



SEED STORAGE METHODS

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Annotatsiya

Aholini yil davomida turli xil mevalar bilan ta'minlash bugungi kunning dolzarb muammolaridan biri hisoblanadi. Urug'li mevalardan olma, behi va nok mevalarni saqlash tartibi va usullarini o'rganishni o'z oldimizga maqsad qilib oldik. Bu mevalarni olti oygacha sifatli saqlash tartibini o'rgandik.

Kalit so'zlar. Olma, behi, nok, saqlash tartibi, harorat, nisbiy namlik, qadoqlash materiallari, urug'li mevalar, bog'dorchilik, rivojlanish, muammo, qishloq xo'jaligi.

Annotatsiya

Обеспечение населения разнообразными фруктами в течение всего года является одним из наиболее актуальных вопросов на сегодняшний день. Мы поставили перед собой целью изучить порядок и способы хранения яблок, айвы и груш из семян плодов. Нами изучен порядок качественного хранения этих плодов до полугода.

Ключевые слова. Яблоки, айва, груши, режим хранения, температура, относительная влажность, упаковочные материалы, семена, садоводство, развитие, проблема, сельское хозяйство.

Annotation

Providing the population with a variety of fruits throughout the year is one of the most pressing issues today. We set ourselves the goal of learning the procedure and





methods of storing apples, quinces and pears from seeded fruits. We studied the order of quality storage of these fruits for up to six months.

Keywords. Apples, quinces, pears, storage mode, temperature, relative humidity, packaging materials, seeds, horticulture, development, problem, agriculture.

Introduction

No. PP-4246 of March 20, 2019 of the President of the Republic of Uzbekistan "On measures to further develop horticulture and greenhouses in the Republic of Uzbekistan" and No. PP-4575 of January 28, 2020 "O Resolutions "On measures to implement the tasks set out in the Strategy of Agricultural Development of the Republic of Uzbekistan for 2020-2030" specify the tasks for the establishment of new orchards and the reconstruction of old ones.

In order to ensure the implementation of these decisions, in the republic to pay more attention to species of fruits with unique signs and characteristics of endangered agricultural crops, including quince, which has long been of medicinal value, and to quince varieties that are now in danger of extinction. The propagation of seedlings is also required to create quince mother gardens.

Southern apple varieties die when the temperature is below $-32-35^{\circ}\text{S}$, and some (Renet Simirenko variety) die at -21°S . Most varieties of apples do not require high temperatures during the growing season to grow and bear fruit. In extreme heat, the fruits of some varieties burn in the sun, they ripen faster, shed and become deficient. Summer varieties of apples are less susceptible to frost than winter varieties.

Pears in Uzbekistan grow poorly and produce low yields due to hot weather. Central Asian pears are well tolerated in summer heat and dry air, they can withstand winter temperatures down to $-30-32^{\circ}\text{C}$. Pears of Western European origin are less resistant to frost, they are damaged at $-26-28^{\circ}\text{C}$.

Quince is more heat-intensive than apples and pears and can withstand temperatures down to -27°C . Because it blooms later, it is less damaged by spring frosts.

Quince is mainly a canned fruit. However, many quince varieties grown in Uzbekistan are also eaten as desserts.

Although quince fruit is eaten fresh, it is often processed (jam, compote, jam, candied fruit, marmalade, quince syrup, etc.).

Quince is more resistant to heat, drought and low temperatures than apple and pear trees. It is grown mainly on Aromatnaya, Samarkandskaya krupnoplodnaya, Izobilnaya, Sovkhoznaya varieties. The quince grown in Uzbekistan has a lifespan of 50-60 years, while the abundant harvest lasts 35-40 years.





Like all fruit products, pears are of great importance for the human body. It contains arbutin, pectin, folic acid, beta-carotene, vitamins A, V1, V2, V5, V6, V9, S, ye, vitamins K, N and RR, as well as minerals necessary for the human body - potassium, calcium, zinc, copper, and manganese, iron, iodine, sulfur, fluorine, phosphorus, and sodium. It is also rich in protein, fat and carbohydrates, and 100 g of fruit contains 42 kcal.

The storage resistance of pears is determined by its ripening properties. Medium-ripe varieties of pears can be stored for a short time, and evening varieties can be stored for 7-8 months. Pears are usually placed in boxes for storage. In this case, the pears are better preserved if wrapped in paper. When pears are placed in boxes, they can be filled with paper or shavings.

The temperature should be between 0 and + 2 ° C when storing pears. At this temperature, fruits harvested from late-ripening varieties often ripen very slowly and remain firm until the end of their shelf life. Such pears should be stored and grown at 15-20 ° C for 4-7 days before shipment.

The relative humidity in the warehouse should be 85-90%. It should be noted that the temperature in the warehouse should not be changed frequently, otherwise the fruit may ripen quickly, and such pears can not be stored for a long time.

The best conditions for storing quince for 4-5 months are air temperature 5-6 oC and relative humidity 80-85%, but their quality should be constantly monitored.

Of course, it is difficult to achieve such conditions in ordinary basements, in which case it is necessary to strive for the above conditions, that is, to ventilate the air, sprinkle water, smoke sulfur and monitor the quality of the fruit.

