using a ventilation system for 4 hours a day.

Kishmish chyornyy variety dries in 46 days in ordinary shade rooms, and in a special shade room the product dries in 42 days after using the wind system for 1 hour per day and it is ventilated. The finished product was dried in 35 days when a 2-hour ventilation system was used, 31 days when a 3-hour ventilation system was used, and 24 days when a 4-hour ventilation system was used. Compared to drying in a normal shade room, drying was achieved 22 days earlier when drying with a ventilation system for 4 hours a day.

Kishmish bely variety dried in 45 days in normal shade houses, and in a special shade room, our product dried in 41 days after using the wind system in the amount of 1 hour per day. The finished product was dried in 36 days when a 2-hour ventilation system was used, 32 days when a 3-hour ventilation system was used, and 25 days when a 4-hour ventilation system was used. Compared to drying in a normal shade room, drying was achieved 20 days earlier when drying with a ventilation system for 4 hours a day. Kishmish Sogdiana variety dried in 50 days in normal shade rooms, and in a special shade room, our product dried in 42 days after using the wind system in the amount of 1 hour per day. The finished product was dried in 37 days when the ventilation system was used for 2 hours per day, in 33 days when the ventilation system was used for 3 hours per day, and in 28 days when the ventilation system was used for 4 hours per day. Compared to drying in a normal shade room, drying was achieved 22 days earlier when drying with a ventilation system for 4 hours a day.

In the table of analysis of the organoleptic evaluation of the products obtained by applying the interval of artificial ventilation system during shade drying of seedless grapes (table 2), it is aimed to accelerate the air movement in the chamber by installing an artificial ventilation system in a specially built shade room, in which the simple shade method was taken as a control. organoleptic indicators of the product

were studied. According to it, the organoleptic indicators of the product were evaluated using the ventilation system for 1 hour a day. For example: Kishmish Botir variety was evaluated with 90.7 points in normal shade rooms, and when the ventilation system was used for 1 hour per day in a special shade room, our product was rated with 94.3 points and a finished product was created. The finished product was evaluated with 95.2 points when using the ventilation system for 2 hours in one day, 96.1 points when using the ventilation system for 3 hours in one day, and 98.9 points when using the ventilation system for 4 hours in one day. Compared to the one dried in a normal shade room, the raisin variety dried using the ventilation system for 4 hours in one day received a higher evaluation with 8.5 points.

Table 2 The effect of the duration of artificial ventilation on the organoleptic evaluation of the finished product in shade drying of seedless grapes (2020-2022)

№	Varieties	Normal shadow (control)	Duration of use of the ventilation system			
			1 hour	2 hours	3 hours	4 hours
1	Kishmish Botir	90,7	94,3	95,2	96,1	98,9
2	Kishmish Rozovy	86,3	89,8	90,6	91,5	94,1
3	Kishmish chyornyy	90,3	93,9	94,8	95,7	98,4
4	Kishmish bely	90,4	94,0	94,9	95,8	98,5
5	Kishmish Sogdiana	82,8	86,1	86,9	87,8	90,3

The Kishmish rozovy variety under evaluation was evaluated with 86.3 points in normal shade rooms, and when it was ventilated for 1 hour in a special shade room, our product was evaluated with 89.8 points, and the finished product was formed. The finished product was evaluated with 90.6 points when using the ventilation system for 2 hours in one day, 91.5 points when using the ventilation system for 3 hours in one day, and 94.1 points when using the ventilation system for 4 hours in one day. A higher rating of 7.8 points was achieved when drying with a ventilation system for 4 hours in a day compared to drying in a normal shade room.

In the Kishmish chyornyy variety under study, it was evaluated with 90.3 points in ordinary shade rooms, and when the ventilation system was used for 1 hour per day in a special shade room, our product was evaluated with 93.9 points, and the finished product was formed. The finished product was evaluated with 94.8 points when using the ventilation system for 2 hours in one day, 95.7 points when using the ventilation system for 3 hours in one day, and 98.4 points when using the ventilation system for 4 hours in one day. A higher rating of 8.1 points was achieved when drying with a ventilation system for 4 hours in a day compared to drying in a normal shade room.

The analyzed Kishmish bely variety was evaluated with 90.4 points in normal shade rooms, and when the ventilation system was used for 1 hour per day in a special shade room, our product was evaluated with 94.0 points and the finished product was formed. The finished product was evaluated with 94.9 points when using the ventilation system for 2 hours in one day, 95.8 points when using the ventilation system for 3 hours in one day, and 98.5 points when using the ventilation system for 4 hours in one day. Compared to drying in a normal shade room, when the ventilation system was used for 4 hours a day, this variety received a higher rating of 8.1 points. , our product was evaluated with 94.0 points when it was aired, and a finished product was created. The finished product was evaluated with 94.9 points when using the ventilation system for 2 hours in one day, 95.8 points when using the ventilation system for 3 hours in one day, and 98.5 points when using the ventilation system for 4 hours in one day. Compared to drying in a normal shade room, this variety obtained a higher evaluation with 8.1 points when it was dried with a ventilation system for 4 hours in one day.

Kishmish bely variety was evaluated with 82.8 points in normal shade rooms, and the dried product was evaluated with 86.1 points in a special shade room using the ventilation system for 1 hour per day. The finished product was evaluated with 86.9 points when using the ventilation system for 2 hours in one day, 87.8 points when using the ventilation system for 3 hours in one day, and 90.3 points when using the ventilation system for 4 hours in one day. A higher rating of 7.5 points was achieved when drying with a ventilation system for 4 hours in a day compared to drying in a normal shade room.

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