GROWTH INDICES, YIELD, BIOCHEMICAL COMPOSITION AND QUALITY OF DRIED MELON PRODUCTS UNDER VARIOUS BACKGROUNDS OF FERTILIZERS

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Abstract

The article presents the results of a study to identify the effects on growth, plant formation, and yield, yield of dried products and quality indicators of summer melon varieties for various backgrounds of fertilizers. Using organic fertilizers at a rate of 30 t/ha of manure + $N_{150}P_{150}K_{60}$ kg/ha, an extension of the vegetation period by 3-5 days was revealed, the longest stems were formed (251.0-275.3 cm), the largest number of stems (4.0 -5.3 pieces), leaf surface area (2618-2791 dm^2), bush thickness (1902-2093 g), root mass (134-177 g) and plant productivity (10.2-12.1 kg).

The highest yield (28.5-34.0 t/ha) was obtained from the melon varieties when grown against organic fertilizers (30 t/ha of manure + $N_{150}P_{150}K_{60}$ kg/ha), with a commodity yield of 27.4-32 8 t/ha or 96.1-97.3%. The yield increase was 4.9-5.6 tons or 119.1-123.4%. And in the composition of the grown fruits was the largest amount of dry matter (12.2-13.4%), sugars (9.4-10.7%), vitamin "C" (15.30-23.16 mg/%), the nitrate content was 42.16-53.65 mg/kg, which is 1.8-2.0 times lower than the maximum permissible norms.

With the artificial method of drying the fruits of selected varieties of melon the highest yield (10.0-13.6%) and yield (3.22-4.16 t/ha) of dried products with a high dry content were obtained substances (81.4-84.0%), total sugar (65.3-68.1%), vitamin "C" (23.4-42.5 mg/%), with a qualitative assessment of 9.4- 10.0 points, with the gelability of drying, the quality of dried products was estimated at 8.2-9.3 points.

Key words: Melon varieties, drying methods, fertilizer backgrounds, growing season, yield, yield and yield of dried products, biochemical composition of fruits (dried products).

Introduction

Research on the cultivation of melon varieties with various elements of technologies and their suitability for drying was carried out by scientists J.-M. Lee et al [2008], L.Tomsone, Z.Kruma [2014], V.V.Korinets, T.A.Sannikova, V.N.Samodurov [2006], T.A.Sannikova [2009], I. V. Makarovsky [1988], J.A.Tolikhov, T.A.Akhmedov, Z.Imamkulova [2012], N.

K. Kalabaev, A. A. Tasov, L. Kh. Em [2006], and in our republic N. N. Balashev [1975], R. F. Mavlyanova, A. A. Rustamov, R. A. Khakimov, A. S. Khakimov, M. S. Turdieva [2005], R. T. Makhamadjanov [1978; 1990], Sh. Mamatov, K. Dodaev [2014], B. O. Abdulniyozov, G. S. Gulimov [2008], T. E. Ostonakulov [2010].

However, studies to identify the effects on growth, plant formation, productivity, yield of dried products and quality indicators of summer melon varieties under various backgrounds of fertilizers in the conditions of newly irrigated typical gray earth soils are not well understood.

The purpose of research. Identification of growth, plant formation, and yield of dried products, the biochemical composition and quality of melon varieties grown under various backgrounds (conditions) of fertilizers.

Materials and methods

Field experiments were carried out under the conditions of newly irrigated typical gray-earth soils of the farm "Abulkhayir dalasi" in the Gallyaaral district of the Jizzakh region.

The object of the study was 3 background (conditions) of fertilizers (mineral - $N_{150}P_{150}K_{60}$ kg/ha; organic - 30 t/ha of semi-rotted manure and organomineral - $N_{150}P_{150}K_{60}$ kg/ha + 30 t/ha of semi-rotted manure).

Conducting field experiments, sowing, measures for growing plants, harvesting and accounting for crops, counts and analyzes were carried out according to generally accepted methods and recommendations [1992; 2003; 2011, 2009].

The biochemical composition in fruits and dried products of dry melon varieties was determined using a Pol-1 refractometer, sugar using the cyanate method, vitamin "C" using the I.K. Murry method, and nitrates using a disulfophenolic acid [1987]. The data obtained as a result of the research were subjected to statistical processing using Microsoft Excel programs and the dispersion method according to B. A. Dospekhov [1985].

