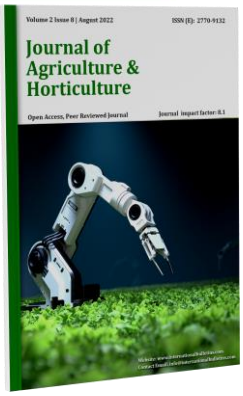

GROUNDING OF ACCEPTABLE TECHNOLOGY IN VEGETABLE PROCESSING. (IN THE CASE OF PEPPER)

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Annotation: This article is about justifying the optimal technology of drying pepper, which is widely used in food, medicine and cosmetics, and is considered the main raw material of the re-production industries of the above directions.

Keywords: PKS-20, KSA-80, KPS-20, KPS-10, convective drying, vacuum drying, drying rooms.

It is known that, according to the organization of the drying process, it is divided into two types, that is, artificial and natural. Artificial drying method is mainly used in the industry due to its high time efficiency. During drying, moisture is released in the form of steam or liquid. Raw materials put to drying change their original properties during and after heat treatment, and the nature and speed of

these changes depends on each of the components that make up the raw material (peel, pulp and seeds). will be different for The laws of changes in the properties of homogeneous capillary-porous materials during

wet-thermal processing have been extensively considered in the works of scientists P.A. Rebinder, A.V. Likov, A.S. Ginzburg and other authors.

This equipment in Figure 1 imported from China is named "Henan" after one of the cities of the country. This pepper drying equipment is similar to barrel dryers in terms of structure, but the principle of operation of the equipment is argued to be somewhat more efficient than this type of equipment.

Figure 1. Modern drying in the company "Brand Investment Group" pepper drying process in the equipment.

The drying temperature in the drying equipment is 50-600C. In the dryer, hot air is provided through the gas, and the rotation speed of the product is 10 revolutions per second. The efficiency of the dryer is 500 kg per hour. The main feature is the full provision of export products. In this dryer, the product is dried as a whole.

However, special vegetable mills are used to grind the dried product to obtain spices in the form of powder. The pepper is put into the mill after being dried and divided into small pieces of 2x2 cm.

The moisture content of dried pepper is higher than the norm, and the moisture content decreases during the production process. In particular, when it is delivered to packaging by belt conveyors.

Continuous tape lines such as PKS-20, KSA-80, KPS-20, KPS-10 are used in the drying industry.

Currently, hot air convective drying is one of the most popular and economically effective methods for agro-food products. However, prolonged exposure to high air temperatures can cause significant degradation of product quality, such as discoloration, heat-sensitive nutrients, and reduced antioxidant and

rehydration capabilities. Vega-Gálvez et al. found that long-term exposure to high air temperatures caused a significant deterioration in the quality of red peppers, such as a decrease in antioxidant capacity and rehydration capacity, loss of nutrients and color, and severe shrinkage. Scala and Crapiste reported that hot air drying resulted in a high loss of carotenoids and vitamin C of 82–88%. Similar results were observed during hot air drying of red pepper by Ramesh et al.

Drying of peppers using special dryers is widespread mainly in Central Asian countries.

In this field, production works are being organized in all regions of Uzbekistan. Even in some regions, information about the income from dried pepper is recorded in the information sources. In particular, information was provided about the "Brand Investment Group" group. BIG AGRO LEGUMES, operating in Mirishkor district of Kashkadarya region, is one of such subsidiaries that dried pepper using special dryers and expanded its production network.

Pepper is divided into two according to the method of artificial drying. Pepper can be dried in industrial drying rooms or in special drying machines.

The drying system of hair dryer rooms is based on the principle of operation of hot air dryers. The size of the hair dryers is designed depending on the heating power of the hair dryers. Peppers to be dried in drying rooms are first sorted, then put on trays with a thickness of 3-4 cm and placed in drying rooms one on top of the other and side by side. After drying, the trays are drained and begin to shake. First, the room temperature is heated at 50-600 C, after 2-2.5 hours the temperature is brought to 800C. Drying is carried out in this environment, after 8-10 hours, the hair dryers are turned off, the room is brought to normal room temperature, and the dried peppers are collected.

It is removed from the dryer together with the dryer trays and sent to the quality control of the canned product. The volume of dried pepper is 30 percent less than its mass before drying.

Conclusion and suggestions: Artificial drying of fruits and vegetables is a very complex technological process. In particular, we will analyze the process results of drying in three different ways using the observation-analysis method below, in order to justify the optimal technology of pepper drying and develop the methodology.

The following conclusions were reached after analyzing relevant studies on the process and product type:

1. PVD-dried red pepper provided higher physico-chemical properties compared to samples dried by HAD and IR-HAD;

2. Current findings indicate that PVD drying has the potential to produce high-quality dried red pepper on a commercial scale;

3. The drying time of red pepper is the shortest for IR-HAD, followed by HAD, and PVD has the longest time at the same drying temperature;

4. In the case of IR-HAD drying, infrared energy can enter the limited depth of the product and turn into heat; therefore, water permeability is improved for IR-HAD compared to hot air drying;

5. The drying time of red pepper with PVD is the longest, but the quality of the product content is excellent compared to them;

6. Vacuum drying can be called the most effective only if the cost of the product corresponds to the cost of its production. The price of the pepper product we selected covers the cost of this drying technology in terms of profit.

Although it shows a low rate of vacuum drying, the quality of its product is excellent.

References:

1.Qishloq xo'jaligida islohotlarni chuqurlashtirishga doir va me'yoriy hujjatlar to'plami. 1– 2 qism. Toshkent 1998 y.

2-Karimov I. A. «Dehqonchilik taraqqiyoti to'kin hayot manbai». Toshkent «O'zbekiston» 1994 y.

3-Bo'riev X. Ch, Jo'raev R. J, Alimov O. A. «Meva–sabzavotlarni saqlash va ularga dastlabki ishlov berish». Toshkent.«Mehnat», 2002 y.

4-Balashev N. N, Zyamen G. O. «Sabzavotchilik».
Toshkent «O'qituvchi» 1977

5-Adhamov A., Ungarov A., Jo'lbekov I. PROSPECTS OF USE OF INNOVATIVE TECHNOLOGIES IN AGRICULTURAL SECTOR DEVELOPMENT //Journal of Agriculture & Horticulture. – 2023. – T. 3. – №. 4. – C. 13-15.

6-Ungarov A. INNOVATIVE METHODS OF FRUIT AND VEGETABLE PROCESSING //International Conference On Higher Education Teaching. – 2023. – T. 1. – №. 2. – C. 107-109.

7-Ungarov A., Ergashov A. QISHLOQ XO 'JALIGI MAHSULOTLARINI QURITISH DAVRIDA ENERGIYA TEJAMKOR TEXNOLOGIYALAR YORDAMIDA QURITGICHLARNING ISH UNUMDORLIGINI OSHIRISH //Eurasian Journal of Medical and Natural Sciences. – 2023. – T. 3. – №. 1. – C. 24-27.

8-Рахматов О. и др. Разработка трёхвалкового аппарата для пластификации вяленой дыни //Наука, техника и образование. – 2019. – №. 9 (62). – С. 41-43.

9-Ungarov A., Sirojiddinov A. AGRAR SOHANI RIVOJLANTIRISHDA RESURSLARDAN SAMARALI FOYDALANISH VA INNOVATSION TEXNOLOGIYALAR ISTIQBOLLARI //Eurasian Journal of Academic Research. – 2023. – T. 3. – №. 1 Part 3. – C. 16-18.

10-www.ski.ilm.uz

11-www.hamai.edu

12-www.ecfak.timacad.ru

13-www.fdmin.ru