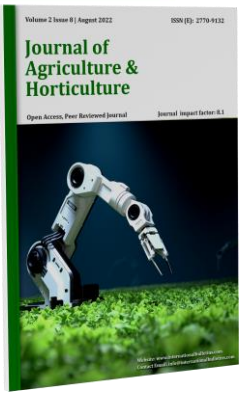

TECHNOLOGY OF DRYING PERSIMMON FRUITS IN THE OPEN AIR

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Abstract. In this scientific article, the persimmon is a subtropical plant that has many species. More than 800 varieties of persimmons have been studied and propagated around the world. Such varieties and forms are effective as large-fruited, fertile, seed-bearing and pollinating trees with flowering at the same time. Today, the drying of persimmon fruits in the world is common in China, Japan, Korea and Brazil. Ripe, but not yet softened hard fruits are peeled off and hung on a string.

Key words: Persimmon varieties Tamopan, Zenji-maru, Hiakume, Persimmon, Diseases bacteriosis, rot, Georgia, Azerbaijan, Tajikistan, Crimea and the Black Sea.

Introduction

Today, Japan, China, and Karia are the countries in the world for drying persimmon fruits. Technically ripe, but not yet soft, taut fruits are picked, peeled and hung on a string. Peeled persimmons should have a little skin on the tip of the fruit, otherwise a lot of liquid may come out. Hanging fruits are dried in the sun for 30-50 days. It needs to be hand crushed every 4-5 days to get a uniform texture and taste. After drying, they are wrapped in balls to "sweat". As a result, sugar crystal grains are formed on the surface of the persimmon. And finally, it is hung again to dry in the wind. In Japan and China, the fruits of the "Hachiya" variety are picked when they are strained. The bark peels off. The wire is tied to racks or poles for air drying. It is dried under the house roofs for 30-50 days. Granules of sugar crystals are formed in the skin of the fruit. Fruits can contain up to 50% sugar. Drying removes the irritation. "Zendji-maru" and "Hiakume" varieties are considered to be drying.

Researches were conducted in the mountainous regions of Bostanliq district of Tashkent region. The research was conducted over three years in 4 repetitions and 4 options:

Option I. Hanging persimmons on a string in the state where the whole skin is peeled off.

Option II. Peeling the whole persimmon and soaking it in boiling water and hanging it on a string to dry.

Option III. Peeling off the skin of a whole persimmon, soaking it in a salt solution and hanging it on a string to dry.

Option IV. Drying persimmons in the open air cut into quarters.

Zenji-maru, Hiakume, Tomapon and introduced Sheng, Fuyu, and Korolek persimmon varieties included in the state register of agricultural crops recommended for planting in the territory of the Republic of Uzbekistan were used for drying persimmon fruits. These selected varieties of ours mainly differ in terms of dry matter above 20% and firmness of the fruit. In our study, Hiakume palm variety was taken as a control.

The research was carried out on a farm near Brichmullo Forestry of Tashkent region. The topography of these areas consists of different heights, and the slopes are mostly 13-400. Therefore, the relief is different. Therefore, the wind blows well in this area. That's why this area is ecologically clean and always windy, so it is a suitable place for our research. It is very important that the wind blows well when drying fruits and vegetables (see Figure 1).

Figure 1. Hanging persimmon fruit on a string in the open air

It is well known that persimmon fruit ripens at the end of September and the first ten days of October. It is during these months that the air temperature in this area drops slightly and averages around 20°C

Experiments were conducted in 4 options for 3 years in our research work. Our first option was to dry the persimmon palm fruit in a simple way, that is, without any additional processing (see Table 1).