In order to establish the identification of various backgrounds of fertilizers, the yield and quality of the dried products, depending on the drying methods, selected 10 pieces of ripe fruits from each version of the experiments. Preparation of ripe melon fruits for drying consists in washing the melon, drying it, weighing it and cutting it in half along with a knife. Seeds are removed from the inside and the placenta (core) is immediately weighed. Then each half is divided across into slices in the form of segments with an equal thickness of 2-3 cm and at the same time the peel (peel) of the melon is removed and weighed. In this case, the yield of pulp and the fraction of the core and peel are determined according to the experimental variants and grades. After that, slices of melon pulp are placed evenly in one layer on a stainless steel or aluminum wall. When the drying method is solar, the grid with slices is placed on the rack in 4-5 layers (the height between the layers is 50-70 cm) closed (covered) with a transparent film. The drying time is 7-12 days.

In artificial drying, cut melon slices are placed in one layer on a stainless steel or aluminum mesh drying chamber (GU-KSK-15) of a belt conveyor and the chamber is heated. The drying process is carried out sequentially at the first 3.45-4.00 hours at $t^0 = 50^0C$, 3.55-4.00 hours at $t^0 = 60^0C$, 35-40 minutes at $t^0 = 50^0C$ and 3 hours 30-35 minutes at $t^0 = 40^0C$, 7.45-9.15 hours in total.

The readiness of the product is determined organoleptically, the finished melon slices have a light-yellow color, a good dried crust and a soft texture inside.

Research results and discussion

It was revealed that with different backgrounds of fertilizers, it had a significant impact on plant growth and development, with the use of organic fertilizers at a rate of 30 t/ha of manure + $N_{150}P_{150}K_{60}$ kg / ha, an extension of the growing season by 3-5 days was revealed, the longest stems were formed (251, 0-275.3 cm), the largest number of stems (4.0-5.3 pieces), leaf surface area (2618-2791 dm2), bush thickness (1902-2093g), root mass (134-177 g) and plant productivity (10.2-12.1 kg).

When growing melon varieties on different backgrounds of fertilizers, there was a difference in the specific gravity of the pulp of the fruit, peel and placenta + seeds, the highest rates of yield of the pulp of the fruit (83.6-84.4%), in the specific gravity of the crust (11.7-13 , 2%) and placenta + seeds (3.4-5.5%) had selected melon varieties grown against organic fertilizers at a rate of 30 t/ha of manure + $N_{150}P_{150}K_{60}$ kg/ha.

The highest yields (28.5-34.0 t/ha) were obtained from the varieties Kuk kalla push, Obi nowvot Samarkand Local, Kukcha-588 and Ok urug-1157 when grown in organic fertilizers (30 t/ha of manure + $N_{150}P_{150}K_{60}$ kg/ha), while marketable crop amounted to 27.4-32.8 t/ha or 96.1-97.3%. The yield increase was 4.9-5.6 tons or 119.1-123.4%. It was found that the composition of the grown fruits contained the highest content of dry matter (12.2–13.4%), sugars (9.4–10.7%), and vitamin C (15.30–23.16 mg/%), the nitrate content was 42.16-53.65 mg/kg, which is 1.8-2.0 times lower than the maximum permissible norms **(Table 1).**

When drying the fruit pulp crop with an existing helix method, the peel yield in relation to the pulp was 9.3-12.4%, the yield of dried products was obtained per hectare of 3.02-3.79 tons, the advantage of drying by artificial method was revealed, while the yield of dried products (melon) was the highest 10.0-13.6%, and the crop amounted to 3.22-4.16 t/ha **(Table 2)**.

Table 1. Productivity and biochemical composition of melon varieties with different backgrounds of fertilizers (2016-2018 y)

№	The name of the variety	Yield, t/ha	Biochemical composition of fruits			
			dry substance, %	sugar, %	Vitamin C, mg/%	nitrates, mg/kg
Against the background of mineral fertilizers-$N_{150}P_{150}K_{60}$ kg/ha (control)						
1.	Kuk kalla push	23,1	11,9	9,1	12,10	34,12
2.	Obi nowvot Samarkand Local (st.)	26,1	12,3	9,5	18,52	37,60
3.	Kukcha-588	28,4	12,7	10,0	20,48	42,72
4.	Ok urug-1157	25,7	11,8	9,2	16,10	28,74
Against the background of organic fertilizer-30 tons/ha of manure						
5.	Kuk kalla push	19,8	11,6	8,6	10,40	28,74
6.	Obi nowvot Samarkand Local (st.)	22,5	12,0	8,7	14,26	40,80
7.	Kukcha-588	24,2	12,6	10,0	18,70	35,45
8.	Ok urug-1157	21,8	11,6	9,0	15,90	25,12
Against the background of organoineral fertilizers - 30 t/ha of manure$_{150}P_{150}K_{60}$ kg/ha						
9.	Kuk kalla push	28,5	12,2	9,4	15,30	42,16
10.	Obi nowvot Samarkand Local (st.)	31,3	12,8	10,1	20,82	53,65
11.	Kukcha-588	34,0	13,4	10,7	23,16	47,13
12.	Ok urug-1157	30,6	13,1	10,4	19,36	35,82

