

## IMPROVEMENT OF CHERRY FREEZING TECHNOLOGY

Muzaffar Mukhtaraliyev

Tashkent State Agrarian University

### Abstract

In recent years, the volume of cherry cultivation in the world is about 1.9 million tons, and the yield is about 52.9 t/ha. 88,000 tons per year in Russia. Cherries are cultivated, the yield in this country is around 32.6 t/ha (FAO, 2002).

The volume of cherry cultivation in our country cannot be considered sufficient. As we mentioned above, the reasons for this can be attributed to the problems of transferring cherry orchards to an intensive basis. Our research work is to study the methods of freezing cherries in order to preserve them for a longer period of time and to improve the product's longer storage.

### Aim

The purpose of the research is to develop an improved technology of shock freezing of cherry fruit with shortened process duration, using an environmentally friendly cooling agent.

### Materials and methods

In carrying out the research and doing the work, raw materials and generally accepted standard, physico-chemical, special organoleptic and correlation-regression analysis and statistical-mathematical planning methods of experiments were used to determine the properties of frozen products.

### Results

The scientific significance of the research results is explained by the fact that the optimal conditions for preserving cherries with the maximum retention of natural vitamins, micro- and macroelements by means of preliminary treatment with 30% sugar syrup and 4% ascorutin and shock freezing have been determined. The practical significance of the results of the research is explained by the selection of parameters of the freezing process taking into account the characteristics of cherries, pretreatment with sugar syrup and ascorutin, and improved technology of shock freezing is recommended.

It was proved that after 6 months of shock freezing of selected cherry samples, soluble solids increased by 2%, and tannin content decreased by 2 times;

#### The practical results of the research are as follows:

- the optimal conditions for quick (shock) freezing of cherries that preserve their chemical properties as much as possible through preliminary processing have been determined;
- constructive recommendations on processing with 30% sugar syrup for the quality of the product during the storage period have been developed;
- an improved technology of shock freezing of cherries using an environmentally friendly cooling agent has been developed.

#### Tasks of the research:

- choose a cherry variety suitable for freezing;
- research, comparison of conventional and shock freezing process;
- study of factors affecting the quality of fruits during storage;
- study of the preliminary processing of fruits before freezing;
- determination of optimal shock freezing modes;
- studying the effect of freezing conditions and storage period on cherry composition;
- calculation of the economic indicators of the freezing process;
- improving the technology of shock freezing of cherry fruit with shortened process duration, using environmentally friendly cooling agent.

