

In Vitro Conservation Through Slow-Growth Storage



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Abstract In vitro approaches are valuable for the conservation of plant biodiversity that includes the preservation of genetic resources of vegetatively propagated species, threatened plant species, taxa with recalcitrant seed, elite genotypes, and genetically modified/engineered material. The mid-term conservation is usually achieved by reducing the growth of in vitro cultures through the application of minimal media and growth retardant or storage at low temperatures resulting in prolonged intervals between the subcultures. Moreover, the combinations of all these factors are also employed for slow-growth storage. The medium-term conservation strategies are consistently employed for a large number of plant species, including various threatened species, from tropical as well as temperate origin. For long-term conservation of plant species, cryopreservation (storage in liquid nitrogen at -196°C) is commonly employed. However, the main difficulties associated with cryopreservation are the maintenance of in vitro cultures as the procedure is highly technical and expensive since it involves a huge amount of resources and labor. In vitro slow-growth storage, therefore, enables a possible solution for mid- to long-term conservation of plant materials in limited space and at reduced costs too. Slow-growth procedures allow clonal plant conservation for several months to years (depending upon the species) under aseptic conditions, requiring the infrequent successive transfers of the cultures.

Keywords Cold storage · Endangered species · Germplasm storage · Growth retardant · Minimal medium

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