

## Effect of Bamiya (*HIBISCUS ESCULENTUS L.*) Steel Height on the Productivity of New Samples

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### ABSTRACT

*The task was set to study a set of samples of early-ripening, high-yielding, export-oriented, medicinal, nutritious varieties of okra, an unknown vegetable for our country, and to select and introduce varieties suitable for the climatic conditions of our republic. Due to the fact that okra is a new non-traditional crop for Uzbekistan and there are no varieties of this crop allowed for planting in our country, 11 varieties from different countries were compared with each other. As okra is a new unique vegetable crop grown in Uzbekistan, it is the optimal planting time for main vegetables in Tashkent region, and 40-45-day-old seedlings in pots were planted in the open field on the second 10 days of April. This article describes the extent to which the height of the stems of planted seedlings affects the yield.*

**KEYWORDS:** *Okra, variety, fruit, technical ripening, biological ripening, number of fruits, fruit weight.*

**Introduction.** To meet the needs of the population in food products, raw materials of the processing industry and to radically improve the supply, especially to increase the range of vegetables, is an important requirement of our time. In our country, great attention is paid to the cultivation of vegetables, melons and potatoes and improving their quality.

It is known that the variety adapted to the soil and climatic conditions of the region provides high yields. Describing in detail the importance of varieties, A.A. Zhuchenko emphasizes that variety is the most necessary factor, the quality and quantity of the crop, the advantages of soil and climatic conditions, the relationship to mineral fertilizers, irrigation, pesticides and the main tool for innovative technologies [1]. In our country, it is possible to grow high-quality, regular crops of vegetable crops, and the soil and climatic conditions are different. Although it provides opportunities for growing vegetables, the number of varieties of vegetable crops grown does not exceed 50. Therefore, the expansion of vegetable diversity will not only meet the needs of the growing population, but also to meet the needs of foreigners visiting our country and living here, as well as to radically increase the country's export potential.

For this purpose, the task was set to study a set of samples of early-ripening, high-yielding, export-oriented, medicinal, nutritious varieties of okra, an unknown vegetable for the Republic, and to select and introduce varieties suitable for the climatic conditions of the republic. Due to the fact that okra is a new non-traditional crop for Uzbekistan and there are no varieties of this crop allowed for planting in our country, 11 varieties from different countries were compared with each other. As okra is a new unique vegetable crop grown in Uzbekistan, it is the optimal planting time for main vegetables in Tashkent region, and 40-45-day-old seedlings in pots were planted in the open field on the second 10

days of April.

Growth, development and productivity of some specimens in the collection of okra in the Tashkent region SS Berlyand [2; 3], II Pugachev, LG Kalyagina [4], VI Zuev, O. Kadyrkhodjaev [5], Studied by B.Yo. Tukhtaev [6], NK Safarova [7] conducted experiments on the water regime of okra in Tashkent and Khorezm regions. The authors recommended the use of 3 samples with early and middle ripening, smooth-skinned, high in ascorbic acid, in the selection process [8].

The morphological, biological and economic characteristics of okra as a vegetable crop, the technology of cultivation have not been fully studied in Uzbekistan.

In many English-speaking countries, okra is called a woman's fingers, okra or gumbo, in Portuguese as quabo, in French as gumbo, in India as bhe or bhendi [9].

Okra (*Hibiscus esculentus L.*) is a perennial plant (cultivated annual plant) belonging to the family *Hibiscus of the family Malvaceae, cultivated in all tropical countries - Asia, Africa and America and Southern Europe*. Okra is one of the most common vegetables in other countries, from its homeland - tropical Africa. It is known from historical sources that okra was cultivated in ancient Egypt as early as two thousand years BC. Flora of Uzbekistan there are 27 species of the family *Malvaceae belonging to 7 genera* [11].

Okra is used in several ways, both nutritionally, economically and industrially. Edible okra fruits contain carbohydrates, protein, fat, iron, calcium, fiber, thiamine, nicotinamide, riboflavin and ascorbic acid. 100 g of cooked okra seeds contain up to 20% fat and 20,23% crude borlisin protein and vitamin C [12].

**Materials and methods.** The experiments were conducted in the experimental fields of the Research Institute of Vegetables, Melons and Potatoes in 2018-2021. The institute is located in the north of Tashkent, in the Tashkent district of the Tashkent region.



