

RESULTS OF RESEARCH ON SELECTION AND DEVELOPMENT OF TECHNOLOGY OF CULTIVATION OF VARIETIES OF BATATAS IN THE CONDITIONS OF SAMARKAND REGION

Ostonakulov T.E.,
DSc. Professor
Samarkad Scientific Experimental Station VMPSRI

Shamsiev A.A.
Doctoral Student
Samarkand Branch of the TSUE

Abstract

This article presents the results of the study in the conditions of irrigated meadow-sierozem soils of the Zarafshan Valley during the cultivation of the selected varieties of sweet potatoes Khazina, Xar-Bay, Sochakinur, Japan, etc. with transparent film mulching, planting scheme 90x20x1 or 70x25x1 cm with a plant density of 55.5-57.1 thousand plants per hectare, irrigation regime during the growing season of plants according to pre-irrigation soil moisture 70-80% FMC (field moisture capacity), that is, with 12 irrigations according to scheme 5-7, application of mineral fertilizers at the rate of N₂₀₀P₁₆₀K₁₀₀ kg/ha, the highest marketable (38.4-56.4 t/ha) yield was ensured and the level of profitability 88.6-161.2%.

Keywords: Sweet potato, transparent film mulching, planting scheme, plant density, irrigation regime, mineral fertilizers, and yield.

Introduction

In the leading countries of the producers of sweet potatoes (batat), when growing this crop, research is being carried out to select varieties of sweet potatoes adapted to specific soil and climatic conditions, to create a modern resource-saving technology, to determine effective planting and care measures that create favorable conditions for the growth and development of plants, the possibility of forming a sustainable, high and high-quality harvest. In our country, agricultural technologies are being developed and improved for the selection and creation of new varieties of sweet potatoes, suitable for various soil and climatic conditions of the region and their cultivation.

Batatas or sweet potato (*Ipomea batatas* Lam.) Is one of the new food crops for Uzbekistan. Sweet potato is a perennial, tropical plant. Therefore, in the dry, hot climate of Uzbekistan, sweet potatoes are cultivated as an annual crop - by the seedling method.

The purpose of the research is a comprehensive assessment of sweet potato varieties in the Zarafshan Valley in terms of early maturity, growth, development, intensive reproduction, yield formation, compactness of tubers in the nest, productivity, yield and keeping quality of

tubers and the isolation of promising ones from them, as well as the development of agricultural technology for obtaining high yields for of these conditions.

Field experiments were carried out in the conditions of old-irrigated meadow-sierozem soils of the "Raykhon" farm in the Taylyak district of the Samarkand region. The mechanical composition of the soil is medium loamy with the occurrence of groundwater at a depth of 4-5 m. Agrochemical indicators of the arable horizon are characterized by a low content of humus (0.98-1.11%), nitrate nitrogen (8.41-10.67 mg/kg), mobile phosphorus (25.43-27.61 mg/kg), exchangeable potassium (189-216 mg/kg) soil.

Materials and methods

The object of the study was the varieties of sweet potato Khazina (Uzbekistan) - standard, Pobeda (Russia), Yellow (Japan), Pumpkin (Korea), Sochakinur (Uzbekistan), Xar-Bay (China), Chestnut (Korea), Kumara Red (Estonia), Betty (Italy), Beauregard (USA), Jewel (USA), Bonita (Spain), Sumor (Japan), Japan (Japan), Porto Rico (Portugal), Georgia Jet (USA), Beige (USA). The selected varieties were studied with a row spacing of 70 and 90 cm with a planting scheme of 70x25 and 90x20 cm, 1, 2 and 3 seedlings in the nest. Plot area - 28 m², replication four times.

All records, observations, analyzes, care and harvesting were carried out according to generally accepted methods and agricultural recommendations [1,2,3].

Results and discussion

It was found that the yield of seedlings from 1 seed tuber varied from 5.6 to 19.8 per cultivar. The highest seedling yield was observed in the varieties Sochakinur (19.8 pcs.), Japan (16.9 pcs.), Pobeda, Jewel (15.6-15.9 pcs.), Khazina, Xar-Bay, Bonita (14.7 -14.9 pcs.), And the smallest seedling yield (5.6-9.7 pcs.) Was in the samples of Chestnut, Porto Rico, Kumara Red, Yellow, Georgia Jet.

In the studied varieties, the growing season ranged from 121 to 141 days. The earliest ripening (121-129 days) varieties of sweet potato Sochakinur, Xar-Bay. And for other varieties, the growing season lasted 134-143 days, for the standard Khazin variety it was 140 days.

