

## CULTIVATION OF MINI TUBER

**Lapasov Sayfiddin Sanakulovich<sup>1</sup>**

<sup>1</sup> Research Institute of Vegetable, Melon Crops and Potatoes,  
PhD, Senior Researcher,

<https://orcid.org/> <https://orcid.org/0009-0009-0959-0522>;

**Ibodullaev Khusniddin Ibodulla ugli<sup>1</sup>**

<sup>1</sup> Uzbek-Hungarian Scientific Center of Potato Growing, Research Fellow,  
<https://orcid.org/0009-0007-4257-7691>;

**Khasilbekova Dilshodakhon Khakimjon kizi<sup>2</sup>**

<sup>2</sup> Scientific Research Institute of Vegetable, Melon Crops and Potatoes,  
Doctoral student,

<https://orcid.org/0009-0008-7954-9181>

**Yuldashev Azamjon Makhammadjonovich<sup>2</sup>,**

<sup>2</sup> Research Institute of Vegetable, Melon Crops and Potatoes, Researcher.

**Temirov Abdunazar**

<sup>2</sup> Research Institute of Vegetable,  
Melon Crops and Potatoes, Researcher.

**Abstract**

This article provides information on the cultivation of mini-tubers by planting potatoes grown in vitro in modern greenhouses in an artificial nutrient medium. The research was conducted in the modern greenhouses of the National Center for Knowledge and Innovation in Agriculture in 2024-2025.

**Keywords:** potato, variety, leaf, stem, plant height, plant "in-vitro," mini tuber, temperature, yield.

**Introduction**

Today, potatoes are planted on a total area of 21.5 million hectares in the countries of the world, and more than 351 million tons of potatoes are grown annually. In the world, potatoes rank second after wheat, rice, and corn, and second in importance. Potatoes are a source of proteins, starch, various vitamins, as well as mineral salts and elements important for humans. It has been established that potato tubers contain 26 elements from the periodic table of D. Mendeleev. Potato farming plays an important role in ensuring the country's food security.

That's why potatoes are called "second bread." Therefore, the cultivation of high-generation potato seeds is of great importance.

**Research Objective and Methodology.** The purpose of the biotechnology laboratory is to propagate in vitro virus-free potato varieties of Hungarian selection, to grow micro- and mini-tubers for high-generation primary seed production in greenhouse conditions.

The following methodological guidelines were used in the research: "Methodology for Conducting Experiments in Vegetable Growing, Melon Growing, and Potato Growing."

#### **Discussion of research results.**

After laboratory processes, potato plants were prepared for release into greenhouse conditions. During these processes, the plants developed during the propagation process were removed from special containers and, together with a 3% NaCL water mixture, the root part of the plants was purified from the residues of the artificial nutrient medium in this chlorinated water. It was washed again in clean water, the chlorine residues were also cleaned, "Okhsin" was prepared for the roots, left for 6-8 hours, and released into greenhouse conditions, where it was washed again from these hormones. Then, planting was carried out on a substrate prepared in the greenhouse.

In the biotechnology laboratory, "in-vitro" potato plants were planted in greenhouse conditions with special mixtures.

The composition of the special mixture consisted of: Peat, Perlite, Vermiculite, Cocopet, and microelements (NPK) were initially mixed in a dry state.

Special mixtures were spread on the greenhouse shelves to a thickness of 25 cm, after which the special mixture was soaked in water for 8 hours and smoothed by stirring.

"in-vitro" for planting seedlings, the moisture content of the special mixture should be 70-75 percent, and the temperature of the greenhouse should be 22-24°C<sup>0</sup>. At this temperature, seedlings were planted in the second half of the day. "in-vitro" To ensure the correct grafting of seedlings in the greenhouse, the top of the seedlings was covered with a 6 mm wire loop every 1 meter after planting.

When transplanting potato seedlings in vitro into a greenhouse, it is necessary to pay attention to the quality of the mixture. Fertilizing, softening, and aerating the mixture are crucial measures for potato growth.

Before planting potato plants in vitro in the greenhouse, it is necessary to adapt them. After planting, it is necessary to regularly water the plants, remove weeds, and control pests.

After planting in the second half of the day, in-vitro potato plants planted in special mixtures in the greenhouse are fed with root-sprouting nutrients at a rate of 1 liter per square meter, after which the seedlings are covered with a "bow" and black material for 8-10 days.

Every morning and evening, 2 hours before sunset, the plants are exposed and ventilated, this process is carried out in-vitro until the plants are completely covered.

After the in-vitro hardening of potato plants in the experimental field, the greenhouse air temperature was maintained at 22-26°C 0C and humidity was maintained at 65-70%.

The plants in-vitro cared for in the greenhouse were irrigated by the sprinkler irrigation method in 24 hours for 8-10 minutes for 8 days. The seedlings, transferred to special feeds, were fed after full capture.

For the propagation of potato plants in greenhouse conditions, sowing was carried out in September-October. A total of 170 square meters were planted with tubers. The results of the harvest were completed in the second half of January 2025.

Initially, after the initial planting of plants brought to the greenhouse from laboratory conditions, additional feeding was carried out every 10 days, initially 5x5, then the second (thinning) planting was carried out according to the 20x20 scheme.

Due to a decrease in air temperature, the development and ripening period is somewhat extended; during these periods, the development processes of the stem part of the potato plant formed the following general measurement results. The stem height was 7-23 cm, and the number of stems was 2-5 pieces.

A total of 23952 tubers were obtained for 5 varieties (**"Botand," "Demon," "White Lady," "Ballatoni Sargo," "Ballatoni Rozsa"**).

## RESULTS

1. An optimal nutrient medium has been prepared for virus-free microclonal propagation of potato varieties of Hungarian selection.

2. Mini-tubers were grown by planting "in-vitro" potatoes in modern greenhouses in an artificial nutrient medium.

## References

1. Azimov B.J., Azimov B.B. Methodology for Conducting Experiments in Vegetable Growing, Melon Growing, and Potato Growing. // Tashkent, "Uzbekistan National Encyclopedia," 2002 (2006). - Б. 181-185.

2. A. Shokirov, S. Lapasov, O. Ismailov, A. Fayzullayev, N. Ismailova, R. Karimov. "Selection of promising potato variety samples for the next term." International journal of biological engineering and agriculture. <https://interpublishing.com/index.php/IJBEA/article/view/2050>.
3. Lapasov S. S. "Studying and Introducing a Collection of Potato Varieties." Nexus: Journal of Innovative Studies of Engineering Science (JISES). Volume: 01 Issue: 03 | 2022 ISSN: 2751-7578 <http://innosci.org/>.
4. Zsolt Polgar, M.A. Tashmatova, M.U. Kholdarov, Sh.R. Aripova, D. Tursunov, O. Ismoilov. Adaptation of Potato Varieties of Hungary to Certain Conditions. // International Journal on Integrated Education IJIE Research Parks Publishing (IDEAS Lab). Vol. 6 No. 6 (2023), pp. 168-171.
5. Lenova N.S. Variability in potato culture (*Solanum tuberosum* L.) in vitro and possibilities of its use in seed breeding: abstract of diss. Biotechnology. Ulan-Ude, 2010. - 34 p.