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# Improvements to Organizations and Conditions of Transportation of the Melons

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**Abstract:** *In this article main by purpose is transportation of the mellons by rail-freight traffics with maximum provision of safety cargo. For this is considered physician-biological and transport factors, acting upon carried cargo.*

**Keywords:** *transportation, railway transport, products, transport factors, regions.*

## I. INTRODUCTION

Railway transport is one of the main modes of transport involved in the transportation of bulk cargo, as well as in the transportation of export-import goods and the development of a large volume of transit traffic between Europe and East Asia along the directions of the Great Silk Road.

It should be noted that the Republic of Uzbekistan has been one of the main producers and suppliers of agricultural products to the regions of the Urals, Siberia and the Far East for many years.

Under the current conditions, there is a need to find ways to reduce costs when passing fruits and vegetables from the producer to the consumer, which, accordingly, will increase the competitiveness of our products. One of the effective ways to reduce the cost of transporting agricultural products by rail is to reduce cargo losses and improve its quality.

Studies of the transportation of fresh fruits and vegetables have shown that the main cause of damage to fruits and vegetables during transportation are:

- 1) Failure to meet delivery deadlines;
- 2) Mechanical damage during assembly;
- 3) Damage to fruits during loading onto vehicles and reloading into refrigerated wagons or containers;
- 4) Incompatibility of loaded products in terms of transportability;
- 5) Untimely unloading;
- 6) Violations of the rules for servicing refrigerated wagons and containers along the route.

Failure to meet delivery deadlines is primarily due to delays at interstate butt points during customs inspections and at marshalling yards due to the dispersion of shipments and a decrease in the level of routing.

However, studies have shown that the safety of quality is affected not only by transport factors (type of rolling stock, temperature and humidity conditions, type of container, method and height of loading, technical standard of loading, delivery time), but also biomedical factors, and the content of alien elements.

Therefore, the purpose of this publication is to analyze the transport and biomedical factors that affect the safety of fruit and vegetable products during storage and transportation by rail. The study provides for a stationary simulation of the process of transporting fresh fruits and vegetables in a refrigerated wagon using a refrigerating chamber installed on a vibration stand.

It should be noted that the operating parameters of the vibrating stand should provide real dynamic loads during the transportation of goods in refrigerated cars from inertial accelerations and vibration with a frequency of 13 ... 16 Hz with a vertical body vibration amplitude of 2 mm, which is dominant for speeds of 72 ... 100 km / h, which corresponds to the operating conditions of refrigerator cars [1]. In order to conduct this study, a stand of a refrigerator chamber installed in TashIIT was used.

Before the start of the research, analyzes of all product samples were carried out to determine the background indicators. For this experiment, winter melons and thick-barked watermelons were chosen as prototypes. The duration of the experiment is calculated for a period of 30 days.

In order to establish the degree of influence of medical and biological factors on fruit and vegetable products during their transportation, before the start of this experiment, all melons and watermelons involved in the experiment were divided into two parts. Half of all production was marked as "control".

After that, bacteriological crops were taken from the entire batch of melons and watermelons. The results of analyzes taken from fruits will allow to establish the degree of influence of the microflora and bacterial composition located both inside the fruit and on its surface, since not only the internal composition leads to product damage during transportation.

According to the results of the analysis, it was revealed that the main cause of spoilage in melons and watermelons is the appearance of rot due to the presence of stafelacocus and antiracoccus bacteria of different groups on the surface of the fruits.

In order to reduce the number of bacteria per unit surface area of the fruit and, consequently, reduce the spoilage of products during transportation, we have proposed the "quartzization" of melons.

As noted above, the entire batch of fruits was divided into two parts. Quartzization was carried out immediately before the start of the dynamic simulation of the transportation process. Laid in a stationary refrigerating chamber on a vibration stand, observing the loading height, the "control" from the entire batch of fruits was subjected to quartzization for one hour. Throughout the entire experiment, lasting thirty days, both from the control and from the rest (not subjected to quartzization) of the batch of fruits, samples of melons and watermelons were taken for analysis of background indicators. Withdrawal was carried out with a frequency of 6, 12, 18, 24 and 30 days. According to the results of the analysis, we can say that in the quartzization of melons and watermelons, we have achieved a decrease in the number of staphylococci and enthiracoci on the surface of the fruit, and therefore reduced the impact of biomedical factors on product spoilage during transportation. In addition, at the first stage after quartzization, that is, immediately before the onset of the impact of dynamic vibrations (simulating the transportation process), the internal structure of the fruits did not change. On the 6th day, the analyzes of the fruits from the control batch showed an identical initial result, but it should be noted that on the surface of the experimental samples of melons and watermelons that did not belong to the control batch, that is, those that did not undergo quartzing, an increase in the number of previously identified types of bacteria was noted.

The results of the analyzes carried out on the 12th day of the experiment showed the following: on samples from the control batch of cargo, stafelacoci and entricocci were hatched in an amount equal to what was detected on the prototype samples without quartzization immediately before loading. In experimental samples of fruits that were not subjected to quartzization on the 12th day, not only the growth of bacteria on the surface was noted, but also staphylococci and entricocci were hatched inside the product in places where the fruits had mechanical damage obtained during loading of melons and watermelons.

Similarly, as a result of analyzes of the microbiological environment on the surface and inside the fruits on the 18th, 24th and 30th days, the percentage of changes in the quality of fruits subjected to quartzization and fruits stored without quartzization before the start of the experiment was compared. The ratio of the number of microorganisms on the surface of fruits subjected to quartzization, as well as those transported without quartzization, is presented below in the diagram. 1.2.

