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Changes in yield and quality of melon dried fruit grown using different types of fertilization

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Abstract: According to the data, more than 30-35% of the fruit and vegetable crops are dying due to various reasons. The main causes of wastage are high weather temperature during the harvesting period, not picking the product at the right time according to the degree of ripeness, and not conducting the post-harvest activities properly, etc

Key words:

Introduction

According to the data, more than 30-35% of the fruit and vegetable crops are dying due to various reasons. The main causes of wastage are high weather temperature during the harvesting period, not picking the product at the right time according to the degree of ripeness, and not conducting the post-harvest activities properly, etc. More than 65-70% of fruits and vegetables sold in the world market are products stored in permanent warehouses. In permanent warehouses, the storage of products is mainly transferred to cooling chambers, and the technological regime is carried out on the basis of control (1,2,3,4).

The convenience of the natural conditions of our republic allows vegetables to be ventilated and dried in the sun. The purpose of drying vegetables is to remove their moisture and prevent the development of microorganisms and various biological processes.

Research methodology

10 pieces (50-100 kilograms) of melon fruit samples were taken from each variety and fertilizer option to determine the pulp yield in different drying methods. Experiments were conducted at RedPak LLC, a private enterprise for the processing and storage of melons products, located in the Mirzaabad district of the Syrdarya region.

For drying melons in the sun, using the helio method, a platform, table, knife, tray, board, stainless metal or plastic mesh racks were used. The drying area has an open environment, with good sunlight and away from busy roads. Melon drying was carried out in specially equipped kilns. To prepare ripe melons for drying, they were first washed and dried. Then each fruit was cut into two equal pieces with a knife. The core (seed and placenta) inside was cleaned and weighed. Each half of the fruit was again divided into two to four parts, then each piece was cut (sliced) evenly into pieces (slices) 12-15 cm long and 2-3 cm thick, and peeled. After that, the finished pieces of melon flesh are placed flat on the stainless metal or plastic mesh trays, placed in no more than 10 layers on the souris or on the belt conveyor of the drying chambers, and the drying process

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begins. Drying lasted for 7-12 days, and the dried weight was determined. The flesh of the melon placed in the dried fruit was covered with a black film or gauze. This kept it clean from dust and insects, and the natural color of the bark was preserved.

The drying process in artificial chambers required continuous control of temperature and humidity. The source of heat can be electricity or natural gas. Air humidity was carried out in the chamber by forced ventilation (ventilation). The readiness of the product was determined organoleptically. Ready melon slices were identified by their light yellow color, well-dried flesh with a non-sticky layer and a soft consistency.

Research results

Under the conditions of different fertilizers, when the "Kokcha - 588" and "Oq urug - 1157" varieties of melon are grown in the conditions of organic fertilizer (30 t/ha of manure), the flesh of the fruit is 82.4 - 82.6%, the pulp is 12.8 - 13.0%, seed-placental 4.8 – 4.4% under conditions of mineral fertilizers ($N_{150}P_{150}K_{60}$ kg/ha), respectively 82.2 – 82.4; 12.8 – 12.9; It was 5.0 - 4.7%, and it showed an increase in fruit pulp and pods by 0.2%, seed-placenta by 0.2 - 0.4% compared to the conditions of organic fertilizer (30 t/ha of manure).

Melon varieties studied with the highest meat yield (83.6 – 83.4%), pod share (12.7 – 13.1%) and seed-placental weight (3.7 – 3.5%) were treated with organomineral fertilizers (30 t /ha manure+ $N_{150}P_{150}K_{60}$ kg/ha) was obtained when grown under conditions (Table 1)

Table 1
Weight of pod, seed-placenta and flesh in fruit when melon cultivars are grown under different fertilizer conditions (2022)

№	Varieties name	Weight of fruit parts,%		
		meat	pod	seed - placenta (core)
Mineral fertilizer – $N_{150}P_{150}K_{60}$ kg/ha background (control)				
1.	Kokcha - 588	82,4	12,8	4,8
2.	Oq urug - 1157	82,6	13,0	4,4
Organic fertilizer - 30 t/ha on the background of semi-rotted manure				
3.	Kokcha - 588	82,2	12,8	5,0
4.	Oq urug - 1157	82,4	12,8	4,8
Organomineral fertilizer - 30t/ha manure + $N_{150}P_{150}K_{60}$ kg/ha background				
5.	Kokcha - 588	83,6	12,7	3,7
6.	Oq urug - 1157	83,4	13,1	3,5

According to the data, when the fruits of melon varieties obtained under conditions of organic fertilizer (30 t/ha of manure) are dried by the available (helio) method, the yield of pulp is 9.0-12.0%, and the yield is 2.02-2.62 tons per hectare. received.

