



THE EFFECT OF DIFFERENT PLANTING DATE OF SEEDLING ON YIELD OF NEW VARIETIES OF SWEET POTATO (IPOMOEA BATATAS).

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Abstract:

Sweet potato is the main food crop cultivated in tropical and subtropical countries of the world. Its tubers are rich in starch and sugar. China accounts for 64% of the world's gross crop. In the leading countries of sweet potato producers, when growing this crop, research is being carried out to select varieties adapted to specific soil and climatic conditions, to create modern resource-saving technology, to determine effective measures for planting and care that create favorable conditions for the growth and development of plants, the possibility of forming a sustainable and high yield. In our country, technologies are being developed and improved for the creation and selection of new varieties of sweet potatoes, adapted for various soil and climatic conditions of the region and their cultivation [1].

Keywords: Different Planting Date, Sweet Potato, Seedling, New Varieties, Yield.

INTRODUCTION

Scientists conducted research on the study of varieties and individual elements of the sweet potato cultivation technology, as an accelerated multiplying, adaptive and high-yielding crop; certain recommendations were given for the cultivation of this crop [2]. In addition, in the State Register of the Republic of Uzbekistan since 2021, the varieties of sweet potato Khazina, GulDU, Sirdaryo, Sochakinur, Tailaki are allowed for sowing on the territory of the country, the variety Branch has been accepted for state testing. However, research on the complex study of the elements of the cultivation and storage technology in the context of sweet potato varieties has not been carried out enough [3,4,5].

The purpose of the research was to study the characteristics of growth, the formation of photosynthetic potential, yield, and storage capacity of tubers of new varieties of sweet potato at different times of planting seedlings in the conditions of irrigated typical serozem soils of the Samarkand region, identifying promising varieties and their optimal timing of planting seedlings, ensuring the receipt of sustainable and high-quality harvest, suitable for long-term storage [6].

MATERIALS AND METHODS

Field experiments were carried out in 2020-2021 in the conditions of irrigated typical serozem soils of the the Samarkand region. The mechanical composition of the soil is medium loamy, the depth of groundwater is 10-12 m. In the experiment, the varieties of sweet potato Khazina (standard), Sochakinur, Toyloki, Filial and the timing of planting seedlings 10,20,30.04, 10,20,30.05, and 10.06 according to the scheme 70x20 were comparatively studied. From all studied varieties of sweet potato, the same size of germinated seed tubers weighing 120-150 g was taken, planted to a depth of 4-5 cm in film nurseries, and the soil moisture was maintained at 65-70% for 45-48 days. After that, a ready-made seedling was obtained with 4-5 true leaves in terms of planting dates. Before planting seedlings, the ridges were covered with foil, watered, then holes were made for planting seedlings. Plot area 36 m², replication 4 times.

At the experimental site, all surveys, observations, measurements, and analyzes were carried out according to generally accepted methods and agricultural recommendations. These yield indicators were subjected to mathematical-statistical processing by the dispersion method using Microsoft Excel programs.

RESULTS AND DISCUSSION

The output of seedlings from each seed tuber in the studied new varieties of sweet potatoes at different dates of planting seedlings ranged from 13.5 to 20.7 pieces. In all sweet potato varieties, the highest seedling yield was observed when the seedlings were planted from February 30 to March 10.

The length of the growing season by varieties and planting dates was 121-142 days. When planting seedlings on April 25, the growing season for the sweet potato variety Khazina was 142 days, and for other varieties - 121-132 days.

With further planting dates, a decrease in the growing season by 3-7 days was observed and amounted to 121-133 days.

In order to study the effect of the timing of planting seedlings of sweet potato varieties on the growth and development of plants at 30, 60, 90 and 120 days after planting, the length of the main stem, the number of lateral shoots and the area of the leaf surface of the plants were determined in the field.

It was revealed that the timing of planting seedlings of sweet potato varieties significantly affects the length of the main stem, the number of side shoots, and the area of the leaf surface of plants. On the 30th day of vegetation, the tallest plants in varieties (25.8-34.6 cm), branched (2.2-4.9 pcs.) And leaf area (0.18-0.21 m²) was obtained when disembarking seedlings on April 25. This pattern persisted until the end of the growing season of plants and amounted, respectively, 158.1-191.6 cm, 13.6-15.6 pcs., 0.66-0.78 m². The superiority in plant growth and development was noted in the varieties Sochakinur, Toyloki, and Filial in comparison with the standard variety Khazina. In another way, it can be noted that on the 120th day of the growing season of plants, the standard variety Khazina formed 36.6 thousand m² of leaf area per hectare, and in other studied varieties of sweet potatoes, it was observed at 3.9-6.6 thousand m². more from 1 hectare (table 1).

