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THE EFFECT OF THE INTERVAL OF APPLICATION OF VENTILATION SYSTEM ON DRYING DURATION OF SEEDLESS GRAPE VARIETIES BY SHIELD DRYING

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Abstract

This article proves that the duration of the process is reduced by 40-45% by using the ventilation system in the drying of seedless Kishmish chyorny and Sogdiana grapes in the conditions of Andijan region. When drying seedless varieties of grapes in the shade method, it was determined that the frequency of operation of the ventilation system at an interval of 180-240 minutes gives the highest effect.

Keywords: Seedless grape varieties, shade drying, ventilation system, stack drying, organoleptic evaluation product characteristics.

Introduction

Dried products are important in the daily food diet of people in the world, and they occupy one of the leading positions as export goods. Currently, in terms of imports of dried grapes in the world, "China - 1479.3 thousand tons (16.9% of the world import), India - 899.6 thousand tons (10.3%), USA - 445.0 thousand tons (5.1%), Japan - 355.8 thousand tons (4.1%), Pakistan - 335.8 thousand tons (3.8%), Great Britain - 222.7 thousand tons (2.6%) and Germany - 207.0 thousand tons (2.4%) are leading countries" Raisins made from seedless varieties of grapes are highly suitable for storage and transportation, so their use as food and confectionery is of great importance.

A number of scientific studies on drying grape products have been conducted in many countries of the world. In these scientific - studies, scientific-practical recommendations are mainly given for drying grapes, its packaging and selection of varieties. In particular, scientists from Turkey, Iran and the United States have focused grapes grapes, and most of the researches are being conducted on improving the processes of drying grapes.

In Uzbekistan, a number of scientists have carried out scientific-research works aimed at drying grapes , and certain results have been achieved. However, there is insufficient scientific research on the effect of grape varieties drying methods on the quality of the finished product.

In our research work, works were carried out to improve the technological process of drying seedless varieties of grapes by adding the ventilation system. The experiments were carried out in a drying area with a capacity of 60 tons, designed for special shade drying. Here, a sample of 100 kg of each variety was taken, and separate - batches were formed for each experiment and

experiments were carried out.

In the control condition, the duration of drying was on average 45-50 days for all varieties. This showed that the process of drying grapes in natural conditions is long-term. In cases where the ventilation system is used, the duration of drying is significantly reduced. The change of ventilation intervals played an important role in this process. For example, if the duration of drying in a 60-minute interval was on average 40 days, in a 300-minute interval, this indicator decreased to 25-31 days. The most effective intervals were 180 and 240 minutes, during which the drying process was reduced while maintaining quality (Table 1).

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Variatios	Years	Normal	Ventilation system application mode, interval, minutes								
name		shadow (control)	60	120	180	240	300				
Kishmish Botir	2022	44	36	32	28	25	28				
	2023	49	41	35	32	28	31				
	2024	45	37	32	29	25	28				
	Average	46	38	33	30	26	29				
Kishmish Rozovy	2022	42	37	32	28	25	27				
	2023	47	42	36	31	28	30				
	2024	43	38	33	28	25	27				
	Average	44	39	34	29	26	28				
Kishmish chyorny	2022	44	40	33	29	23	25				
	2023	49	45	37	33	26	28				
	2024	45	41	34	30	24	25				
	Average	46	42	35	31	24	26				
	2022	48	40	35	31	27	28				
Kishmish	2023	54	45	40	35	30	31				
Sogdiana	2024	49	41	36	32	27	28				
	Average	50	42	37	33	28	29				
Kishmish bely	2022	43	39	34	30	24	26				
	2023	48	44	39	34	27	29				
	2024	44	40	35	31	25	26				
	Average	45	41	36	32	25	27				

1-table The effect of the use of the ventilation system on the duration of the drying interval during shade drying of seedless varieties of grapes, days (202 2-2024 v.)

The results of the study showed that the ventilation system was highly effective in shade drying of seedless grape varieties, and its effect was stable over the years. The duration of drying was significantly reduced in all varieties. In particular, 180 and 240 minute intervals were noted to be the most effective. At the same time, it has been shown that the ventilation system allows economical use of energy resources while maintaining product quality.

