



Morphological and Economic Characteristics of Melon Varieties Grown Under Mulching With Different Films

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Abstract: the article presents the results of research on the morphological and economic characteristics of melon varieties grown by mulching with different films (transparent and black).

Keywords: melon varieties, films (transparent and black), weight of roots and stems, number and level of leaves, number and weight of fruits, productivity.

Introduction

Currently, scientific researches are being conducted in the world on the creation, reproduction and development of innovative technologies for the production of high-quality products of exportable, high-yield local varieties. In particular, in the countries of Spain, Southern Italy, Brazil, Poland, Jordan, Russia, the USA, and Turkey, important elements of resource-saving technologies such as soil protection, use of various polyethylene films, use of effective irrigation methods, and the correct selection of optimal planting periods have been developed in the cultivation of vegetable and vegetable crops and recommended for production [3, 6].

One of the factors of increasing the productivity and efficiency of planting melon in our republic, as well as resource-saving technologies of its cultivation, is to grow its seedlings directly in the open field under various polyethylene films (transparent and black). Mulching with different films (transparent and black) helps in plant growth and development, early harvest and increase in yield, reduction of water evaporation from the soil, and freedom from weeds in field areas. Taking into account the above factors, in our research we studied the effect of melon crop on morphological and economic characteristics by using different (transparent and black) films [5, 7].

Materials and Methods

Researches were carried out at the Department of "Fruit-Vegetable growing and Viticulture" of Tashkent State Agrarian University. Field experiments were conducted in 2020-2022 at the "Center for Innovative Developments and Consultancy in Agriculture" DUK pilot farm.

Transparent film. Roll size 3x100 m, thickness 150 mkm, width 150 cm, transmittance (visible rays) 87-90%. Transmittance of sunlight varies depending on the thickness of the film. Water and vapor density is not more than 2%.

Black film. Roll size 3x100 m, thickness 150 mkm, width 150 cm, transmittance (visible rays) 65-70%. Transmittance of sunlight varies depending on the thickness of the film. Water and vapor density is not more than 2%.

Each option was placed in 4 returns. Planting scheme "Kichkintoy" variety (210+70): 2x60 cm, feeding area 0.84 m²; "Kok tinni 1087" variety (210+70): 2x100 cm, 1.4 m². One return area is 33.6 m² according to varieties; 56 m². One option area is 100.8; 168m². The total area of the experiment is 268.8 m².

The following observations, measurements and calculations were made in the experiments:

1. Biometric readings were taken on 10 plants per return. The length of the main stem, the number of lateral branches, the weight of the root and stem in the 0-30 cm soil layer, the number of leaves, the level of the leaves, the length, width and mass (weight) of the fruit were determined.
2. Melon fruit was harvested according to its appearance (smell, firmness, weight). When determining the productivity of each variety sample, the commercial and non-commercial yield, the total and commercial productivity per hectare was determined by calculation.

Researches are carried out in field and laboratory conditions, in which "Methodology of conducting experiments in vegetable growing, potato growing and potato growing" (Azimov B.J., Azimov B.B., T.: 2002 y (2006).), "Методика опытного дела в овощеводстве и бахчеводстве" (V.F. Belik, M.: 1992), from the recommendation "Development of resource-efficient technology of melon cultivation in the conditions of Tashkent region" (T.: 2022), mathematical-statistical processing of experimental data was recommended by B.A. Dospekhov conducted according to the method [1, 2, 4, 8].

Results and discussion

We know that melon varieties grow rapidly until the "fruiting-ripening" phase, that is, the root, stem weight, number of leaves and 80-90% of the leaf surface in the 0-30 cm layer are formed (Table 1).

Taking this into account, we studied the morphological indicators of melon varieties in the fruiting-ripening phase when grown by mulching with different films. An analytical comparison was made between the varieties of melon "Kichkintoy" and "Kok tinni 1087" on the parameters of root, stem weight, number of leaves and leaf surface in one plant. It was found from the experiments that the root weight of one seedling planted in the "Kichkintoy" variety without film (control) was 96 g in 2020, 99 g in 2021, and 94 g in 2022. It was found that the weight of the root in the version with a transparent film is 9 g, and in the version with a black film, it is 21 g heavier than the control. When the stem weight of this plant was analyzed in the same order, it was observed that the average weight of the control option was 1526 g, in the second option (transparent film) 1706 g, and in the third option (black film) it was even higher 1743 g.

When the analysis of morphological parameters was carried out according to the number of leaves, we observed an average of 329 pieces in the variant without film, 18 pieces more than the control in the version with transparent film, and 29 pieces more in the black film. Analytical comparison of the leaf surface of the melon seedling was carried out, it was noted that our seedlings grown on the black film showed a higher index of 357 dm² compared to the non-film (control) variant, while the difference in the leaf surface on the transparent film was 290 dm².