On the basis of the study, it can be concluded that the quartzization of individual fruits and vegetables, in particular, as in the above experiment of melons and watermelons, before the start of transportation over long distances, provides an increase in the period of transportability of this cargo. The following was found that the process of quartzization of products before transportation slows down the development of microflora (bacteria of various types) both on the surface and inside the fruit, the development of which is the cause of fruit rotting. The ratio of the number of microorganisms on the surface of fruits subjected to quartzization, as well as transported without quartzing

Diagram 1  
MELONS

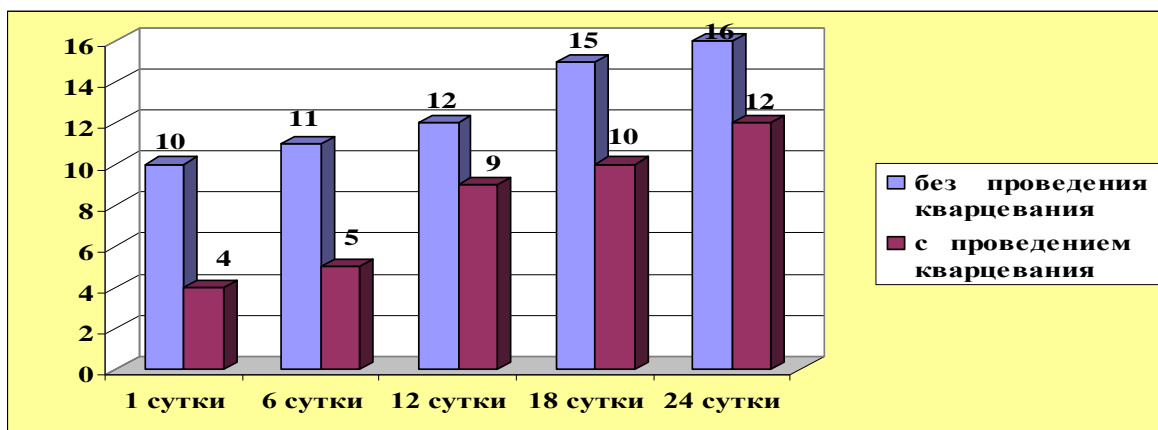
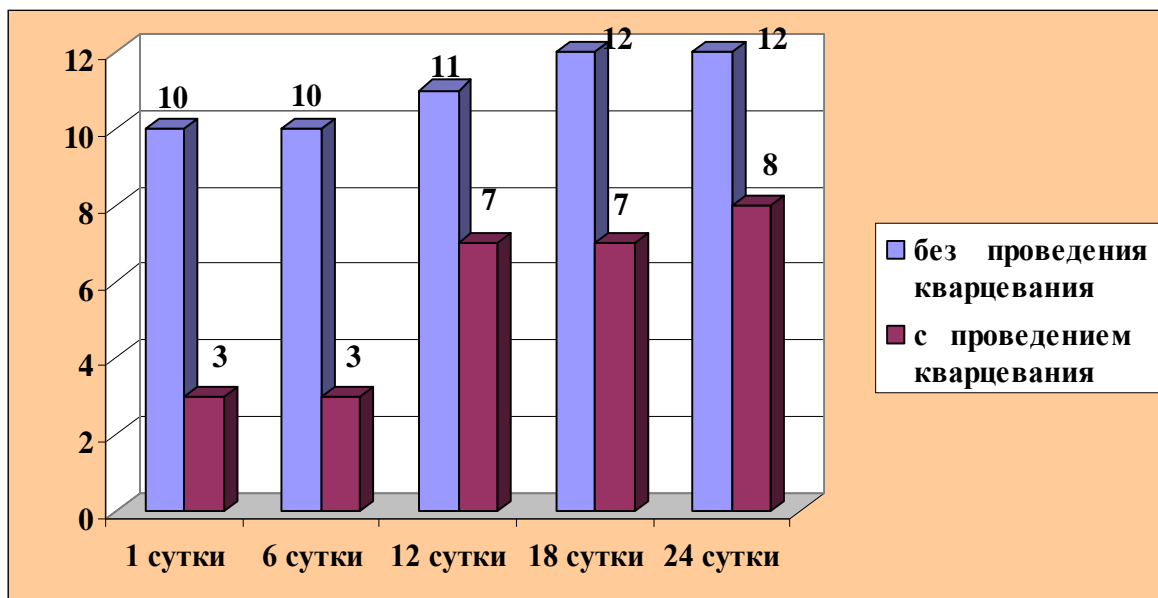


Diagram 2  
Watermelons



It should be noted that any recommendations for the transportation of perishable products should be based on the results of stationary studies, theoretical calculations and verified through pilot transportation.

The purpose of the pilot transportation is to test the results of theoretical calculations and stationary studies in operational conditions to develop the conditions and deadlines for the transportation of agricultural products.

Experimental transportations are carried out in the summer and transitional periods of the year. For each checked variant of transportation conditions, at least three wagons must be loaded.

Before the start of the transportation season, representatives of the railway ensure that experimental loading is included in the loading plan, provide the necessary rolling stock in full in a timely manner, and take measures to promote the experimental cars strictly for their intended purpose.

On the basis of experimental transportation, a final draft of recommendations is developed on adjusting, clarifying and supplementing the loading height, deadlines for transportation, and it is also proposed to quartz gourds before loading, and also changes and additions to the Rules for the transport of goods are drawn up along the way in refrigerated wagons and containers.

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