A comparison between the Encapsulation-Dehydration (ED) and Droplet-Vitrification (DV) methods on cassava's cryopreservation: Could these techniques overcome cassava's recalcitrant behavior?

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Cassava genetic resources conservation is managed through in-situ or ex-situ methods. CIAT maintains more than 6300 cassava accessions under an in vitro storage facility at 26°C, 1000lux, 12/12 photoperiod using less than 65m². Depending on clone behavior under those conditions, stocks should be planted on fresh medium each 8-12 months. Cryopreservation could allow the maintenance of this collection for the long-term, reduce maintenance and regeneration costs, and minimize the risk of genetic change. CIAT has implemented classical and new techniques on cassava cryopreservation. During recent years, we focused on the ED method and it was tested with the core collection. Some clones have shown recalcitrance to this technique. As part of a collaborative project among CGIAR centers (IITA, CIP, Bioversity and CIAT) with a support of the Global Crop Diversity Trust and GPG-2, a round of technical interactions were facilitated among researchers of participating centers. Recalcitrant clones to ED were tested with the DV method. Data showed that some clones could overcome the recalcitrance. One-hundred lowest responding clones were tested with the new technique and plantlets are being recovered to transfer to soil to be analyzed. If no changes are observed, this technique could be considered as a routine cryopreservation method.