The stored product is inspected once or twice and the warehouse is smoked with sulfur. To do this, firewood is burned in the pot outside, when the coal is formed, the containers are brought to the warehouse (every 3-4 m) and sulfur is thrown on the coal. Sulfur is added to 100-150 g per 1 m³.

The best conditions for fruit storage is to keep the air temperature and relative humidity at a clearly defined level at all times. When fruits are stored for a long time, their best qualities are achieved at temperatures close to 4-7 oS. The most important conditions for good preservation of quince fruits are timely and correct picking and processing (sorting, sorting by size, packaging).

Apples contain up to 15% of sugar (glucose, fructose, sucrose), organic acids (malic, citric acid), pectin, trace elements such as iron, potassium, matganets, copper, cobalt, vitamins C, B1, B2, PP, provitamin A have Apples are also known to contain phosphoric acid.





Apples kill a number of germs, regulate blood circulation, relieve brain fatigue, eliminate anxiety.

Lowers blood cholesterol levels due to the pectin and related fibers in apples. One unpeeled apple contains 3.5 grams of fiber, which is more than 10% of the amount of fiber needed by the body per day. Peeled apples contain 2.7 grams of fiber. Insoluble molecules of fiber stick to cholesterol and help them to leave the body, thereby reducing the risk of heart blockage and blockage of blood vessels. Apples also contain soluble fiber called pectins, which bind and help remove excess cholesterol from the liver.

Apple peel contains a large amount of the antioxidant quercetin, which, along with vitamin C, prevents the harmful effects of free radicals on the body. Pectin is also a substance that gives apples their main protective power. It binds and removes harmful substances such as lead and arsenic from the body. The insoluble fiber in apples prevents constipation, which in turn prevents the development of colon cancer.

Researchers have found that eating two apples a day can lower cholesterol by 16%. The same apple with a small or medium onion and 4 cups of green tea reduces the risk of heart attack by 32%.

Picking and Storing Pears

Harvesting time depends on the type and variety of the fruit, the demand for the product and the purpose for which it is used.

The ripening period of pear varieties lasts from late July to early October. Usually, early ripening pears are stored for a short time, they are harvested in one harvest.

Harvesting is carried out several times in the middle and evening varieties. Each variety has its own color and texture during ripening. This should be taken into account when harvesting.

Summer and autumn varieties, which are sent to distant places, are harvested when they are very ripe (technically mature). Fruits that are intended for drying, processing and freshness are suitable for consumption and are harvested during the ripening period, ie when the taste and color of the fruit are specific to the variety. Summer varieties of pears intended for long-distance transportation are harvested 5-7 days before full ripening, autumn varieties 10-15 days, and winter varieties 5-10 September before the weather, depending on the weather.

A three-legged ladder 2.5-3 m high and a ladder 6-10 m high are used for fruit picking. Long baskets with a capacity of 8-10 kg of fruit are very convenient for harvesting. These baskets are filled with bags or thick paper. Fruits can also be picked in tin





buckets, but need to be cut into pieces or grass. Each picker should have 4-5 baskets with hooks. A special fruit picker is used to pick the fruit at the ends of the branches. The harvested fruits are transported to the place of sorting by trucks and trailers. When picking evening pears that ripen in October, harvesters are required to be familiar with the rules of harvesting. First, the fruit that falls to the ground is picked, and then the fruit on the tree is cut off. The harvested fruits are sorted, cut into large and small pieces and placed in boxes. Cracked, damaged fruits are quickly sent for sale or processing. Healthy, selected fruits are removed for long-term storage.

Fruits harvested for storage are sorted according to their degree of maturity, sorted by size and placed in boxes. The boxes are stacked on top of each other, leaving a distance of 50-60 cm to the roof of the warehouse.

There is a 10 cm gap between the rows of boxes for air flow and a 60-80 cm corridor for walking. Fruits can also be stored at home. For storage of pears in the warehouse without containers, along the walls are installed bars of different widths, height 10-15 cm. A distance of at least 70-80 cm should be left between parallel planks made of wood or plywood.

The storage resistance of pears is determined by its ripening properties. Medium-ripe varieties of pears can be stored for a short time, and evening varieties can be stored for 7-8 months. Pears are usually placed in boxes for storage. In this case, the pears are better preserved if wrapped in paper. When pears are placed in boxes, they can be filled with paper or shavings.

The temperature should be between 0 and + 2 ° C when storing pears. At this temperature, fruits harvested from late-ripening varieties often ripen very slowly and remain firm until the end of their shelf life. Such pears should be stored and grown at 15-20 ° C for 4-7 days before shipment.

The relative humidity in the warehouse should be 85-90%. It should be noted that the temperature in the warehouse should not be changed frequently, otherwise the fruit may ripen quickly, and such pears can not be stored for a long time.

Picking and storing apples. Harvesting time depends on the type and variety of the fruit, the demand for the product and the purpose for which it is used. The ripening period of apple varieties begins in late May and lasts until early October. Usually, early apples are stored for a short time, they are harvested in one harvest. Harvesting is carried out several times in the middle and evening varieties. Each variety has its own color and texture when ripe. This should be taken into account when harvesting.

