



Technology of Microclonal Growth of Orchide Flower

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Abstract *In vitro* propagation of trees and plants is becoming a requirement of the times. Because this method allows you to grow a lot of seedlings in small areas. By creating a technology for growing orchids in this way, economic efficiency in floriculture in Namangan will be achieved. Based on the achievements in the field of cell and tissue culture, a new method of vegetative propagation of plants - clonal micro propagation (asexual reproduction of plants *in vitro* (test tube), genetically identical to the original) is created.

Keywords plants, clone, floriculture, cell, vegetative propagation, orchid

Introduction

In many countries of the world, the bioindustry of microclonal propagation of crops is well established, and dozens of actively developing enterprises are engaged in this work. In France, for example, 94% of flower beds are grown this way. In the United States, more than 100 enterprises grow ornamental plants, vegetable and field crops, and fruit and forest tree seedlings *in vitro*. The Netherlands leads in the cultivation of healthy ornamental flowers and Italy in the cultivation of fruit trees in this way.

In the context of the Republic of Uzbekistan, in collaboration with the Uzbek Institute of Bioorganic and Uzbek Vegetable and Potato Research Institutes, the Institute of Fruit and Viticulture named after M. Mirzaev and the Institute of Genomics of the Russian Federation are conducting research on the cultivation of potatoes *in vitro*.

Growing seedlings *in vitro*

The method of growing cells and tissues in an artificial nutrient medium under sterile conditions (*in vitro*) is called "isolated tissue culture" and is of great importance as a branch of biotechnology.

Currently, in many countries around the world, special attention is paid to the development of biotechnology. The main reason for this is that biotechnology has a number of advantages over other technologies. In particular, biotechnological processes require very little energy, are almost waste-free, environmentally friendly, and so on. At the same time, it is based on conducting these processes throughout the year, without taking up much space.

In vitro cultivation of seedlings from cells and tissues is called clonal micro propagation, which is carried out for the following purposes:

- *In the synthesis of isolated plant cells secondary metabolites necessary for medicine, veterinary medicine, cosmetics and other fields: alkaloids, steroids, glycosides, hormones, essential oils and other biologically active substances;*
- *In the absence of the ability of the plant to grow on its own under certain conditions, to grow their cells throughout the year;*
- *In the use of isolated cells in plant breeding and thus in the creation of fast-growing plants resistant to various environmental influences (heat, cold, salinity, drought, disease);*
- *At the same time, this direction is in the creation of new plants and the production of somatic hybrids by the addition of isolated protoplasts;*



- In the production of haploids from the extracted pollen and seed buds in an artificial nutrient medium, in the cultivation of hybrid seeds from plants that cannot grow and grow (poorly developed endosperm);
- This method is used for the reproduction of isolated tissues and the healing of planting material free from viruses and other pathogens.

Currently, many scientists around the world do not conduct research on orchids. In particular, Japanese scientists are currently conducting research on enlarging the petals of the flower.

In 2019, Austrian botanist Anton Zider identified a new, pungent-smelling orchid species in Madagascar, according to National Geographic. The scientist submitted his find to the Kew Botanical Garden of the Kingdom. Orchid specimens and its alcoholic replica were studied by Johan Hermans, a researcher at the Royal Botanical Garden.

He confirmed that the plant, named *Cynorkis christae*, was new to science. "It's a real find," John said. "The distinguishing feature of this orchid is its sweet aroma, similar to the smell of champagne." The flowers of the *Cynorkis christae* plant are large. Most of them are white, and the upper leaves are bright burgundy.

