
**STORAGE CONTAINERS OF GRAPES IN THE REFRIGERATOR AND THEIR
IMPACT ON THE QUALITY OF PRODUCTS**

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ABSTRACT

In this article is given the information on the types of containers used in the process of storage of the grape variety Toyfi grown in different climatic conditions of the Republic in modern refrigerated enterprises, the materials, size, the average weight of the packaged raw material, the impact of packaged dishes on the quality indicators of the products, the shortcomings and advantages of the dishes in the storage process, and, the perspective types of containers due to their ecological peculiarities of materials.

Keywords: Grapes, crate, dynamics, exports, sea level, irrigation systems, cellulose, plastic.

1. INTRODUCTION

Today, more than 80 kinds of agricultural products grown in the Republic are exported to 66 countries of the world. With the increase in the volume and gross harvest of fruits and vegetables and grapes, it is becoming a topical issue to deliver them to consumers with high quality and without destruction. The total area of grapes grown in the world today is 74.5 million hectares; gross grape harvest is 77.8 million tons, of which grape fields in Uzbekistan are equal just to 1.5%.

This is followed by the resolution of the president of the Republic of Uzbekistan dated October 23, 2019 “on approval of the strategy of the development of Agriculture of the Republic of Uzbekistan for 2020 - 2030 years” PF-5853 has defined measures for further improvement of the fruit and vegetable and viticulture Sector [1].

According to statistics of the World Bank, the total area of grapes grown in our Republic in 2019 was 110 072 hectares, the total gross yield obtained from them amounted to 1 767 607 tons [1, 5]. At the same time, it is predicted that these figures will increase year by year, when the decisions and Orders adopted by our government are taken into account.

It is known that the transmission of grapes grown throughout the year to consumers, based on morphological and biological indicators, chemical composition and quality indicators, is carried out in several ways.

Methods for delivering grown grapes to consumers depending on their chemical and quality indicators are presented (Table 1).

Table 1 .Methods of delivering grapes to consumers depending on their chemical and quality indicators

Biological features	Gross yield, %	Methods of transfer to the consumer	Use in relation to the mass of grown grapes %
Grape varieties of khuraki	91,3	Market counters and shops	29
		Storage warehouses	50
		Processed products	21
Technical grapes	8.7	Wine products	83
		Pharmaceuticals from seeds products	17

As can be seen from the table above, a large 91, 3% of grown grapes are considered to be horticultural varieties of grapes, they are sent mainly to the markets and shops or to foreign countries with a new break, in addition to 50% to the cooling towers (temporary and modern cooling towers), more than 21% to the processing enterprises (drying, get juice and sauces). Another large part of the grapes, which is technique varieties, is considered to have the total amount of 8, 7%. Technical grape varieties are mainly used as in the production of wine, for 83%, while the remaining waste from it as raw materials for the pharmaceutical industry (seed, shells), for 17%.

It should be noted that today the increase the export potential of our Republic is carried out by storing grapes in modern warehouses.

The following Figure 1 shows the data on the export of agricultural products in the Republic today.

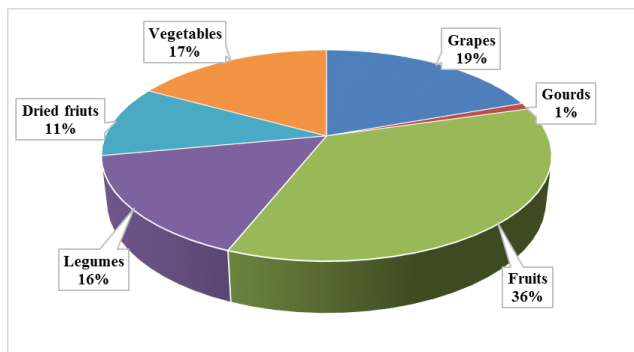


Figure 1. Dynamics of export of fruits and vegetables in the Republic in terms of 2018.

As can be seen from the picture, today more than 20% of grapes are exported from fruits and vegetables and other products exported from our Republic, the main part of which is fresh.

Therefore, each link in the supply of grape products to consumption and in the process will have to pay attention to its own specific factors aimed to improving the quality indicators of the product. One of such factors is the study of the types of grape packaging containers, their impact on the quality indicators of grapes, on the process of storage for a long period of time; there has not been enough research work in this direction in our Republic.

2. MATERIALS AND METHODS

One of the research tasks carried out by us was carried out in the districts of Zarkent of Tashkent region, Samarkand of Samarkand region, Bukhara of Bukhara region and Kitab of Kashkadarya region, which differ sharply from each other in different climatic conditions of the Republic - weather, sea level, irrigation systems.

As an object of our research, the Toyfi grape variety was selected. Storage processes the influence of Toyfi grape varieties grown in the regions of the Republic on quality indicators in the processes of harvesting, packaging and storage of them in modern refrigerators has been studied. The picture below shows the dishes that are used in the process of storing grapes.