Table 2. The yield of dried products of melon varieties with various backgrounds of fertilizers (2016-2018 y)

№	The name of the variety	The output of dried products in relation to the pulp			
		solar drying		Artificial drying	
		t/ha	%	t/ha	%
	Against the background of mineral fertilizers-$N_{150}P_{150}K_{60}$ kg/ha (control)				
1.	Kuk kalla push	2,40	10,4	2,59	11,2
2.	Obi nowvot Samarkand Local (st.)	2,56	9,8	2,90	11,1
3.	Kukcha-588	2,58	9,1	2,81	9,9
4.	Ok urug-1157	3,14	12,2	3,44	13,4
	Against the background of organic fertilizer-30 tons/ha of manure				
5.	Kuk kalla push	2,02	10,2	2,18	11,0
6.	Obi nowvot Samarkand Local (st.)	2,18	9,7	2,48	11,0
7.	Kukcha-588	2,18	9,0	2,35	9,7
8.	Ok urug-1157	2,62	12,0	2,86	13,1
	Against the background of organomineral fertilizers - 30 t/ha of manure$_{150}P_{150}K_{60}$ kg/ha				
9.	Kuk kalla push	3,02	10,6	3,22	11,3
10.	Obi nowvot Samarkand Local (st.)	3,13	10,0	3,57	11,4
11.	Kukcha-588	3,16	9,3	3,40	10,0
12.	Ok urug-1157	3,79	12,4	4,16	13,6

When drying by artificial means, the biochemical composition of dried products (melons) was the highest (dry matter content of 81.4-84.0%, total sugar - 65.3-68.1%, vitamin "C" - 23.4-42.5 mg/% when growing manure + $N_{150}P_{150}K_{60}$ kg/ha when normal organic fertilizers are grown at a rate of 30 t/ha, the organoleptic evaluation of dried produce (melon) is the highest, that is, when the solar method is 8.2–9.3, and when using the artificial method of drying, it is 9 , 4-10.0 points **(Table 3).**

Table 3. Biochemical composition and quality of dried products of melon varieties with various backgrounds of fertilizers (2016-2018 y)

№	The name of the variety	Biochemical composition of dried products, %						Product quality assessment, in points	
		solar drying			artificial drying				
		dry substance, %	sugar, %	Vitamin C, mg/%	dry substance, %	sugar, %	Vitamin C, mg/%	with helioss	artificial drying
	Against the background of mineral fertilizers-$N_{150}P_{150}K_{60}$ kg/ha (control)								
1.	Kuk kalla push	81,4	62,9	25,0	81,9	65,4	27,4	8,0	9,1
2.	Obi nowvot Samarkand Local (st.)	80,2	61,5	18,3	80,6	63,1	20,7	8,8	9,8
3.	Kukcha-588	82,3	64,4	24,6	82,9	65,7	25,5	9,0	9,9
4.	Ok urug-1157	80,6	60,2	36,4	81,3	61,6	40,2	8,5	9,5
	Against the background of organic fertilizer-30 tons/ha of manure								
5.	Kuk kalla push	80,7	62,2	24,1	81,5	64,9	26,8	8,0	9,0
6.	Obi nowvot Samarkand Local (st.)	80,0	60,8	17,1	80,5	62,5	18,6	8,8	9,6
7.	Kukcha-588	81,6	61,6	21,5	82,2	64,1	23,8	9,0	9,8
8.	Ok urug-1157	80,4	58,1	32,5	81,0	60,8	38,0	8,6	9,5
	Against the background of organoineral fertilizers - 30 t/ha of manure$_{150}P_{150}K_{60}$ kg/ha								
9.	Kuk kalla push	82,2	63,8	29,3	83,3	68,1	30,4	8,2	9,4
10.	Obi nowvot Samarkand Local (st.)	81,0	62,4	21,7	81,4	65,3	23,4	9,1	10,0
11.	Kukcha-588	83,1	65,3	27,2	84,0	66,7	28,0	9,3	10,0
12.	Ok urug-1157	81,4	64,2	38,1	82,0	65,7	42,5	8,8	9,8

Conclusion

The cultivation of summer varieties of melon in the conditions of newly irrigated typical gray earth soils against organic fertilizers in the norms of 30 t/ha of manure + $N_{150}P_{150}K_{60}$ kg/ha favorably affects the growth, the formation of tops with sufficient assimilation surface. The highest fruit yield (28.5-34.0 t/ha) with a high dry matter content (12.2-13.4%), sugar (9.4-10.4%) was obtained. And the yield (10.0-13.6%) and the yield (3.22-4.16 t/ha) of dried products with good qualities.

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