Table 1

Persimmon fruit drying duration, yield and organoleptic evaluation results (2019-2021)

№	Varieties name	Day	Fruit weight, gr		Amount of dried product output, %	Total organoleptic evaluation scores
			Before drying	After drying		
Option I						
1	Hiakume (control)	30	1630	580	30,5	4,5
2	Zenji-maru	30	1500	470	31,3	4,5
3	Tomapon	30	1550	430	27,7	4,0
4	Sheng	30	1250	300	24,0	3,0
5	Fuyu	28	1410	350	24,8	4,5
6	Korolek	25	1300	320	24,6	3,5
Option II						
1	Hiakume (control)	28	1700	620	29,1	4,5
2	Zenji-maru	28	1520	450	29,6	4,5
3	Tomapon	28	1600	510	30,1	4,0
4	Sheng	25	1300	320	24,6	3,0
5	Fuyu	28	1450	400	27,5	4,5
6	Korolek	25	1320	350	26,5	3,5

Option III						
1	Hiakume (control)	25	1600	620	29,2	4,5
2	Zenji-maru	20	1510	420	27,8	4,5
3	Tomapon	22	1580	450	28,4	4,0
4	Sheng	25	1300	340	26,1	3,0
5	Fuyu	25	1400	330	23,5	4,5
6	Korolek	20	1240	310	25,0	3,5
Option IV						
1	Hiakume (control)	15	1520	350	23,0	4,5
2	Zenji-maru	16	1480	410	27,8	4,5
3	Tomapon	16	1605	400	24,9	4,5
4	Sheng	15	1200	305	25,4	4,0
5	Fuyu	18	1320	280	21,2	3,5
6	Korolek	16	1280	245	19,1	3,5

According to the results of the experiment, 24.0-31.3% dried product was obtained from each variety, depending on its characteristics. The highest dry yield was observed in Hiakume (control) - 30.5%, Zenji-maru - 31.3%, Tomapon - 27.7% and Fuyu - 24.8%. The remaining two studied varieties, Sheng and Korolek, had a slightly lower yield of dried products, i.e. 24.0-24.6%.

The quality of our dried products obtained as a result of our research was evaluated by organoleptic evaluation in laboratory conditions. In this case, a special tasting commission was formed and evaluated in a 100-point evaluation system, points were assigned according to the coefficient of importance, and the best quality ones were selected.

According to the evaluation results of our first option, Hiankume, Zenji-maru and Fuyu varieties were rated high, i.e. 4.5 points. According to the result of organoleptic evaluation, the lowest score of 3.0 was given to the Sheng variety.

The second option of our research, i.e. experiments were conducted on peeling and immersing persimmon fruit in boiling water and hanging it on a string to dry. According to the results of this experiment, the highest rate of dry product yield was observed in Hiakume and Tomopon varieties and was 29.1-29.6%. The lowest dried product yield was observed in the Sheng variety, which was 24.6%.