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 developed regarding the most optimal mode.

The analysis of the organoleptic assessment of the products obtained by using the interval of the

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ventilation system in the shade drying of seedless grapes is presented in Table 4 -, aimed at accelerating the air movement in the chamber by installing a ventilation system in a specially built shade room. In this case, the simple soyaki method was adopted as a control, and the organoleptic indicators of the product were studied. The results of the organoleptic evaluation were expressed by points, and the quality indicators of the product (taste, smell and appearance) were evaluated. This study was carried out in 20 22 -202 4 and five seedless grape varieties were studied.

4-table The effect of the duration of the ventilation system on the organoleptic evaluation of the finished product in the shade drying of seedless varieties of grapes, points (20 22-2024 c.)

	Normal	Duration of ventilation system use, minutes									
Varieties name	shadow	60	120	180	240	300					
	(control)	00									
Kishmish Botir	90.7±0.5	94.3±0.5	95.2±0.5	96.1±0.5	98.9±0.5	91.7±0.5					
Kishmish Rozovy	86.3±0.5	89.8±0.5	90.6±0.5	91.5±0.5	94.1±0.5	87.2±0.5					
Kishmish chyorny	90.3±0.5	93.9±0.5	94.8±0.5	95.7±0.5	98.4±0.5	91.3±0.5					
Kishmish Sogdiana	82.8±0.5	86.1±0.5	86.9±0.5	87.8±0.5	90.3±0.5	83.7±0.5					
Kishmish bely	90.4±0.5	94.0±0.5	94.9±0.5	95.8±0.5	98.5±0.5	91.4±0.5					

It turned out that the ventilation system significantly improves the organoleptic indicators of the product. In particular, the highest quality was noted in cases where the duration of ventilation was 180 - 240 minutes (3 - 4 hours). But the excessive duration of ventilation (300 minutes or 5 hours) had a negative effect on the quality of the product.

In the control group, the organoleptic evaluation of Kishmish Botir was 90.7 points. When using the ventilation system, the highest rate was recorded at 240 minutes (4 hours), and the assessment reached 98.9 points. This aeration system has shown to significantly improve product quality for this variety. But when the duration of ventilation was increased to 300 minutes (5 hours), it was observed that the evaluation decreased to 91.7 points, which showed the negative effect of excessive ventilation on product quality.

Kishmish Rozovy's grade in the control condition was 86.3 points. The highest score was recorded at 240 minutes when the ventilation system was used, and the rating reached 94.1 points. It was found that the rating dropped to 87.2 points after 300 minutes of ventilation. It was observed that this variety is highly sensitive to the ventilation system and its highest quality is manifested in 3-4 hours of ventilation.

In the control condition, Kishmish Sogdiana had the lowest organoleptic score, which was 82.8 points. In the case where the ventilation system was used, the rating reached 90.3 points in 240 minutes. But at 300 minutes, the rating was observed to drop to 83.7 points. It showed that the ventilation system significantly improved the organoleptic quality of this variety, but excessive ventilation had a negative effect on the quality of the product. Kishmish bely variety organoleptic evaluation in the control condition was 90.4 points. During the 240-minute ventilation process, the highest score was recorded - 98.5 points. But when the duration of ventilation was increased to 300 minutes, the rating dropped to 91.4 points. These results showed that the ventilation system can improve the organoleptic parameters of this variety for 3-4 hours.



The study was conducted in 2020-2022 and the effect of the ventilation system was stable in all years. In the case of control, the organoleptic parameters of the product were medium. In the case where the ventilation system was used, the results in 180-240 minutes were distinguished by high marks. In 2022, 240 minutes of aeration for all varieties was noted to have the highest evaluation scores, demonstrating the efficiency and effectiveness of the aeration system this year.

As a result of the conducted research, it was found out that the use of artificial ventilation system when drying seedless grapes in the shade method leads to higher marketability of the finished product. During shade drying of seedless grape varieties, the most effective operating frequency for the artificial ventilation system was determined in the interval of 180-240 minutes. For example, if drying of Kishmish chyornyy variety in control conditions was on average 46 days, by using the ventilation system, this duration can be reduced to 24 days, that is, the use of the ventilation system significantly increases the drying efficiency.

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