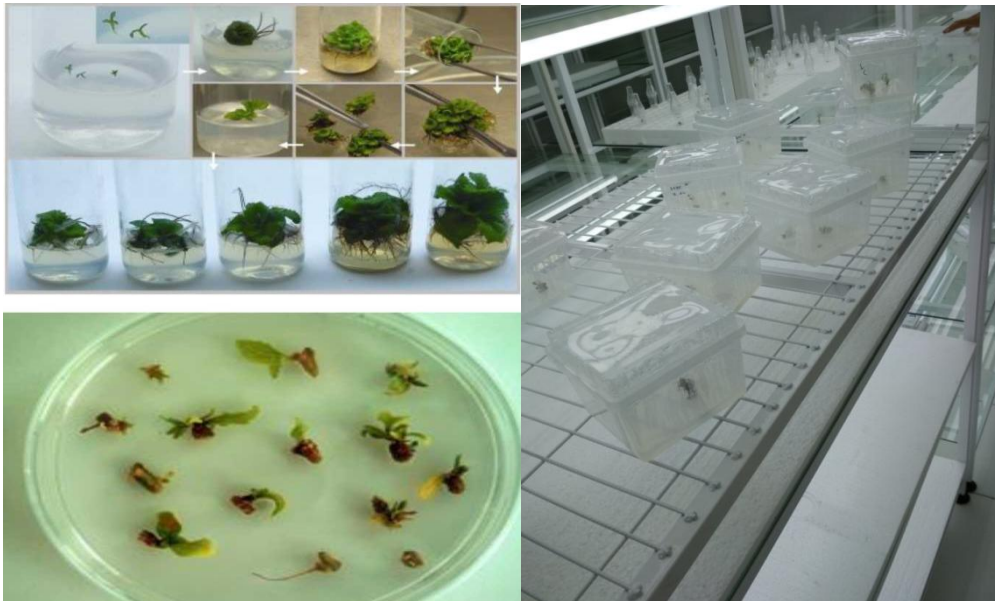
"I'm surprised this orchid hasn't been found before," Johan said. "It's probably because he's growing up in a remote area." In addition, the flower can be seen only for a month - the plant blooms only during the rainy season.

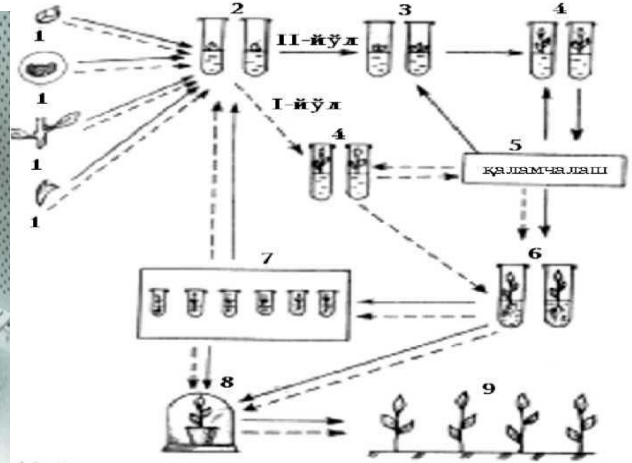
In collaboration with the staff of the Namangan Institute of Engineering and Technology and the Namangan Floriculture Development Center, scientific research is being carried out on growing orchids *in vitro*. During the study, the orchid flower obtained for the experiment was studied in depth, and a group of NamMTI scientists cultivated this flower *in vitro* and organized a trip to the Republic of Malaysia where this flower was widely grown and returned to Malaysia to improve their skills.

Studies have shown that the orchid flower belongs to a plant species that grows in the dead bodies of trees and shrubs under natural conditions. In the cultivated state, this flower feeds on humus made from peat bark. Orchids are very delicate in nature, sharp-smelling, odorless, and in appearance are divided into different varieties. This is due to the fact that the aerial roots of this flower are very well developed, they grow well in humid climates, i.e. at 60-70%, the maximum temperature is 25-27 °C, and the lowest is 15-18oS. In breeding, their stems are used.

Conclusion

The current research uses the technology of *in vitro* propagation of orchids. In this context, the technology of applying 2 methods has been scientifically studied.





Picture 1: The process of clonal micro propagation of plants



Picture 2: Orchid flowers selected for research

That is, the callosum is propagated from the growing tissue of the flower, and these seeds, which are mature within 6 months after fertilization of the flower, are grown *in vitro* and divided into callos. Both of these methods achieve economic efficiency in reproduction technology. Only the results of research show which one is the most acceptable variant.

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