The yield of melon varieties grown under conditions of mineral fertilizers ($N_{150}P_{150}K_{60}$ kg/ha) was 9.1-12.2% and the yield was 2.58-3.14 t/ha. The highest fruit yield (9.3 - 12.4%), yield (3.16 - 3.79 t/ha) was obtained when melon varieties were grown in organomineral conditions (30 t/ha fertilizer $N_{150}P_{150}K_{60}$ kg/ha). The above pattern was also observed when dried in an artificial chamber. However, it was noted that the fruit yield increased by 0.7-1.2%, the yield increased to 2.18-4.16 tons per hectare, and the highest fruit yield (10.0-13.6%) was obtained from melon varieties with organ mineral fertilizers (30 t/ ha manure + $N_{150}P_{150}K_{60}$ kg/ha) was recorded when grown under conditions (Table 2)

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Table 2

Effects of drying methods on yield, fruit sugar and rind yield when melon dried fruit are grown under different fertilizer conditions (2022)

№	Varieties name	Yield, t/ha	Sugar content, %	Melon is good for meat			
				in the existing (helio) drying method		when dried in an artificial chamber	
				t/ha	%	t/ha	%
Mineral fertilizer – $N_{150}P_{150}$ K_{60} kg/ha background (control)							
3.	Kokcha - 588	28,4	10,0	2,58	9,1	2,81	9,9
4.	Oq urug - 1157	25,7	9,2	3,14	12,2	3,44	13,4
Organic fertilizer - 30 t/ha on the background of semi-rotted manure							
7.	Kokcha - 588	24,2	10,0	2,18	9,0	2,35	9,7
8.	Oq urug - 1157	21,8	9,0	2,62	12,0	2,86	13,1
Organomineral fertilizer - 30t/ha manure + $N_{150}P_{150}K_{60}$ kg/ha background							
11.	Kokcha - 588	34,0	10,7	3,16	9,3	3,40	10,0
12.	Oq urug - 1157	30,6	10,4	3,79	12,4	4,16	13,6

So, it was found out that drying in an artificial chamber has an advantage in terms of yield and yield of melon varieties. When analyzing the effect of various fertilizer conditions and drying methods on the biochemical composition of the pulp of melon varieties, the fruit yield obtained under the conditions of organic fertilizer (30 t/ha of manure) when dried by the (helio) method, the dry matter content of the pulp was 80.4-81.6%, total sugar 58.1 – 61.6%, vitamin C 21.5 – 32.5 mg/%, and in the content of artificially dried cranberries, these indicators are higher, respectively, 81.0 – 82.2%, 60.8 – 64.1%, 23.8 - 38.0 mg/% (Table 3)

Table 3

Effects of different fertilizer conditions and drying methods on the biochemical composition of the fruit peel of melon dried fruit (2022)

№	Varieties name	Biochemical composition of fruit pulp,%					
		In the existing (helio) method			Artificially		
		dry matter	total sugar	Vitamin C, mg/%	dry matter	total sugar	Vitamin C, mg/%
Mineral fertilizer – $N_{150}P_{150}$ K_{60} kg/ha background (control)							
1	Kokcha - 588	82,3	64,4	24,6	82,9	65,7	25,5
2	Oq urug - 1157	80,6	60,2	36,4	81,3	61,6	40,2
Organic fertilizer - 30 t/ha on the background of semi-rotted manure							
3	Kokcha - 588	81,6	61,6	21,5	82,2	64,1	23,8
4	Oq urug - 1157	80,4	58,1	32,5	81,0	60,8	38,0
Organomineral fertilizer - 30t/ha manure + $N_{150}P_{150}K_{60}$ kg/ha background							
5	Kokcha - 588	83,1	65,3	27,2	84,0	66,7	28,0
6	Oq urug - 1157	81,4	64,2	38,1	82,0	65,7	42,5

When the melon fruits obtained under the conditions of mineral fertilizers ($N_{150}P_{150}K_{60}$ kg/ha) are dried by the existing (helio) method, compared to the conditions of organic fertilizer (30 t/ha manure), 0.2 - 0.7% of dry matter, 2.1 - 2.8% of total it was found to contain a lot of sugar, 3.1-3.9 mg/% vitamin C.

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