Table 1 Morphological parameters ("fruiting-ripening") of melon varieties grown by mulching with different films, 2020-2022.

Options	Years	On a plant			
		Root weight in 0-30 cm layer, gr	stem weight, gr	number of leaves, pcs	leaf level, dm ²
(var <i>bucharika</i> Pang.) "Kichkintoy" variety					
Without film (control)	2020	96±2,0	1462±2,0	322±3,0	1701±2,0
	2021	99±3,0	1598±3,0	336±2,0	1768±4,0
	2022	94±2,0	1518±3,0	328±2,0	1728±3,0

	Average	96±2,3	1526±2,7	329±2,3	1732±3,0
Transparent film	2020	101±2,0	1686±2,0	340±3,0	1982±3,0
	2021	110±3,0	1732±3,0	354±2,0	2090±2,0
	2022	103±2,0	1702±2,0	348±3,0	1994±5,0
	Average	105±2,3	1706±2,3	347±2,7	2022±3,3
Black film	2020	112±2,0	1718±4,0	352±3,0	1997±5,0
	2021	124±3,0	1772±2,0	365±2,0	2197±4,0
	2022	114±2,0	1740±3,0	357±3,0	2072±3,0
	Average	117±2,3	1743±2,3	358±2,7	2089±3,0
(var ameri Pang.) "Kok tinni 1087" variety					
Without film (control)	2020	153±2,0	1635±4,0	354±3,0	2264±2,0
	2021	167±3,0	1692±2,0	362±4,0	2393±3,0
	2022	159±4,0	1663±3,0	357±5,0	2378±4,0
	Average	160±3,0	1663±3,0	358±3,0	2345±3,0
Transparent film	2020	172±2,0	1796±2,0	388±3,0	2797±4,0
	2021	182±4,0	1848±3,0	392±4,0	2823±5,0
	2022	176±3,0	1821±2,0	398±5,0	2815±6,0
	Average	177±3	1822±2,3	393±3	2812±5
Black film	2020	178±3,0	1818±5,0	401±2,0	2814±4,0
	2021	194±5,0	1886±2,0	410±4,0	2843±5,0
	2022	187±4,0	1856±4,0	405±5,0	2821±3,0
	Average	186±3	1853±3,7	405±3,7	2826±3

Morphological indicators of melon varieties when using different films for mulch cultivation can be explained by the creation of a favorable environment for plant growth and development.

When analytical morphological observations were made in the "Kok tinni 1087" melon variety, it was found that the root weight of one plant was 153 g in 2020, 167 g in 2021, and 159 g in seedlings planted the following year. Analyzing the results of this observation, it was observed that the root weight of one seedling in the control variant was 160 grams, and under the transparent film, it was 17 grams heavier, and in the black film version, it was 26 grams higher than the control form.

When the observations were continued with the comparison of stem weight, the 3-year results of one seedling grown in the option without film was 1663 g on average, while in the option with transparent film it was 159 g higher, and when using black film, the stem weight was 190 g compared to the control form. was observed to be heavier.

If we look at the number of leaves, the melon seedling produced an average of 358 leaves without film, and when transparent film was used, the plant produced 35 more leaves, and under black film conditions, it was 47 more than without film. Therefore, it was found that mulching with different types of polyethylene films has a higher performance compared to the non-mulched option due to the fact that it creates the necessary heat and moisture for the growth of the number of leaves of the plant.

During the research, when the effect of mulching on the leaf surface of the "Kok tinni 1087" sample was also considered, the leaves of the plants planted as a control option had an average of 2345 dm², compared to the control in the melon seedlings planted in a transparent film, it was 467 dm², and in the black film mulched option, it was 481 dm².

As a conclusion, it can be noted that the morphological parameters of melon varieties grown with mulching with different films differed significantly in the sections of the variants, mulching created the necessary environment for the growth of melon seedlings, that is, keeping them from high temperature, keeping the soil moisture level at the same level, and due to good root nutrition, being free of weeds, and at the same time reducing the coefficient of water evaporation (transpiration) in the leaves, it has been proven that both conditions of mulching are more effective for melon seedlings compared to the option without film (control).

Ripeness of melon fruits is determined by their appearance. The color of the fruits when ripe becomes a color characteristic of the variety (at first it is dark or light green to varying degrees, then when ripe it becomes gray, yellow, fire color and other colors), and the pattern remains well known (Table 2).

Table 2 Number, weight and yield of melon plants grown under mulching with different films, 2020-2022.