Summer and autumn varieties, which are sent to distant places, are harvested before they are very ripe (technically mature). Fruits intended for drying, processing and freshness are suitable for consumption during the ripening period, ie when the taste





and color of the fruit are specific to the variety. collected. Summer varieties of apples intended for long-distance transportation are harvested 5-7 days before full ripening, autumn varieties 10-15 days, and winter varieties 5-10 September before the weather. Three-legged ladders with a height of 2.5-3 m and ladders with a height of 6-10 m are used for fruit picking. Long baskets with a capacity of 8-10 kg of fruit are very convenient for harvesting. These baskets are filled with bags or thick paper. Fruits can also be picked in tin buckets, but need to be cut into pieces or grass. Each picker should have 4-5 baskets with hooks. A special fruit picker is used to pick the fruit at the ends of the branches. Harvested fruits are transported to the place of sorting by trucks and trailers.

Usually, early apples are stored for a short time, they are harvested in one harvest. Medium and late varieties are harvested several times. Each apple variety has its own color and shade during ripening. This should be taken into account when harvesting. When harvesting, the fruit is gently held with one hand and cut with the thumb and forefinger without damaging the fruit band.

Storage resistance of apples is determined by their ripening properties. Early ripening varieties of apples can be stored for a short time, and late varieties can be stored for 7-8 months. Apples are usually placed in boxes for storage. In this case, the apple is better preserved when wrapped in paper. When apples are placed in boxes, they can be filled with paper or shavings.

Boxes are placed in the warehouse 25-30 cm from the wall, with a two-meter gap between the boxes. There are 7-8 boxes in a box. There should be 50-60 centimeters between the top box and the warehouse ceiling. When storing apples, the relative humidity should be 85-95%. Cooling of the warehouse is achieved by rapid stirring until the air reaches the storage temperature. It is recommended that the air flow speed between the cages is 0.2-0.3 meters per second.

Before storing apples, they are stored in special compartments. Every day, 10-15% of the capacity of the fruit warehouse is filled with apples. The department will be fully filled in 7-10 days. The air in the compartments is gradually cooled to + 4 + 6 oC. It is then left at the temperature required for the variety. High and first grade apples are stored for a long time, second and third grade apples for 2-3 months. They are stored in boxes, cardboard boxes and containers. Storage of fruits in containers ensures efficient use of each cubic meter of useful volume of the warehouse. At the same time, when the fruit is stored in boxes with a useful volume of 1 m³, its density is 250-300 kg, in containers - 400 kg.





Apples are also stored in plastic wrap. It uses polyethylene bags with a capacity of 1-3 kg. Within 1.5-2 months, the amount of oxygen in such bags reaches 14-16%, and carbon dioxide - 5-7%.

Collection and Storage of Quince Fruit

Quince harvest begins to ripen mainly in September. For consumption, depending on the navigation, it is ripened during storage after disconnection. Harvest is usually held from the second half of October to November. The duration of harvesting depends on the color of the main fruit and the change in the flesh of the fruit. During the dry period of the fruit is carefully cut during the dry season, because the fruit rots early if slightly hit or crushed. Depending on the appearance of the fruit and the characteristics of the variety, the order of picking the fruit is determined.

The harvested fruits are carefully placed in 25-30 kg boxes lined with paper and gently removed from the field. There should be no sharp or rough movements during loading and unloading, as quince fruits are crushed and the shelf life is shortened. For sorting, storage, sale it is necessary to cut a variety of fruits. In sorting, the fruits are divided into separate groups, taking into account the size, color and purity of the fruit.

Fruits intended for transportation and storage in cold rooms are placed in 35 kg boxes or containers and delivered to warehouses for storage.

Proper storage of quince products eliminates the seasonality in the supply of fresh fruit to the population, and the death rate is reduced when they are stored for a long time.

Fruit products are stored in cellars, warehouses or warehouses and refrigerators, which can store from several tens to hundreds of tons of fruit, built on special projects. The best conditions for fruit storage is to keep the air temperature and relative humidity at a clearly defined level at all times. When fruits are stored for a long time, their best qualities are achieved at temperatures close to 4-7 °C.

The most important conditions for good preservation of quince fruits are timely and correct picking and processing (sorting, sorting by size, packaging).

When the fruits ripen, they should be carefully cut in dry weather, because if the fruit is slightly hit or crushed, it will be micro-biologically damaged and begin to rot early. Fruits harvested for storage are divided into varieties according to the degree of maturity, and they are sorted by size, rotten, damaged, then placed in boxes, stacked on top of each other, leaving a distance of 50-60 cm to the roof of the warehouse. There is a 10 cm gap between the individual rows of boxes for air flow and a 60-70 cm gap for walking.





The best conditions for storing quince for 4-5 months are air temperature 5-6 °C and relative humidity 80-85%, but their quality should be constantly monitored.

Of course, it is difficult to achieve such conditions in ordinary basements, in which case it is necessary to strive for the above conditions, that is, to ventilate the air, sprinkle water, smoke sulfur and monitor the quality of the fruit.

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