Biometric counts showed that the height of plants, the number of side shoots and leafiness of the bush in the tested cultivars differed significantly even at the beginning of the growing season (30 days after planting the seedlings) and by cultivars the height of plants ranged from 19.1 (Yellow) to 29.1 cm (Sochakinur), the number of side shoots is from 2 to 4 pieces, and the foliage of plants is from 33 (Pumpkin) to 68 pieces (Sochakinur). The tallest (26.0-29.1 cm) with the largest lateral shoots (3-4 pieces) and leafy (62-71 pieces) plants were observed in the varieties Sochakinur, Japan, Xar-Bay. This advantage was preserved during the growing season of plants and on the 120-day after planting the seedlings were, respectively, 157.2-188.9 cm, 14-15 pieces and 234-260 pieces.

Intensive plant growth was observed 30-90 days after planting seedlings in the field. So, in the standard variety Khazina, the plant height on the 30-day after planting seedlings in the field was 22.0 cm, on the 60-day - 70.4 cm, on the 90-day - 122.1 cm, and on the 120-day - 149, 1 cm, plant growth was noted, respectively, 47.6; 51.7 and 27.0 cm.

The studied varieties of sweet potatoes differ significantly in terms of the rate of formation of the yield of tops and tubers during the growing season, and on the 30th day after planting the seedlings in the field, the mass of the tops from the bush was 215-293 for varieties, and the mass of the tuber was 138-213 g. The highest rate of yield formation from a bush of tops (293 g) and tubers (213 g) was observed in the variety Sochakinur. These benefits persisted until the end of the growing season. A relatively high rate of accumulation of the crop tops and tubers was observed in the varieties Xar-Bay, Japan, Bonita, Kumara Red, Beauregard, in which at the end of the growing season the mass of the tops per bush was 453-571, and the yield of tubers was 991-1188 g. varieties of sweet potato Khazina on the 30-day after planting seedlings in the field, the mass of tops from the bush was 229, the yield of tubers was 169 g, on the 60-day, respectively, 336 and 377, on the 90-day 376 and 741, and on the 120-day after planting seedlings 403 and 971 g. Sweet potato varieties Sochakinur, Xar-Bay, Japan are distinguished by an intensive rate of formation of haulms and tubers yield. (Fig. 1)

