

ISSN 2181-8622

**Manufacturing technology problems**



# **Scientific and Technical Journal Namangan Institute of Engineering and Technology**

INDEX  COPERNICUS  
INTERNATIONAL

**Volume 10  
Issue 3  
2025**



# DEVELOPMENT OF COMPLEX PROCESSING TECHNOLOGY FOR THE SECONDARY MASS OF WATERMELONS AND ZUCCHINI

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**Abstract:** The main stages of the convective drying process, the effectiveness of the method and the possibilities of energy savings of pumpkin polyz products are analyzed. Opinions have also been expressed on the application of the technology in production conditions, its advantages and disadvantages. Detailed information will be given about the role and importance of this technology in the long-term preservation and quality preservation of zucchini. The article is aimed at contributing to the development of the agrarian industry and looking for ways to improve energy efficiency.

**Keywords:** Bark, drying, convective drying, energy, moisture, critical, sublimation drying, freezing, rehydration, dehydration.

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**Introduction.** Environmental protection activities in the Bugung Republic are important for the development of environmentally friendly, clean natural products. Shuningdek ushbu is the main building polishing facility for 2023-2024, throughout the polishing season buildings on roofs, warehouses abroad and locally, the volume of polishing buildings on the roof is 35-40% of the production volume (Namangan region example). Stat.uz. In order to overcome these issues, the priority goal is to reduce the cost of products in domestic and foreign markets by expanding the technology of pumpkin and watermelon processing, that is, by expanding the assortment. It is considered appropriate to use the primary and secondary products separated by peeling the skin of watermelon and pumpkin products in various industrial production enterprises. [1; 2].

**Methods.** When the inner part of the peel of the primary and secondary pumpkin mass is treated with ascorbic acid, the color and structure are well preserved, and it is found that the processed product samples are highly resistant to heat agents, in addition, the secondary raw material was processed by processing in 2 different ways.

**Main part.** Chemical treatment of raw materials intended for drying can be carried out in various stages of preparation of polished products for drying. Sometimes chemical treatment is carried out several times. For example, in the drying of watermelon, ascorbic acid is applied after the watermelon is peeled and before it is dried again so that the concentration of CO<sub>2</sub> does not drop during the drying process. One of the raw materials prone to blackening is the secondary mass of pumpkin and watermelon, which, after peeling, should be treated with a solution of ascorbic acid and a powder solution. The required concentration of CO<sub>2</sub> is determined after cutting the raw material or during its blanching process. Raw materials, which are often dried without blanching, are treated with citric acid and ascorbic acid, depending on the type of product, after cutting [3].

Chemical treatment of raw materials intended for drying can be carried out in various stages of preparation of polished products for drying. Sometimes chemical treatment is carried out several times. Raw materials, which are often dried without blanching, are treated with citric acid and ascorbic acid, depending on the type of product, after cutting.

Ascorbic acid raw materials are made by dipping or spraying in 0.5-0.7%, 0.4-0.5% solutions of citric acid.

After placing the product in the freezing chamber, it was launched in the following order:

When drying the skin of the pumpkin, organoleptic parameters (shape, size, taste, color and smell), shape and content of active vitamins were preserved;



**Figure 1.** Samples of raw materials prepared for drying

By drying pumpkin fruits by peeling and freezing, it was possible to reduce the drying period of products by 2-3 times;

The technology for the production of children's ingredients was created by peeling and freezing the pumpkin and making a powder from the dried product samples;

The technology of obtaining natural dyes and products with high nutritional value from powders prepared by the primary and secondary mass of pumpkin fruit was created;

The range of tourism and export products from products obtained by drying pumpkin fruit has been improved;

The technology for the production of nutritional additives for bread, confectionary and confectionery products was created with lyophilized powder flour and peel powder prepared by drying the primary mass and secondary skin of pumpkin fruits;

One of the main ways of processing pumpkin fruits in innovative ways is drying by convective and vacuum-sublimation methods. In these methods, drying occurs in 2 ways:

1. The amount of chemicals contained in the convective drying products is lost up to 30-35% as a result of the heat effect for 5-6 hours.

2. The vacuum-sublimation drying period is long, but the natural ingredients and chemical composition of the obtained product samples can be preserved at a high level. Before drying the products, the duration of the freezing process is 5-6 hours at -5-40°C for pumpkin fruit pieces. The drying period is carried out at a temperature of 35-40°C for 22-25 hours. It is possible to preserve the organoleptic indicators of product samples dried by the sublimation method up to 95-97%. Technological parameters of pumpkin drying are listed in Table 1 below.

**Table 1.** Methods and technological parameters of convective drying of pumpkin fruit

No	Product samples	Types of heating agent	Temperature, °C
1	Main fruit mass (separated from the peel)	Thermoradiative	85-100°C
2	Secondary mass (bark)	Thermoradiative	80-95°C
3	Pressed mass (mezga)	Thermoradiative	95-105°C
4	Seed	Thermoradiative	95-100°C

The technological parameters of convective drying of pumpkin fruit listed in Table 1 above were developed and improved.

Main fruit pulp (peeled), Secondary pulp (peel), Pressed pulp (pulp) and Seed were dried at 85-110°C for 4-6 hours, critical moisture content for packaging and storage of dried products is 8- 12%, the organoleptic parameters were maintained and recommended for consumption.

As a result of the research work carried out, an engineering solution is proposed that allows you to clean the pulp of watermelon, separate the seeds and completely replace manual labor in the process of obtaining a homogeneous mass. In addition, the use of this technology allows you to minimize the amount of waste and provides many opportunities to increase the productivity of the technology and automate the watermelon processing line.

