Laboratory of Cell Technologies

Head of the laboratory

Elmurat Gavshitovich Kholmuratov

The laboratory was founded in 2012; the development of the most efficient methods for *in vitro* introduction and micropropagation of the potato and other crops is a principle direction of activity.

t. laboratory is conducting studies on the effects the nano-compounds produce on the growth and development of plants, effects of growth inhibitors and stimulators of various origins on the formation of a microtuber, as well as on their storage, germination and cultivation in the open ground, effects of stress factors and other conditions of cultivation on the changes taking place in the qualitative compositions of microtubers *in vitro*, effects of a nutrient medium on the intensity of growth and development by the dispersion of the medium components.

A. unique technology for generation of microtubers in the micropropagation of any potato genotype *in vitro*, for generation of seedlings from the microtubers and production of the elite of elite seed potato on their basis has been developed at the laboratory.

f. the first time, scientific and technical documentation for the potato microtubers production *in vitro*, for production of the elite of elite seed potato based on the microtubers, as well as for production of the elite of elite and the elite seed potato was developed in the Republic. The control over accumulation of the potato viral infections by means of the enzyme-immunoassay has been arranged.

t. potato biotechnological collection was made up at the laboratory to be registered as a unique object of the Uzbekistan Academy of Sciences in 2015. Today, in the collection there are more than 200 potato genotypes in the forms of plants and microtubers in vitro, including those all those cultivated in Uzbekistan, as well as promising lines and clones maintained at the laboratory. The works for optimization of conditions to maintain the potato biotechnological collection, for in vitro selection of candidates for the species from the genetic material of the collection in question are under way.

t. table grapes, to name “Kora kishmish” (Black sultana grape), “Sogdiana kishmish” (Sogdiana sultana grape), “Rizamat”, as well as the vine grapes, to name “Yursi Muscat”, “Sweet Muscat” and others were brought in *in vitro* cultivation to be propagated.

In vitro propagation of the grapes

The potential capacity of the laboratory is the annual production of 2.4-3.0 mln potato microtubers. All stages of the elite seed potato production, starting from the production of microtubers to the production of the elite seed potato, were tested in the experimental farms of the Institute and in a number of farms in Namangan region.

The bedding of microtubers and production of elite of elite seed potato in Bakhmal

The bedding of microtunbers and production of elite of elite seed potato in Pskom

Generation of seedlings from microtubers and production of elite of elite seed potato in the farm of Yangikurgan district of Namangan region

The seed potato production is certified at all stages.

Upon prior request, the laboratory is capable of production of any amounts of virus free microtubers or seedlings of any potato species for production the elite of elite seed potato within a year.

Potato microtubers ready for bedding and the potato seedlings

Upon prior request, the laboratory can produce the seedlings of any grapes.

International ties

The laboratory cooperates with International Center of Potato (CIP, Lia, Peru), Gulistan State University, Tashkent Agrarian University, Namangan State University and other higher educational institutions.

The workers of laboratory with Dr. Karli K., a regional CIP representative

Publications

1. Kholmuratov E.G., Salikhov Sh.I. The cytokinins and their significance in micropropagation of potato. (2017). Uzbek Biological Journal. 5:32-37.
2. G.T. Mavlonov, E/G/ Kholmuratov, G.B. Nasirova et all. Glycoalcaloids profile of different potato genotypes microtubers in tissue culture. (2017). Uzbek Biological Journal. 3: 58-63.
3. Kholmuratov E.G., Nasyrova G.B., Sabirova M.Sh., Todjieva L. Potential for a potato biotechnological collection as an optimal system for the applied experiments. Abstract, Proceedings of “Scientific-innovation bases for the potato, vegetable and melon growing in the Republic of Kazakhstan” International Scientific-Practical Conference, July 22-23, 2016, 236-240
4. Kholmuratov E.G., Nasyrova G.B., Sabirova M.Sh., Abdulkhakova S. Dynamics of accumulation of viruses in the potato crops by their localities. Abstract, Proceedings of “Scientific-innovation bases for the potato, vegetable and melon growing in the Republic of Kazakhstan” International Scientific-Practical Conference, July 22-23, 2016, 241-245

5. Kholmuratov E.G., Nasyrova G.B., Mirzaganiev M.M. Advantages of the integrated approach to the potato micropropagation. Abstract, Proceedings of “Current problems of genetics, genomics and biotechnology” Republican Conference, Tashkent, May 18, 2017. 173-174
6. Nasyrova G.B., Sabirova M.Sh., Tojieva L.O., Kholmuratov E.G. Optimal method for maintenance of a potato biotechnological collection. Abstract, Proceedings of “Current problems of genetics, genomics and biotechnology” Republican Conference, Tashkent, May 18, 2017. 159-161
7. Kholmuratov E.G., Nasyrova G.B., Sabirova M.Sh., Edilova G.E. Controlled reversed inhibition of the potato microtuber sprouting generated *in vitro*. Abstract, Proceedings of “Current problems of genetics, genomics and biotechnology” Republican Conference, Tashkent, May 18, 2018, 254-255

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