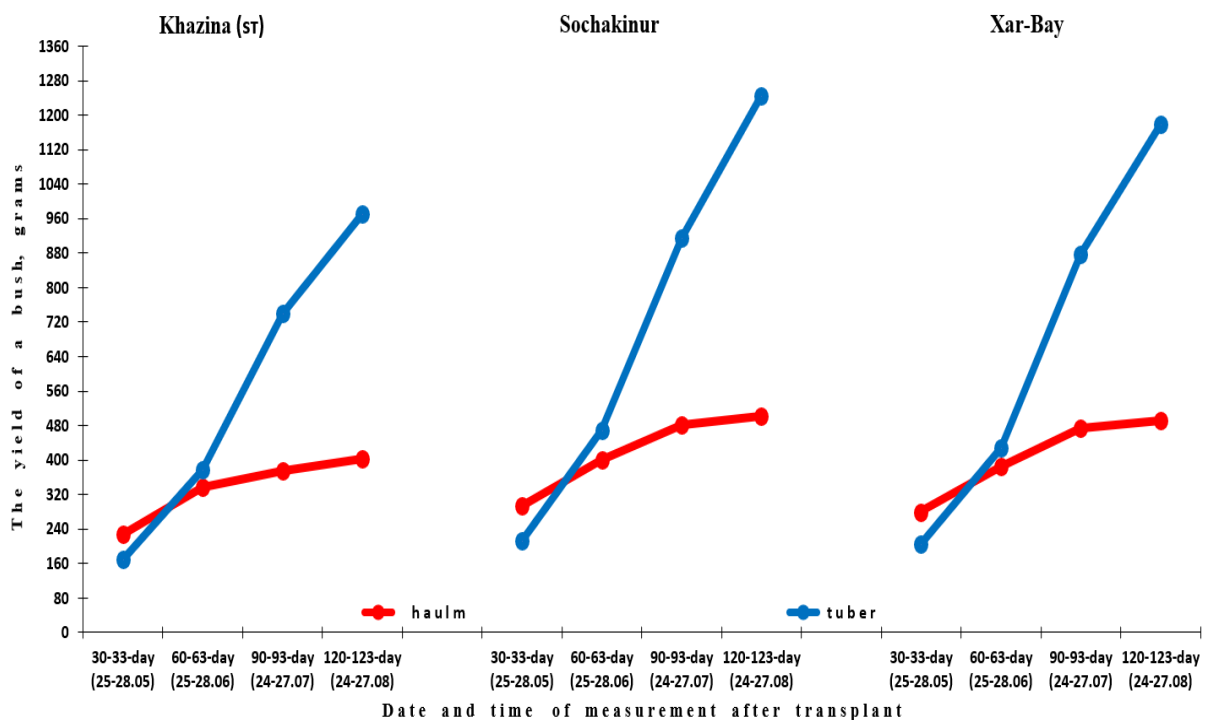


Fig 1. Formation of haulms and tubers in sweet potato varieties

It was revealed that the yield of tubers from one bush varied by varieties from 885 to 1265 g, the number of tubers from a bush from 6.2 to 10.1 pcs., The weight of one tuber from a bush from 99 to 154 g. The highest productivity indicators (1265 g , 8.2 pcs., Average tuber weight 154 g) were obtained from the variety Sochakinur. All the studied varieties of sweet potato did

not differ in the compactness of tubers in the nest, that is, the arrangement of the crop of tubers in the nest was compact in all varieties (Fig 2).



Fig 2. Houlms and tubers of the batat Sochakinur variety.

The yield of sweet potato varieties varied from 32.5 to 46.1 t/ha. The highest yield (44.5-46.1 t/ha), of which an increase in yield of 9.4-11.0 t/ha or 126.8-131.3%, was obtained in the varieties Sochakinur, Xar-Bay, Japan. At the same time, these varieties had the highest yield of marketable tubers, which amounted to 43.2-45.2 t/ha or 97.1-98.0%.

When studying the planting of seedlings 1, 2 and 3 pieces in a nest with a row spacing of 70 and 90 cm according to the scheme 70x25x1 (plant density 57100 per 1 ha), 70x25x2 (114,200 per 1 ha) and 70x25x3 (171300 per 1 ha), 90x20x1 (plant density 55,500 per 1 ha), 90x20x2 (111,000 per 1 ha), 90x20x3 cm (166,500 per 1 ha) in the selected varieties of sweet potato Sochakinur and Xar-Bay, it was found that the highest productivity (45.3-47.8 t/ha) was obtained when planting seedlings according to the scheme 70x25x1 and 90x20x1 cm. With an increase in the density of the seedlings standing per hectare with a width of 70 cm from 57.1 to 171.3 thousand, and at 90 cm from 55.5 to 166.5 thousand. the productivity of the bush, the yield and marketability of the crop is significantly reduced and is for varieties 902-942, 32.7-36.0 t/ha, and marketability - 88.6-92.1% or 142-244, the yield 8.7-11.1 t/ha, marketability 3.4-5.7% is lower compared to the scheme 70x25x1 (90x20x1) cm, standing density 55.5-57.1 thousand per 1 ha.

Conclusions

In the conditions of irrigated meadow-sierozem soils of the Samarkand region, widespread cultivation of the selected varieties of sweet potatoes (yam) Sochakinur, Xar-Bay and Japan according to layouts 70x25x1 and 90x20x1 cm, plant density 55500-57100 per 1 hectare by mulching with film, maintenance during the period vegetation of plants of the irrigation regime for pre-irrigation soil moisture not lower than 70-80% FMC or 12 irrigations according to the scheme 5-7 (from "planting seedlings to closing the tops" - 5, from "closing the tops to ripening" - 7 times), the introduction of mineral fertilizers at the rate of N₂₀₀ P₁₆₀ K₁₀₀ kg/ha provide the possibility of obtaining a stable high yield (43-48 t/ha) with good commercial qualities.

Reference

1. Dospekhov B.A. Field experiment technique. - Moscow.: "Kolos". 1985. - P.280-285.
2. Research methodology for potato culture (VNIIKH).– Moscow. 1967. - P.210.
3. Ostonakulov T.E., Zuev V.I., Kodirkhodzhaev O.K. Vegetable growing (in Uzbek) - Tashkent. 2018.-P.554.
4. Ostonakulov T.E., Khamzaev A.Kh., Shamsiev A.A. Issues of selection and cultivation technology of sweet potatoes (sweet potatoes) in the conditions of the Zarafshan valley. Monograph. Tashkent. Publishing house "Navruz". 2020.-P.-134.
5. Fedorov, A. V. Plant productivity of *Ipomoea batatas* Lam. in the southern agro-climatic region of the Udmurt Republic. International research journal. - 2018. - No. 12 (78). - P. 18-21.
6. Zorin D.A., Cheremnykh E.N. Introduction of sweet potatoes in the Udmurt Republic. Bulletin of the Izhevsk State Agricultural Academy. -No. 4 (60) 2019. -P. 11-15.