

Coffee Seed Cryopreservation: Current Research Progress

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SUMMARY

Viability of seeds stored in genebanks must be maintained for several years or even centuries. Because of the difficulties in storing the seeds, coffee germplasm is maintained in field collections, presenting significant problems, such as land and labor costs and susceptibility to environmental hazards and pathogens. Storage of *Coffea* species in *ex situ* genebanks may help to preserve the threatened diversity of this important genus. Since 1976 the International Plant Genetic Resources Institute has considered coffee as a high priority for genetic conservation. For non-orthodox seed species, cryopreservation is the only technique available for long-term germplasm conservation. The genebank of Embrapa Genetic Resources and Biotechnology, in Brazil has now established a program to cryopreserve genetic resources of *Coffea*. The protocol was first determined for *C. arabica* and *C. racemosa*. Seeds were first dried to 0.20 g/g (in equilibrium with 78-80% RH). Sufficiently rapid cooling and warming was achieved in hermetically-sealed foil-laminate bags containing 10-11 g (or 50 seeds) by plunging bags directly into liquid nitrogen – LN containers and placing bags removed from LN directly into a 40 °C bath. Successfully cryopreserved *C. arabica* and *C. racemosa* seeds showed minimal viability loss after two-year storage in liquid nitrogen. The same protocol is being adapted to other species of *Coffea*.