Вариантлар	Years	On a plant		Yield, t/ha	
		number of fruits, pcs	weight of one fruit, kg	total	marketable
<i>(var bucharika Pang.) "Kichkintoy" variety</i>					
Without film (control)	2020	3±1,0	0,62±0,26	19,9	17,9
	2021	3±1,2	0,68±0,14	21,8	19,6
	2022	3±1,5	0,64±0,15	20,6	18,5
	Average	3±1,2	0,65±0,18	20,7	18,6
Transparent film	2020	2±1,1	1,05±0,25	22,5	21,3
	2021	2±1,2	1,09±0,24	23,3	22,1
	2022	3±1,0	0,70±0,22	22,5	21,3
	Average	2,3±1,1	0,94±0,23	22,7	21,5
Black film	2020	3±1,3	0,76±0,25	24,4	21,9
	2021	2±1,4	1,20±0,20	25,7	24,4
	2022	2±1,2	1,16±0,23	24,8	23,5
	Average	2,3±1,3	1,04±0,22	24,9	23,2
<i>(var ameri Pang.) "Kok tinni 1087" variety</i>					
Without film (control)	2020	2±1,0	1,95±0,12	25,0	22,5
	2021	2±1,1	2,03±0,16	26,1	23,5
	2022	2±1,0	1,98±0,20	25,4	22,8
	Average	2±1,0	1,97±0,16	25,5	22,9
Transparent film	2020	2±1,2	2,20±0,20	28,2	26,7
	2021	2±1,1	2,27±0,25	29,1	27,6
	2022	2±1,3	2,22±0,22	28,5	27,0
	Average	2±1,2	2,23±0,22	28,6	27,1
Black film	2020	2±1,5	2,25±0,20	28,9	27,4
	2021	2±1,2	2,31±0,24	29,6	28,1
	2022	2±1,1	2,28±0,15	29,3	27,8
	Average	2±1,2	2,28±0,19	29,3	27,8

Some varieties of melons are netted in a unique way. Cantaloupes and soft-fleshed summer melons are fragrant.

In early and mid-ripe varieties, ripe fruits are easily separated from the fruit bunch. Timely and high-quality application of agrotechnics is a guarantee of abundant harvest.

The number of fruits per plant, weight, total and commodity productivity were analyzed in different mulched melon varieties. In early-ripening "Kichkintoy" variety, the average number of fruits per bush was 3 pieces in the control variant, and the average fruit weight was 650 g. In our version mulched with a transparent film, the average number of fruits is 2.3, fruit weight is 940 g, in our version with a black film, these indicators are 2.3, respectively; 1040 was observed.

The total yield per hectare in our control option was 20.7 t/ha, and the market yield was 18.6 t/ha. In our second option, compared to the control, it was found that the total productivity was 1.8 t/ha, and the marketable yield was 2.9 t/ha. In the third variant, it was observed that the average yield was 24.9 t/ha, the marketable yield was 23.2 t/ha, and the marketable yield was 24.7% higher than the control. So, mulching has been proven to significantly increase the overall productivity and marketability of melon crops.

When the number and weight of fruits per bush was studied in early-early "Kok tinni 1087" variety, the average number of fruits in the non-film version was 2 pieces, the weight was 2520 gr. In transparent and black mulch, the average number of fruits and the fruit weight is 2910, respectively; It was equal to 2950 gr.

The total yield in the control option was 32.3 t/ha, and the market yield was 29.0 t/ha. In the second option, the total yield was 37.3 t/ha, and the marketable yield was 35.4 t/ha, while in the third option, the total yield was 5.5 t/ha, and the marketable yield was 6.9 t/ha or 23.7% higher than the control.

Conclusions

1. It was observed that the root weight of the "Kichkintoy" variety without film (control) in the 0-30 cm layer was 96 g in 2020, 99 g in 2021, and 94 g in 2022. Compared to the control, the weight of the root in the 0-30 cm layer was 9 g heavier in the case with a transparent film, and 21 g heavier in the case with a black film. When the stem weight of this plant was analyzed in the same order, it was found that the average weight of the control option was 1526 g, in the second option (transparent film) 1706 g, and in the third option (black film) it was even higher 1743 g. This pattern was also observed in the "Kok tinni 1087" variety.
2. The average total yield of melon varieties grown with different mulches is 25.5 t/ha in the control variant "Kok tinni 1087", the marketable yield is 22.9 t/ha, the total yield in transparent mulch is 28.6 t/ha, the marketable yield is 27.1 t/ha, it was found that the total yield of black mulch was 3.8 t/ha and the total yield was 4.9 t/ha or 21.4% higher than the control.

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