The object of research was the Tashkent gift of okra and Burgundy varieties of fruits, seeds and leaves. Field experiments were carried out on the basis of methodological manuals "Methods of conducting experiments in vegetable, melon and potato growing " (B.J.Azimov., B.B.Azimov 2002).

**Results of the research and their discussion.** When studying the morphological characteristics of okra specimens, it was not observed that most cultivars grew vertically and branched. The leaves, flowers, fruits, erect, formed on the main stem (Table 1).

Table 1. The height of the stem of the okra plant during the growing season (2018-2021)

№	Variety samples	At the time of harvest		At the last harvest	
		cm	% to average	cm	% to average
1	"Burgundy"	52.0	87.0	155.7	110.4
2	" Dmort"	53.0	88.6	123.7	87.7
3	"Clemson"	64.0	107.0	136.4	96.7
4	"Organic"	65.0	108.7	165.8	117.6
5	K-36	66.0	110.4	121.1	85.9
6	K-19	59.0	98.7	147.6	104.7
7	K-176	61.0	102.0	125.4	88.9
8	K-194	45.0	75.3	167.5	118.8
9	K-224	72.0	120.4	145.4	103.1
10	K-226	66.0	110.4	127.6	90.5
11	K-248	55.0	92.0	135.2	95.9
	$\bar{X}$	59	100	141.0	100
	$\Sigma$	658		1551.4	

During the first fruiting period, the average height of stems of all cultivars was 59 cm. The earliest in the K-194 cultivar sample, the stem height was 45 cm, which was 14 cm lower than the average of all cultivars. Stem height of "Burgundy", " Dmort" and K-248 cultivars was 52 cm at the time of harvest; 53 cm; and 55 centimeters, which was 5,7-9,2 percent lower than the average. Height of K-19 and K-176 cultivars was 59 cm and 61 cm, which did not differ from the average of all cultivars (98-102%). In Clemson, Organic, K-36 and K-226 cultivars, the stem height fluctuated between 64 and 66 cm during the initial harvest and was 5-7.3% higher than the average of all cultivars. The K-224 variety was 72 cm tall at the time of harvest, 14,4% higher than the average and 27,8% higher than the earliest K-194 variety.

The stem height of the studied cultivar samples at the time of harvest was lower or higher, depending on the period of early or late harvest.

At the end of the growing season, the crop was re-measured from the last harvest period. The height of the stems of all cultivars averaged 141 centimeters when measured before the last harvest. Compared with the average of the varietal samples, no regularity was observed between the indicators at the time of harvest. In addition to yielding early-maturing cultivars, the growth of leaves and stems in their vegetative parts also continued to a maximum.

At the last harvest, the height of the stems of Dimort, K-36, K-176 and K-226 varieties was 123,7 cm, respectively; 12,1 cm; 125,4 cm; and 127,6 cm, which is 4,2-3,3% lower than the average (13.4–135.2 cm) of the cultivars, compared to the average (141–135.2 cm) of the cultivars, K-19 and K. In samples of 224 varieties (147,6-145,4 cm) it was 3,1-4,7% higher.

The height of the stem of the variety "Burgundy" was 155,7 cm, which is 110.4% of the average. Among the studied cultivars, the stem height of "Organic" and K-194 cultivars was 165,8 and 167,5 cm, respectively, measured before the last harvest, which was 17,6-18,8% higher than the average of all cultivars. The stem height of these varieties was found to be 27,8-13,1% higher than that of Dmort, K-36, K-176 and K-226 varieties.

Since okra is a new plant in the country, according to the methodical manual "Study and preservation of the world collection of vegetable crops" (Leningrad L-1977) at the end of the growing season the plants were divided into 3 groups depending on stem length: short 120-135 cm; medium height 136-150 cm; tall 151-170 cm. K-36, Dmort, K-176, K-226 for short varieties, K-248, Clemson, K-224, K-19 for medium varieties, Burgundy, Organic for tall varieties. », K-194 cultivar samples were introduced. It can be seen that the height of the okra does not go unnoticed in its effect on plant productivity (Table 2).

