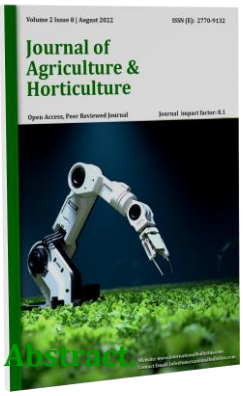


# IMPROVEMENT OF SOLAR FRUIT DRYERS

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Abstract: Today, the fundamental development of the food industry and the demand of consumers and the labor market require the introduction of innovative technologies. This article is intended to put into practice new methods of drying fruits and vegetables with the effective use of modern technologies.

Key words: solar dryer, air temperature and humidity, heating, realization.

Dried fruits and vegetables are always in great demand among the population. Dried fruits are usually bought in large quantities by food industry enterprises, schools, kindergartens, canteens, cafes and other food establishments. Drying vegetables and fruits is a cheap and very difficult way to preserve them. Such canned dried fruits are perfectly stored, do not need cool rooms and do not take up much space. The importance of drying fruits and vegetables is very high.

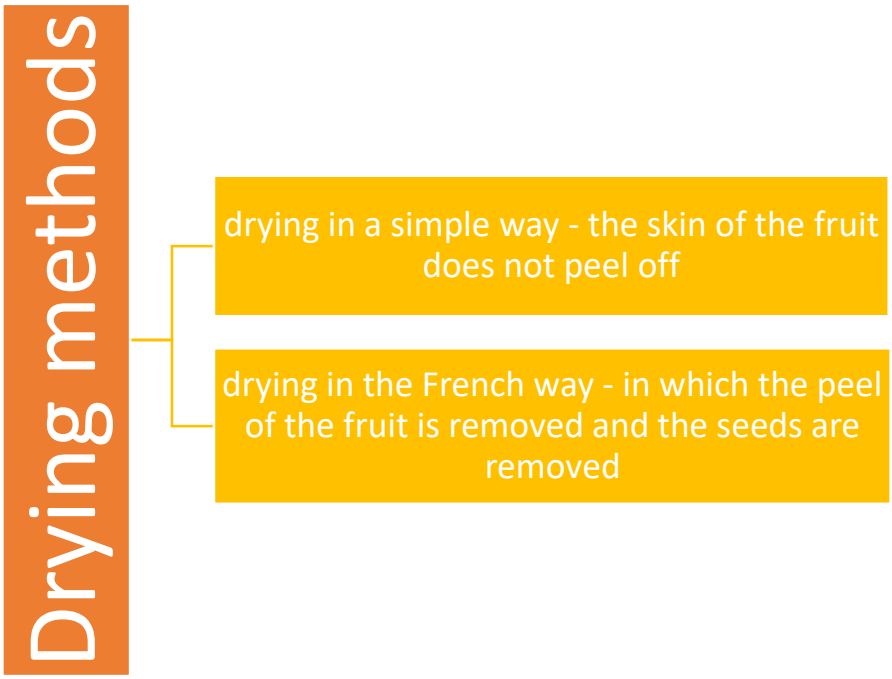
1) Firstly, with the organization of high-quality drying of fruits and vegetables, it is possible to increase the production profitability of farms specializing in horticulture and vegetable growing, increase their competitiveness and further economic development. Because organizing the drying of fruits and vegetables is one of the most inexpensive, simple and popular directions in the field of processing agricultural products.

2) Secondly, dried fruits and vegetables are sold at much higher prices both in the domestic market and in export compared to their fresh form.

3) Thirdly, by drying fruits and vegetables, there is an opportunity to increase their shelf life and fully satisfy the population's demand for these products in the off-season.

4) Fourthly, in our country, many fruits fall and die during the summer (for example, apricots, plums, etc.). The organization of drying allows to prevent these products from spilling and perishing due to rapid drying. Apparently, drying fruits and vegetables is a promising direction for farms. Research shows that the process of drying agricultural products requires energy. For example, in convective grain dryers, the power consumption of air heating with electricity is from 1.3 to 1.9 kWh per kilogram of moisture, from 1.4 to 2.2 kWh for thermo-radiation, from 1.8 to 3 at high frequency, Up to 5 kWh of energy is consumed [1]. With the improvement of the design of thermonuclear dryers, in which direct radiation is reflected together with infrared rays, the moisture removed according to the consumption of electricity per kilogram [1] is 0.9 to 1.3 kW/ Energy capacity varies depending on the type of raw material being dried up to s. Studies show that the energy density and drying technology of agricultural vegetables and fruits are significantly different from the energy consumption of grain drying. If for grain drying it is necessary to reduce its humidity from 30% to 15% on average, i.e. 2 times, for drying vegetables and fruits this indicator should be reduced from 85% to 15% on average i.e. That's 5.66 times. In the Bukhara region, where the flow of solar

radiation reaches 1000 - 1100 W s/m2 and the duration of sunny days during the harvesting of vegetables and fruits is the greatest (720 hours in June and July, 480 hours in August, 420 hours in September and 360 in October clocks out on average), it's a waste not to use that energy.




Tests were conducted in laboratory field conditions under production conditions. Laboratory experiments on drying of apples and pears in production under natural conditions show that within 30 hours, apples are dried to 15% moisture, pears to 27%, and control samples. Measurement of air parameters in the dryer, determination of the humidity of the incoming and outgoing air according to a certain method was carried out in the latest recorder using the programmable device "air temperature and humidity recorder". The analysis of the obtained data shows that in the heating dryer, air from solar energy in autumn, it reaches 46°C and higher in open sunny weather, with a capacity of 1300 m3 /h. When heated by a heating element with a capacity of 2 kW, this parameter reaches 28°C in cloudy weather. laboratory experiments have shown that air, drying apples and pears have uneven temperatures during

the drying process, which means that each dryer has a separate air supply required to provide, as well as to improve the design of the dryer by changing the air supply scheme, or to cover the same channels of air with better thermal insulation.

Conclusion: In conclusion, it should be noted that it would be useful to use solar fruit dryers and other drying methods to provide the population with quality and affordable fruits and vegetables. The above experiences and examples are clear examples of this. Recently, such technologies have been developed and put into use in Uzbekistan, which helps to keep the demand for fruits and vegetables in a normal state in the domestic and foreign markets.

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