



3096 - Plant Genetic Resources

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## IN VITRO ESTABLISHMENT AND CONSERVATION OF GRAPEVINE GERmplasm

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Plant genetic resources are characterized by the presence of significant phenotypic variation, due to the occurrence of allelic diversity, maintained by evolutionary processes or by artificial selection. Thus, plant germplasm comprise the huge genotypic diversity found in wild and cultivated species, which has been used as source of traits of interest. Although extremely valuable, biodiversity conservation has high demands for funding, physical space and work-power. In vitro conservation is an interesting alternative for the conservation of highly-heterozygous, vegetatively propagated, perennial species, such as grapevine. It also helps to improve the plants phytosanitary conditions. The current work aimed to develop effective and feasible means to in vitro establishment and conservation of grapevine germplasm. Woody stakes of ~ 30 cm were obtained from the field collection of the Grapevine Germplasm Bank, at Embrapa. Stakes were surface disinfected, planted in a mixture of autoclaved soil and vermiculite (1:1), and kept under controlled temperature ( $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ) and relative humidity (70%). Young apical shoots (~ 10 cm) were excised and superficially disinfected in 70% (v/v) ethanol followed by immersion in 1% (v/v) bleach with 1%(w/v) polyvinylpyrrolidone. Explants were transferred to tubes with 15 mL of medium with 0.25% (w/v) active charcoal, under aseptic conditions. Established plants were propagated and maintained in vitro as duplicates. For long-term conservation, the effectiveness of two cryopreservation techniques; vitrification and encapsulation-dehydration, was compared for 11 grapevine genotypes, including *Vitis vinifera*, *V. labrusca*, *V. berlandieri* x *V. rupestris*, and *V. riparia* x *V. berlandieri* hybrids. Shoot induction from treated stakes under protected greenhouse conditions significantly reduced environmental contamination and, along with the use anti-oxidant agents, allowed in vitro establishment of approximately 1000 (80%) grapevine accessions. The establishment of the remaining accessions is underway. Plants free of ectophytes were produced for 610 (41%) accessions. Cryogenic protocols require further modifications to achieve acceptable recovery rates. High-scale in vitro conservation of grapevine germplasm is feasible and may safeguard valuable biodiversity. Although promising, cryopreservation requires further studies for protocol optimization.