Table 2. Fruit and yield indicators of okra varieties (2018-2021 year)

№	Variety samples	In a bush plant, on average				Productivity (t/ha)			
		number of fruits, pcs	%	fruit weight, grams	%	General	%	brand	%
1	"Burgundy"	18	103.0	13.0	104.0	11.1	106.7	10.0	106.0
2	"Dmort"	16	91.4	12.0	96.0	9.1	87.5	8.0	85.1
3	"Clemson"	16	91.4	13.0	104.0	9.9	95.2	8.8	93.4
4	"Organic"	21	120.0	12.0	96.0	12.0	115.4	10.9	115.0
5	K-36	18	103.0	10.0	80.0	8.6	82.7	7.5	74.8
6	K-19	16	91.4	14.0	112.0	10.7	102.9	9.6	102.1
7	K-176	15	85.7	13.0	104.0	9.3	89.4	8.2	87.2
8	K-194	23	131.4	13.0	104.0	14.2	136.5	13.1	139.0
9	K-224	16	91.4	13.5	108.0	10.3	99.0	9.2	97.2
10	K-226	17	97.1	11.5	92.0	9.3	89.4	8.2	87.2
11	K-248	16	91.4	12.7	102.0	9.7	93.3	8.6	91.2
	$\bar{X}$	17	100	12.5	100	10.4	100	9.4	100
	$\Sigma$	192		137.7		114.2		102.1	

When the number and weight of fruits in one bush were studied, the average weight was 12.5 grams. Among the cultivars, K-176 produced 15 fruits per bush, which was 14.3% less than the average. In Dmort, Clemson, K-19, K-224, K-248 and K-226 cultivars, the number of fruits in the bush was 16-17, which was 3-9% less than the average. In the Burgundy and K-36 varieties, this figure was 18, which was higher than the average.

In the studied cultivars, 21-23 fruits were formed in the "Organic" and K-194 cultivars, which was 20.0-31.4% higher than the average of the cultivars and 40-53% higher than in the K-176 cultivars.

When the weight of the fruits was studied, the average weight of a single fruit was 10 grams, which is 20% higher than the average. In varietal samples (13.2–14 g) it was 108–112 per cent above the mean. The weight of K-19 was 15-16% higher than that of Dmort, Organic and K-226, and 40% higher than that of K-36, and differed in size from all other varieties.

When the total and average yield of all varieties of okra was studied, the average yield of all varieties was 10.4 tons. The average yield was 9.4 tons.

The average weight of one fruit from "Burgundy", "Clemson", K-176, K-194 and K-248 varieties is in the range of 12.7-16.0 grams, but not more than the average (12.5 g) of varieties. Was found to be -4 percent higher.

The number of fruits per plant is 23 in K-194, 18 in Burgundy and K-36, 16-17 in K-224, K-226, K-248, Dmort, Clemson, K-19. and 15-16 in K-176 varieties. The weight of the fruit in a bunch of okra was determined, according to which the okra is considered to be edible with fruits 5-15 cm thick, 10-15 grams. Based on this, we determined the weight of the fruit in all cultivars during the technical maturation of okra, according to which the weight of the fruit was 10-14 grams. The fruits of Burgundy, Clemson, K-176 and K-194 weighed 13.0 grams, while the fruit of K-36 weighed 10 grams. Fruits of K-19, K-224 varieties weighed 3.5-4.0 grams heavier than K-36 varieties. When determining the yield of okra varieties, the total yield of K-36 was 8.6 tons per hectare, compared to 11.1 t/ha or 2.5 t/ha (29.0%) of Burgundy. Organic variety is 12 t/ha or 3.4 t/ha (39.5%) compared to K-36 variety, K-194 variety is 14.2 t/ha or 5.6 t/ha compared to K-36 variety. (65.1%) were found to be high in experiments.

**Conclusion.** Samples of okra varieties were divided into 3 groups depending on the length of the stem: low 120-135 cm; medium height 136-150 cm; tall 151-170 cm. K-36, Dmort, K-176, K-226 for short varieties, K-248, Clemson, K-224, K-19 for medium varieties, Burgundy, Organic for tall varieties. , K-194 variety samples were included.

2. The height of the stem of the variety "Tashkent tuhfası" was 185.3 centimeters, the height of the stem of the variety "Burgundy" was 162.4 centimeters. The Tashkent Tuhfası variety is 14.1% higher than the Burgundy variety.

3. In the study of 11 varieties of okra, varieties K-194, "Organic", "Burgundy" were distinguished by their productivity. In the K-36 variety, the total yield was 8.6 tons per hectare, compared to 11.1 t/ha or 2.5 t/ha (29.0%) of the Burgundy variety and 12 t/ha of the Organic variety..

4. The control period of technical maturity of okra fruits was 33-34 days in seedlings planted on April 20, and 37-40 days in seedlings planted on April 1.

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