The technological parameters of vacuum-sublimation drying were developed in Table 2, whose technological parameters are presented below.

**Table 2.** Methods and technological parameters of sublimation drying of primary and secondary raw materials of watermelon fruit

No	Product samples	Types of heating agent	Temperature, °C
1	Main fruit mass (separated from the peel)	Sublimation	40-45°C
2	Secondary mass (bark)	Sublimation	30-35°C
3	Pressed mass (mezga)	Sublimation	35-40°C
4	Seed	Sublimation	30-35°C

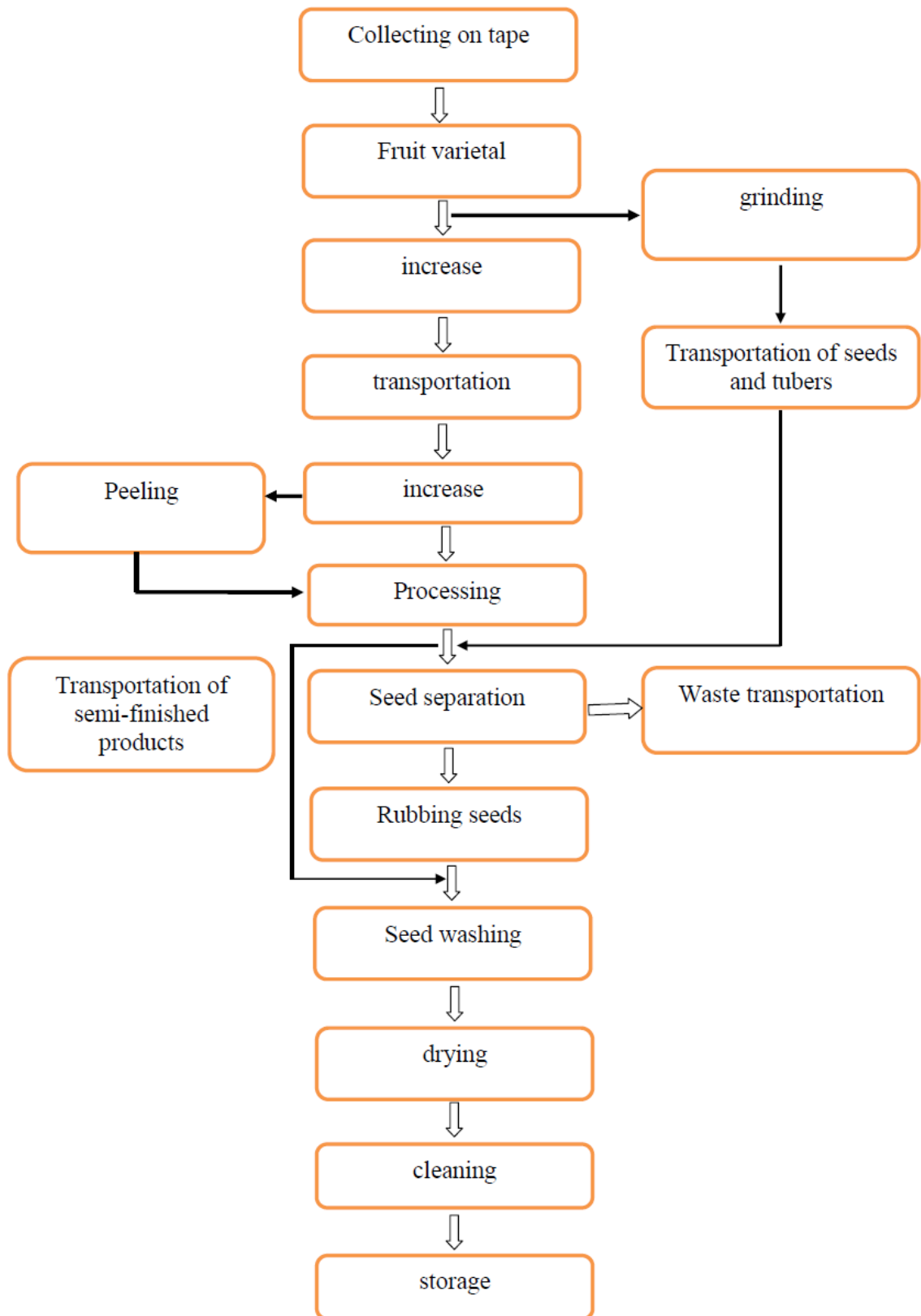


Figure 3. Complex processing of watermelon fruit

The technological parameters of sublimation drying of pumpkin fruit listed in Table 2 above were developed and improved. Main fruit pulp (peeled), Secondary pulp (peel), Pressed pulp (pulp) and seeds were dried for 15-20 hours at a temperature of 30-450C, the critical moisture content for packaging and storage of dried products is 5- 8%, the composition of products in this method differs from the traditional method 95-97% of organoleptic parameters were preserved.

Convective drying of pumpkin raw materials from Poliz products is an effective way to preserve pumpkin without waste and in good quality. The convective drying process produces its own mechanism based on drying the product by evaporating water through air movement.

**Conclusions.** In conclusion, it is worth saying that today, due to various diseases in the body, the people of the world are exposed to unconscious situations such as acquiring new diseases and illnesses or passive immunity during the use of various chemical drugs, during the prevention and treatment of those diseases. Drawing the correct conclusion from such cases requires less use of chemical preparations and wide use of natural medicinals in the treatment of diseases. Of course, most of these medicines are obtained from green plants. One such plant is the pumpkin plant and its fruit, the beneficial properties of which we have listed above. Because medicinal substances obtained from different parts of this plant are an effective tool in the treatment of many diseases encountered in the digestive, digestive, endocrine, blood circulation, and basic movement systems.

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