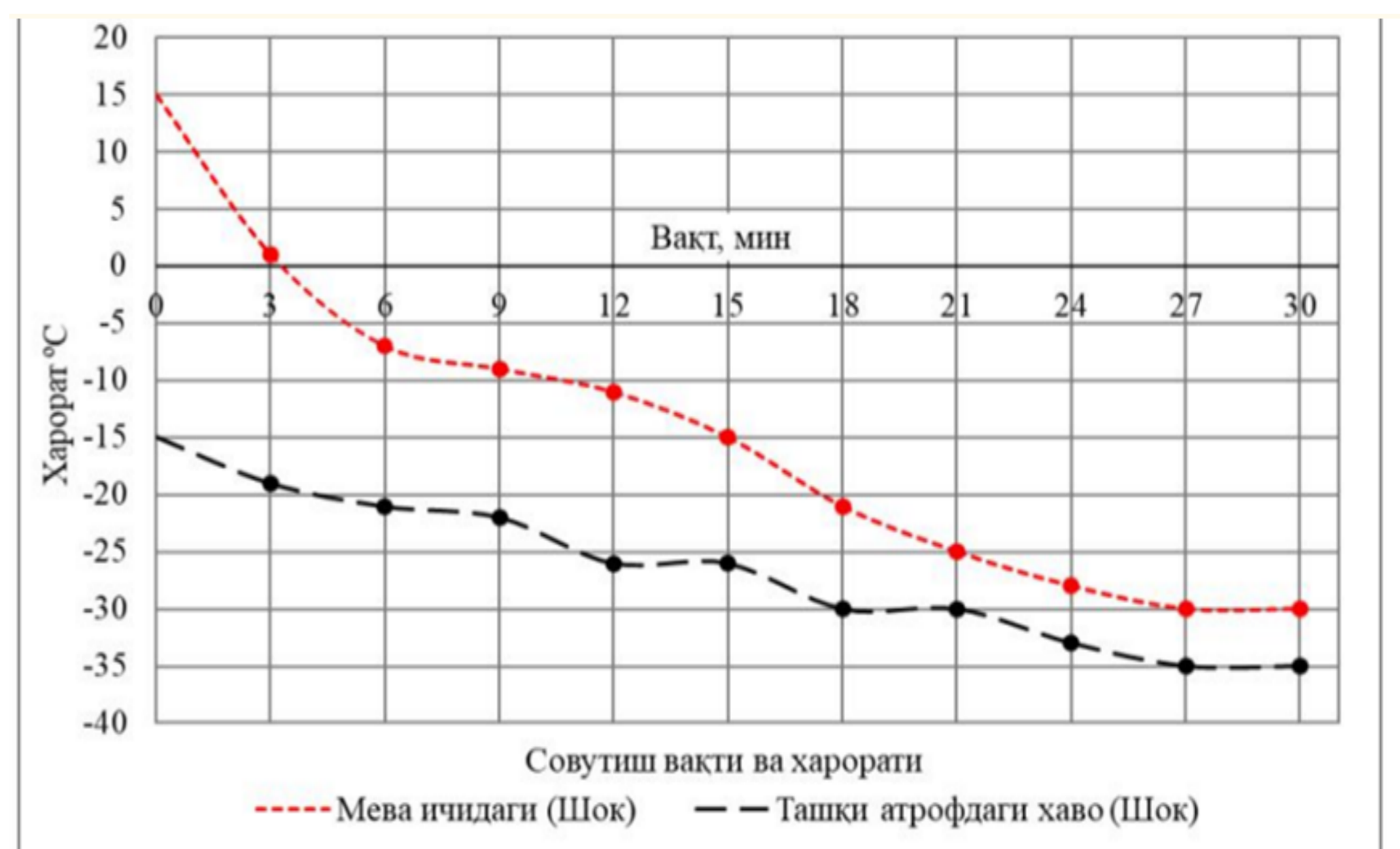


Fig.1. Changes in temperature during rapid (shock) freezing of cherry samples

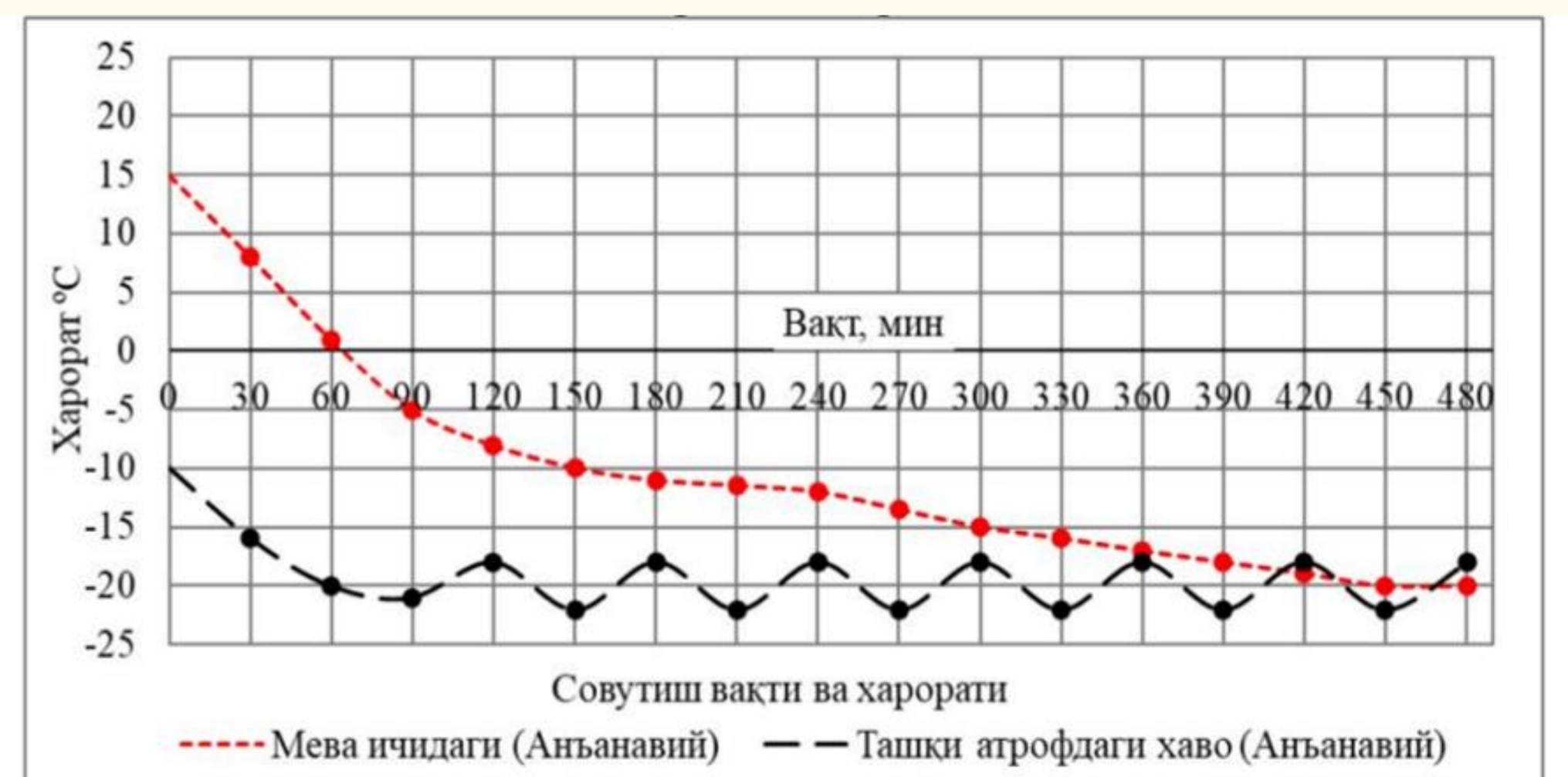


Fig.2. Temperature variation of cherry samples during conventional freezing

### Conclusion

1. Based on the conducted research, it was experimentally determined that the Bychiy Glaze variety is the most convenient and suitable for shock freezing and storage among the cherry varieties obtained for research.
2. The difference between the storage period of conventionally frozen and shock-frozen cherry samples is 3-6 months, and it was found that the shock-frozen samples treated with 30% sugar syrup and 4% ascorutin have maximum storage of mono- and disaccharides for up to 9 months.
3. It was found that by treating the samples frozen by the shock method with 30% sugar syrup and 4% ascorutin, the amount of sugars can be preserved naturally up to 87% and 74% during the storage period of 9 and 12 months, respectively. At the same time, it was found that the amount of ascorbic acid is 62% and 42%, respectively, at 9 and 12 months of storage.

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