Determination of the net productivity of photosynthesis of new varieties of sweet potatoes at different dates of planting seedlings showed that on the 30th day after planting the seedlings in the field, the highest net productivity of photosynthesis in the studied varieties was observed at the time of planting seedlings on May 10 and amounted for varieties to 4.16-4.65 g/m² per day. The maximum indicators of the net productivity of photosynthesis (5.89-6.11 g/m² per day) were noted 90 days after planting seedlings in the field. In the subsequent periods of planting seedlings and counting the net productivity of photosynthesis, they decreased.

The study of the rate of accumulation of the yield of sweet potato varieties at different times of planting seedlings showed that on the 30th day of the growing season when planting seedlings on April 25, the standard variety Khazina had 220 g of tops per bush, and the yield of tubers was 158 g, and when planted on May 10 - 225 and 165 g, May 25 - 232 and 176 g, and in subsequent periods decreases to 224-230 and 161-170, respectively, At the end of the growing season of plants, this pattern persists, and the largest mass of tops is 446 g, the yield of tubers is 1018 g per bush. when disembarking seedlings on May 10. In other studied varieties of sweet potatoes, this tendency was repeated, and the highest mass of tops (524 g) and tubers (1259 g) from 1 bush was observed in the sweet potato variety Sochakinur.

The productivity and morphological characteristics of sweet potato varieties in terms of planting seedlings significantly differed, for the standard variety Khazina, the yield of tubers per bush was 987-1108 g, the number of tubers was 6.5-6.7 pieces, the average weight of one tuber per bush was 149.5 165.4 g. These indicators for new varieties of sweet potato are the highest, the highest productivity from a bush is 1262-1389 g, the number of tubers is 8.0-8.2 pcs., The average weight of one tuber is 156.1-169.4 g in terms of planting seedlings were obtained from the Sochakinur variety.

Table 1
Changes in the leaf surface area of sweet potato varieties from one hectare at different dates of planting seedlings (2020-2021)

	Dates of planting seedlings	Leaf area per hectare, thousand m ²				Increase between counts, thousand m ²		
		days of counting after planting of seedlings				30-33/60-63	60-63/90-93	90-93/120-123
		30-33-day	60-63-day	90-93-day	120-123-day			
The variety Khazina (st.)								
.	25.04	8,9	15,0	29,0	34,4	6,1	14,0	5,4
.	10.05	9,9	16,1	31,6	36,6	6,2	15,5	5,0
.	25.05	9,4	15,5	30,0	36,1	6,1	14,5	6,1
The variety Sochakinur								
.	25.04	8,9	16,7	35,5	41,6	7,8	18,8	6,1
.	10.05	11,7	18,9	36,6	43,2	7,2	17,7	6,6
.	25.05	10,5	18,3	36,1	42,1	7,8	17,7	6,0
The variety Toyloki								
.	25.04	9,4	15,0	32,2	37,7	6,6	17,2	5,5

.	10.05	10,5	16,7	34,4	40,5	6,2	17,7	6,1
.	25.05	9,9	15,5	33,3	39,4	5,6	17,8	6,1
The variety Filial								
0.	25.04	9,4	15,5	33,3	40,0	6,1	17,8	6,7
1.	10.05	9,9	17,8	35,5	41,6	7,9	17,7	6,1
2.	25.05	9,4	16,7	34,4	40,0	7,3	17,7	5,6

Productivity by varieties and timing of planting seedlings ranged from 34.5-53.6 t/ha. For the standard variety Khazina, when planting seedlings on April 25, the yield was 34.5, when planting on May 25 - 37.8, when planting on May 10, the highest - 40.3 tons, and in subsequent periods the yield decreases and is 35.0-37, 6 t/ha. The largest increase in yield (5.8 t/ha or 116.8%) was obtained when planting seedlings on May 10. At the same time, the yield of marketable tubers was the highest - 39.5 t/ha or 98.2%. The other studied varieties of sweet potatoes have the highest yield (50.2-53.6 t/ha), of which the marketable yield of 49.4-53.6 t/ha or 98.5-99.0% was obtained when planting seedlings on May 10. At the same time, the yield increase was 6.4-7.2 t/ha or 114.6-115.5%.

CONCLUSIONS

The timing of planting seedlings of new varieties of sweet potato significantly affects the growth and formation of plants, and at the same time, the highest output of seedlings (15.0-20.7 pcs. From 1 tuber), tall (158.1-191.6 cm), branchy (13, 6-15.6 pcs. From a bush) with powerful tops and leaf area (0.66-0.78 m² from 1 bush) when planting seedlings on May 10. At the same time, the net productivity of photosynthesis was the highest in all studied varieties of sweet potatoes and amounted to 4.16-6.11 g/m² per day. The yield varied in terms of planting dates and the studied sweet potato varieties from 34.5 to 53.6 t/ha. The highest yield of marketable tubers (50 t/ha and more) was obtained when planting seedlings on May 10 in the sweet potato varieties Sochakinur, Toyloki, and Filial.

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