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**EFFECT OF RESOURCE-SAVING MELON CULTIVATION METHODS ON
YIELD**

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Abstract: This article presents the efficiency of cultivating 20-day-old melon seedlings under film in open fields. Planting 20-day-old seedlings under film produced higher marketable yields: 45.8 t/ha in the Obi Novvot variety, which is 20% higher than the control; 37.2 t/ha in the Samarkand Yellow variety, 16% higher than the control; and 35.8 t/ha in the Local Yellow variety, 15% higher than the control.

Keywords: Melon, planting, variety, seedling, resource, growth period, yield, marketable yield, ton, disease.

Introduction. In recent years, the Republic of Uzbekistan has prioritized the further development of the melon-growing sector, particularly increasing the production of exportable melons, preserving the brand of Uzbek melons, and implementing resource-saving technologies. Special attention has been given to key cultivation elements such as irrigation, fertilization, use of solar energy, and variety selection. Relevant tasks in this area have been defined in the Decree of the President of the Republic of Uzbekistan No. PQ-136 dated April 8, 2025, “On Additional Measures to Increase the Export Potential of Agricultural Products and Develop the Processing Chain,” and in the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 622 dated October 2, 2024, “On Additional Measures to Improve the Seed Production System of Agricultural Crops.”

This study presents the results of cultivating melon seedlings of different ages in open fields using a method that involves mulching the soil surface with polyethylene film and covering it with an additional film layer, followed by planting the seedlings underneath. This method aims to save water, regulate temperature, and reduce labor input.

Methods. Experiments on resource-saving cultivation of rare local melon varieties were conducted in 2024–2025. Seedlings of six rare melon varieties were grown in greenhouses in 8×8 cm polyethylene film trays, prepared as 15-, 20-, and 25-day-old seedlings. Each variety was planted in double-row “ribbon” style using a $(210+70)/2 \times 50$ cm spacing scheme. The experiment was fourfold, with each plot 6 m long and containing 24 plants, covering a nutrition area of 16.8 m².

Results. In resource-saving cultivation, the yield of each variety was measured separately at each harvest and divided into marketable and unmarketable fractions. Observations and measurements were also conducted on the number of fruits per plant, fruit weight, flesh thickness, and incidence of the most common powdery mildew disease.

Observations indicated that the number of fruits per plant did not vary significantly among varieties, ranging from 1.8–2.8 fruits per plant. Higher results were recorded in the Samarkand Yellow and Local Yellow varieties, producing 2.7–2.8 fruits per plant (see Table 1).

Table 1

Number of fruits, fruit weight and flesh thickness, and incidence of powdery mildew in melons grown from seedlings under film (2024–2025).

Variety	Experimental Variant	Number of Fruits, pcs	Fruit Weight, kg	Flesh Thickness, cm	Powdery Mildew Incidence, %
Mahalliy sariq hadalak (Local yellow muskmelon)	Sown from seed – control	2,5	0,7	3,5	2,5
	From 15-day-old seedlings	2,6	0,9	3,5	0
	From 20-day-old seedlings	2,8	1,0	3,7	0



	From 25-day-old seedlings	2,7	1,0	3,8	0
Apelsin-qizil handalak (Orange-red muskmelon-Cantaloupe)	Sown from seed – control	1,8	0,9	3,7	2,5
	From 15-day-old seedlings	2,0	1,0	3,8	0
	From 20-day-old seedlings	2,2	1,1	4,1	0
	From 25-day-old seedlings	2,1	1,0	4,0	0
Oq kallaposh	Sown from seed – control	2,0	0,8	3,5	5,0
	From 15-day-old seedlings	2,1	1,0	3,5	2,5
	From 20-day-old seedlings	2,2	1,1	3,8	0
	From 25-day-old seedlings	2,0	1,0	3,6	2,5
Qora qosh	Sown from seed – control	2,0	0,8	3,6	5,0
	From 15-day-old seedlings	2,1	0,9	3,7	0
	From 20-day-old seedlings	2,3	1,1	4,2	0
	From 25-day-old seedlings	2,2	1,0	4,0	0
Samarqand sariq handalak (Samarkand yellow muskmelon)	Sown from seed – control	2,4	0,8	3,8	5,0
	From 15-day-old seedlings	2,5	1,0	3,8	2,5
	From 20-day-old seedlings	2,7	1,2	4,2	0

	From 25-day-old seedlings	2,6	1,1	4,0	0
Obi novvot	Sown from seed – control	1,8	1,4	4,7	0
	From 15-day-old seedlings	2,0	1,4	4,8	0
	From 20-day-old seedlings	2,1	1,6	5,2	0
	From 25-day-old seedlings	2,0	1,5	5,1	0
ЭКФ ₀₅		0,08	0,03	0,13	
Sx%		3,36	3,24	3,15	

Determination of melon fruit weight showed that, in most varieties and variants, fruits were small, ranging from 0.7 to 1.2 kg. Relatively large fruits were recorded only in the Obi Novvot variety, with fruit weight ranging from 1.4 to 1.6 kg across variants. Flesh thickness is an important economic trait among melon varieties. Analysis of fruit flesh thickness showed that thin-fleshed varieties (3.5–3.8 cm) included Local Yellow and Oq Kallaposh. In other varieties, flesh thickness ranged from 4.0 to 5.2 cm, with the Obi Novvot variety showing the thickest flesh, 4.7–5.2 cm. The incidence of the common powdery mildew disease was also determined. Plants were visually inspected twice during the growth period: before male flower blooming and before harvest.

