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NATURAL WEIGHT LOSS BY SAVING CARROTS

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Abstract
This article presents the origin, history, distribution, biological and useful properties of carrots. The article provides information on the influence of ripening time, storage methods and regimes, and fertilization rates on the natural weight loss of carrots during storage.

Keywords: Carrot, chemical composition, vitamin, storage temperature, rest period, Shantane variety, Red Mirzoi variety, Yellow Mirzoi variety, polyethylene bags, trench, mineral fertilizers, weight loss.

Introduction

Carrots are a plant in the umbelliferae family. Carrots grow wild in Europe, Asia, North Africa, as well as in the Americas and Australia. The yellow and white varieties of carrots are native to Afghanistan, while the orange varieties are native to the Mediterranean region.

Carrots are mainly biennial plants, producing tubers in the first year and tubers in the second year, and seeds in the second year. The plant has a long leaf sheath, 2-3 hairy, bisexual flowers, a complex umbel of tubers, pollinated by insects. The seeds are small, oval, and pointed, weighing 1000 seeds, about 1 g. 400-500 quintals of carrots are obtained from one hectare of land. In agricultural farms, a harvest of more than 1000 quintals can be obtained.

In the climatic conditions of Uzbekistan, it is recommended to plant early-maturing carrot varieties (requiring 90-110 days from seed germination to root and technical maturity): Mushak-195 and Nurli-70; medium-maturing (110-120 days): Mirzoi Sarig-304, Nantskaya-4 and Shantene-2461; mid-maturing (120-130 days): Mirzoi Kizil-228 and Ziynatli. They noted that it would be advisable to plant the Nantskaya-4 variety during the "Toqsonbosti" period.

Carrot root is characterized by its multivitamin content, it contains vitamins C, B1, B2, PP, carotene, as well as phytoene, phytofluene and lycopene. It contains mineral salts such as potassium, sodium, calcium, magnesium, iron, phosphorus, iodine.

Carrot seeds contain 1.5% essential oils, which include pinene, 1-limonene, cineole, geranyl acetate, carotol, laucol, azorone, flavone compounds, fat (up to 13%), and daucosterol.

In folk medicine, carrot roots are used to treat a number of diseases. In particular, carrots are considered a diuretic, a laxative, a remedy for bladder stones and sand, a useful agent for chronic coughs and colds, and are useful for chest and liver diseases. Carrot seeds are used as an anthelmintic in powder form or as a tincture. Carrots can also be used for burns, frostbite, and for purulent wounds and injuries that are difficult to heal.

Carrots contain a large amount of various vitamins (especially A). Therefore, carrots are widely consumed both raw and processed. Proper storage of carrots ensures the demand for this product all year round.

Table 1 Chemical composition of root vegetables (%)

Crop		Nitrogenous substances	Kletchatka	Ash	Water
Red eets	10,02-11,49	1,27-1,35	0,71-1,02	0,85-1,04	81,69-83,97
Carrot	6,04-8,05	1,13-1,18	0,81-1,27	0,94-1,21	84,24-87,22
SHolgam	2,58	1,75	1,24	0,75	90,17
Radish, Turnip	1,58	1,92	1,55	1,07	86,92
Radish	0,85	1,23	0,75	0,74	93,34

Since carrots are a biennial plant, the main feature of their storage is related to the dormancy period. The dormancy period of carrots is not as long as that of other vegetables. It is a product that is quite demanding on external environmental conditions when stored indoors. Unfavorable storage temperatures lead to rapid spoilage of carrots.

The storage life of carrots often depends on the time of harvesting. They are dug up after they have fully ripened within a certain period. Late carrots are dug up in the autumn months when the weather is dry. The soil should be soft.

The last watering is important for the storage of carrots. Usually, it is better to carry out the last watering 5-7 days before digging up late carrots, and 3-5 days before digging up early carrots. Carrots dug up late cannot be stored for a long time. Early carrots should be dug up in late May or early June, medium carrots in late August or early September, and late carrots in early November.

