IN VITRO SLOW-GROWTH STORAGE OF THE ENDANGERED SPECIES MALUS NIEDZWETZKYANA FOR BIODIVERSITY CONSERVATION

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The conservation of biodiversity requires efficient ex situ methods for storing plant genetic material outside its natural habitat. This approach will maintain valuable, endemic, and endangered plant species for extended periods. One widely used method is *in vitro* slow-growth storage.

Our study describes the results of slow-growth storage of micropropagated shoots of the endangered and endemic *Malus niedzwetzkyana*. *In vitro* shoots of annual shoots of the *Malus niedzwetzkyana* were used as the object of the study. The shoots were obtained using a previously developed protocol of micropropagation.

To develop slow-growth storage in in vitro culture of shoots, we studied the influence of osmotic agents, light, and temperature regimes. We investigated cultivation conditions such as temperature (4°C and 24°C) and photoperiod (16/8 and growth in the dark), as well as the composition of nutrient media to slow growth (sucrose, mannitol, abscisic acid). The research results showed that the optimal condition for medium-term storage of shoots is the QL nutrient medium with the addition of 3% or 6% sucrose under standard conditions. The optimized protocol allowed us to preserve the shoots of *Malus niedzwetzkyana* for 5 months without re-cultivation.

This result confirms the effectiveness of the selected protocol for slow-growth storage of *Malus niedzwetzkyana* shoots. The explants stopped growing but remained viable, and the recovery period took 35 days (1 passage). The developed protocol enabled us to preserve plant material for several months without intermediate cultivation. As a result of this work, an *in vitro* collection was created to conserve the rare and endangered species of *Malus niedzwetzkyana*.

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