Observations showed partial infection in all varieties except Obi Novvot. The highest disease incidence (up to 5.0 %) was observed in variants sown directly from seed. In variants planted with 15- and 25-day-old seedlings, lower infection rates were recorded (up to 2.5 %). However, the 20-day-old seedling variants in all varieties were resistant to powdery mildew, and no plants were affected.

The total and marketable yield of melons grown from seedlings of different ages under film was determined. According to the results, total yield of melon varieties ranged from 27.5 t/ha to 47.2 t/ha across variants (see Table 2).

Table 2

Yield indicators of melons grown from seedlings under film (2024–2025).

Variety	Experimental Variant	Total Yield, t/ha	Marketable Yield, t/ha	Relative to Control, %	Share of Marketable Yie
Mahalliy sariq hadalak (Local yellow muskmelon)	Sown from seed – control	33,1	31,1	100	94
	From 15-day-old seedlings	34,0	32,0	103	94
	From 20-day-old seedlings	37,7	35,8	115	95
	From 25-day-old seedlings	35,2	33,1	106	94
Apelsin-qizil handalak (Orange-red muskmelon-Cantaloupe)	Sown from seed – control	29,3	27,5	100	94
	From 15-day-old seedlings	30,4	28,9	105	95
	From 20-day-old seedlings	33,5	31,8	116	95
	From 25-day-old seedlings	31,8	29,9	109	94
Oq kallaposh	Sown from seed – control	30,2	28,4	100	94
	From 15-day-old seedlings	30,7	29,5	104	94
	From 20-day-old seedlings	34,6	33,2	117	96
	From 25-day-old seedlings	32,6	30,6	108	95
Qora qosh	Sown from seed – control	27,5	26,4	100	96

	From 15-day-old seedlings	27,9	26,5	100	95
	From 20-day-old seedlings	31,0	29,8	113	96
	From 25-day-old seedlings	29,7	28,2	107	95
Samarqand sariq handalak (Samarkand yellow muskmelon)	Sown from seed – control	33,7	32,0	100	95
	From 15-day-old seedlings	34,5	32,8	103	95
	From 20-day-old seedlings	38,4	37,2	116	97
	From 25-day-old seedlings	35,3	33,9	106	96
Obi novvot	Sown from seed – control	40,1	38,1	100	95
	From 15-day-old seedlings	41,8	40,1	105	96
	From 20-day-old seedlings	47,2	45,8	120	97
	From 25-day-old seedlings	43,5	41,3	108	95
ЭКФ ₀₅		1,11	1,05		
Sx%		3,22	3,22		

Analysis of marketable yield from total yield showed that the highest marketable yield was obtained in the Obi Novvot variety, ranging from 38.1 to 45.8 t/ha across variants. The 20-day-old seedling variant gave the highest yield of 45.8 t/ha, which is 20 % higher than the control. Next were the Samarkand Yellow variety, yielding 37.2 t/ha (16 % higher than control), and the Local Yellow variety, yielding 35.8 t/ha (15 % higher than control). The lowest-yielding variety was Black Eyebrow, with yields ranging from 26.4 to 29.8 t/ha; the 20-day-old seedling variant produced 29.8 t/ha, 13 % higher than the control. Other varieties showed intermediate values.

Planting 20-day-old seedlings under film resulted in higher shares of marketable yield in all varieties compared to the control, while other variants with 15- and 25-day-old seedlings produced yields comparable to the control.

Across years, analysis of total yield and marketable yield from different-aged seedlings showed that marketable yield shares were nearly uniform across all varieties (94–97 %). The highest shares, 97 %, were recorded for Obi Novvot and Samarkand Yellow varieties. This indicates that growing melons under film ensures high-quality, market-compliant, and sweet fruits with increased quantity.

Conclusion. Planting 20-day-old seedlings under film resulted in the highest marketable yield in Obi Novvot (45.8 t/ha, 20 % higher than control), Samarkand Yellow (37.2 t/ha, 16 % higher than control), and Local Yellow (35.8 t/ha, 15 % higher than control). Compared with conventional field cultivation, this method saves 1000–1500 m³ of water per hectare, reduces weeding twice, maximizes the use of natural temperature, protects plants from early spring frosts, and lowers the required fertilizer application, thereby conserving resources.

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