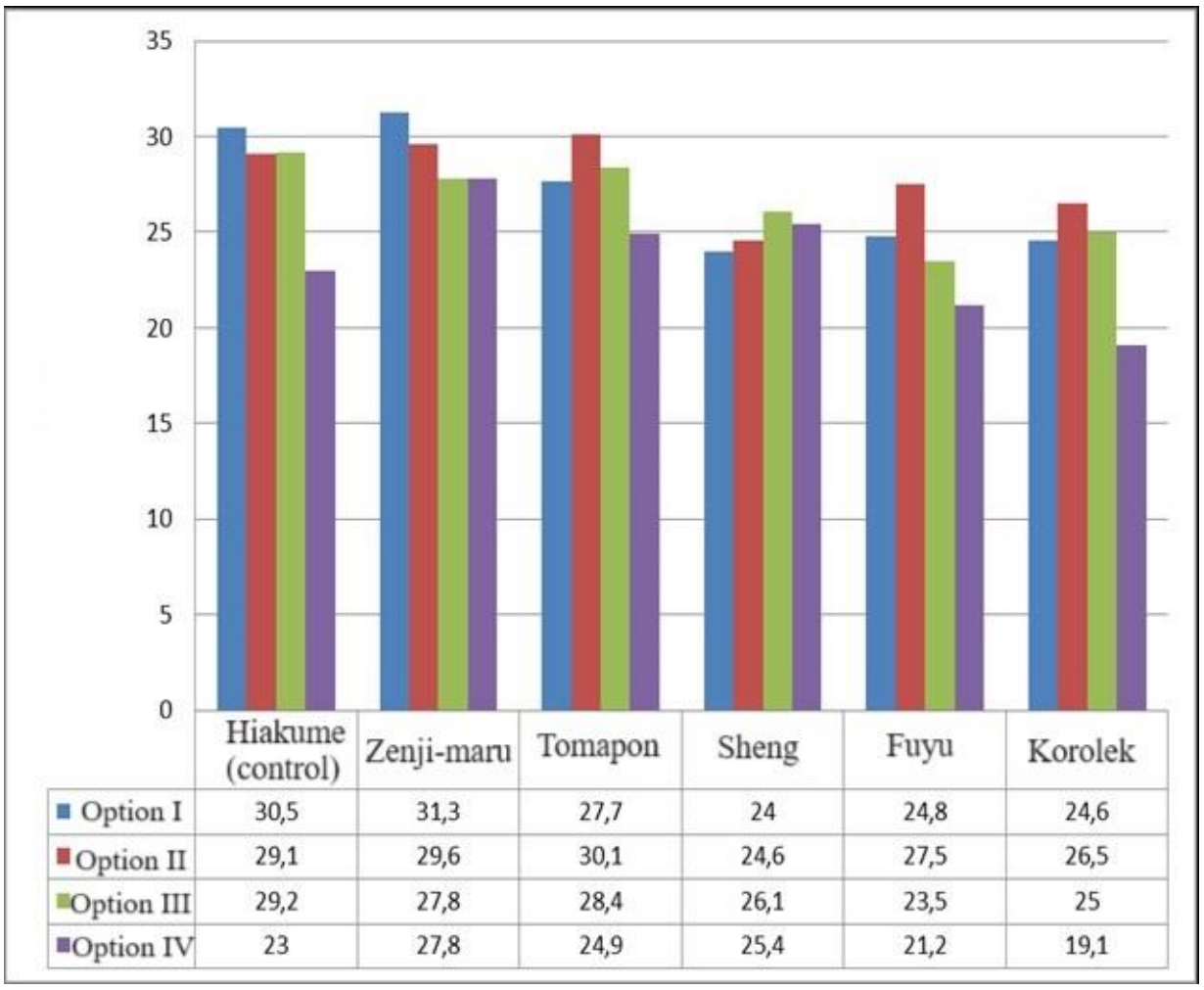
In the third variant of our research, in our three-year experiments, i.e., when the persimmon fruit was dipped in a 3% salt solution and dried with the peel removed, the production yield of the Hiakume and Tomapon varieties was the leader and was 27.8 - 29.2%. During the three years of the study, the lowest rate in this variant was 23.5% of the Fuyu variety.

In the fourth variant of our research, in our three-year experiments, that is, when persimmons were cut into quarters and dried in the open air, the yield of Zenji-maru and Sheng varieties was the leader and was 27.8 - 25.4%. During the three years of the study, the lowest rate in this variant was the Korolek variety, which was 19.1%.

According to the results of organoleptic evaluation, Hiakume was rated with the highest 4.5 points in this option as well. Zenji-maru, Tomapon, Fuyu, Korolek varieties participating in the study were evaluated with the same average score of 4.0. According to the

results of the experiment, the Sheng variety was the lowest and was 3.5 points (see Table 1 and Figure 1).

According to the results of experiments on drying persimmon fruits, separate studies were conducted to study the yield of each variety. In these studies, we took one fruit of each variety and evaluated its yield and taste.



	Hiakume (control)	Zenji-maru	Tomapon	Sheng	Fuyu	Korolek
Option I	30,5	31,3	27,7	24	24,8	24,6
Option II	29,1	29,6	30,1	24,6	27,5	26,5
Option III	29,2	27,8	28,4	26,1	23,5	25
Option IV	23	27,8	24,9	25,4	21,2	19,1

Figure 2. Amount of dried product yield from persimmon fruit, %

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