Root vegetables quickly lose moisture and become resistant to microorganisms. To prevent carrots from losing too much moisture and wilting, it is best to store them in conditions with an air humidity of 90-95%. The air temperature should be 0-1 ° C. If the temperature is lower than this, the product will freeze and, as a result, lose its marketable properties.

Table 2 Natural weight loss of carrots during storage, %

Months	Natural decrease rates	Storage methods		in artificially cooled warehouses (containers)
		In the warehouse	in the ditch	
September	2,5	--	--	-
October	2,3	2,1	0,7	-
November	1,3	1,4	0,5	1,5
December	0,8	1,2	0,6	0,8
January	0,8	1,7	0,8	0,6
February	1,3	2,0	0,8	0,7
March	1,7	--	1,7	1,3
April	2,3	--	--	1,6
May	2,5	--	--	1,8

The storage stability of carrots also depends on their varietal characteristics. The Shantane carrot variety is more storage-resistant, while the Red Mirzoi variety is more storage-resistant than the Yellow Mirzoi variety.

Carrots can also be stored in plastic bags. The concentration of carbon dioxide should not exceed 3-5%. Otherwise, the chemical composition of the product will change, and as a result, the product will become unusable.

It is not allowed to store carrots intended for seed at a temperature below 0.5°C. At low temperatures, the stratification of carrot shoots stops. Storing seed carrots at a temperature of 0.5-1.5°C ensures their high-quality storage.

Table 3 Effect of nitrogen fertilizers on the storage life of carrots (when stored in polyethylene bags under refrigeration, data from A. Rasulov)

Amount of fertilizer, kg			Natural decrease, %	Contamination by mikroorganisms, %	Total decrease, %
N	R	K			
100	100	50	0,6	0,7	1,3
150	100	50	0,9	0,7	1,6
200	100	50	2,3	1,2	3,5

The leaves of carrots to be stored are cut off with a knife around the base of the root on the day they are dug up, because if they are left with the leaves on, they will lose water, wilt, and will not store well later. The carrots that have been stripped of leaves are sorted by size, and at the same time, carrots that are not suitable for winter storage, i.e., unripe, cracked, or damaged, are separated.

When digging, sorting, and transporting the crop, it is important to try not to damage or bruise it, otherwise it will not store well. Carrots are less likely to be damaged if they are brought to storage in boxes.

In Uzbekistan, carrots are stored in various ways. However, storage in a smaller trench is widespread. The dimensions of the trenches should be 40-45 cm wide, 60-70 cm deep, and 2.5 -3.0 m long. Carrots are buried in sand in the trenches. Then they are covered with reeds, and soil is poured over the reeds. Hilly areas with deep groundwater are chosen for digging trenches. Typically, in the northern regions of Uzbekistan, the slope of the trench should be made towards the sun, and in the southern regions - towards the north. Carrots can also be stored in artificially cooled warehouses. In this case, containers with a product capacity of 30-50 kg or polyethylene bags are used. Carrots can be stored refrigerated for a long time (more than 200 days). Storing them in containers allows for mechanization of loading and unloading operations. The method of storing carrots in polyethylene bags is considered a promising method. As a result of the product's respiration, high humidity conditions (90-95%) are created inside the bag and the required amount of carbon dioxide (3-5%) is accumulated. When stored

in polyethylene bags, rotting of the product, weight loss, and loss of sugar and vitamins are significantly reduced.

The shelf life of carrots is often determined by the amount of natural weight loss during storage. The natural weight loss of the product during storage depends on the method of storage. Mineral fertilizers have a significant effect on the storage stability of carrots. According to A. Rasulov, it was observed that the dry matter content of carrots grown on land with 200 kg of nitrogen, 100 kg of phosphorus and 50 kg of potassium per hectare decreased by 0.7% (compared to the control) and the total sugar content by 0.4%. At the same time, the natural loss and waste of the product during storage increases.

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