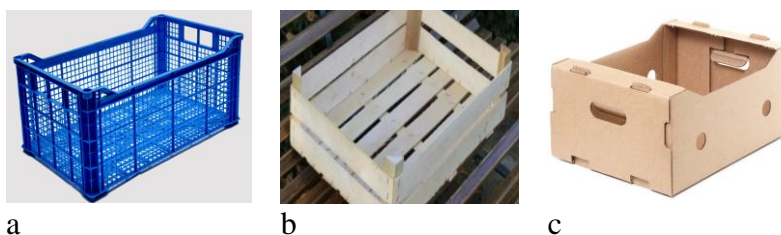


Figure 2. Types of dishes used for storing grapes.

The types of dishes that are used for the processes of grape storage today in our Republic are presented in Figure 2 above. Each of the dishes presented in the picture has its own advantages and disadvantages, that is, the crate shown in Figure 2a is made of plastic material, these types of dishes are widely used mainly in the southern regions of the Republic, another one (Figure 2b) is

made of local wooden materials and is widely used mainly in the Valley regions of the Republic, the third one (Figure 2c) is made of cellulose, and widely used in European countries, India and China. In this regard, it should be noted that the containers made of cellulose for the farmers and exporters- entrepreneurs of the Republic will serve as future packaging containers.

3. RESULTS AND DISCUSSION

At the next stage, in order to determine the advantages and disadvantages of the above-mentioned plastic and wooden dishes, scientific research was conducted by us, the results of which are presented in the following Figure 3 - the packaging process and in the Table 1-the data obtained during the storage process.

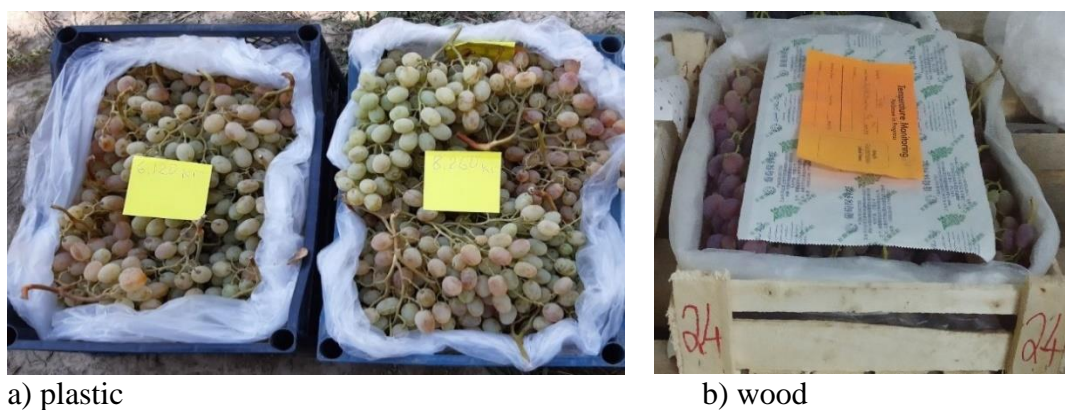


Figure 3. The process of storage of grape variety Toyfi.

It should be noted that the process of packing the grape variety in various containers is presented in the results of our research on products that have been preserved in modern refrigerated containers from the beginning of September to the end of December of 2019.

Table 2 .The results of packing process of grape variety Toyfi in different containers

Province	Type of container	Weight of the grape container put on storage. on average, 4 pieces of pots are on account of September, kg	The weight of the grape-packed container after on storage. on average, 4 pieces of pots are on the account of December, kg	The difference in the mass of dishes in the process of storage is on account of December, gr	On account of each vessel, gr
Tashkent	Wood	29.1	29.445	435	108
	Plastic	33.509	33.189	-320	-80
Samarkand	Plastic	27.4	27.15	-250	-62.5
Bukhara	Plastic	33.639	33.29	-349	-87.25
Kitab	Plastic	31.995	31.713	-282	-70.7

According to the results of the research, as can be seen from the table, today in our Republic, mainly wood and plastic types of packaging containers are used for storage of grapes in refrigerators. According to the results, the average weight of grapes packed in each container was 6.5-8 kg. It was observed that the quality of grapes in various containers packed and their organoleptic performance practically did not change. The weight of the product in the wooden crate, packed grapes, is increased to 108 gr, due to the wet pulling of the wooden material on the account of one container. If we take into account the fact that this figure is located approximately 10000 units of crate in the cooling capacity of 100 tons, it is 1080 kg, then when multiplying 1080 kg to the market price of grapes, it in turn will bring additional income to the entrepreneur. But at the same time, in the opinion of experts, the wet pulling of wooden crates also leads to the development of micro-organisms. In the process of storing grapes in the second type of plastic containers, it was determined that the average reduction of 75 gr from each crate. We believe that the reason is due to the natural reduction of grapes in the storage process.

4. CONCLUSIONS

Thus, as a result of the researches carried out, it was determined that in the process of storage of grapes in refrigerated containers in the Republic, mainly the use of wooden and plastic containers, as a result of their moisture content in wooden containers, increased container weight, while plastic containers decreased the total weight due to the decrease in the natural weight of grapes, and in recent years, the demand for packing containers, made by ecological standard, increased, as well as the demand for cellulose containers in the world grape-exporting countries.

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