CRYOPRESERVING CASSAVA MERISTEMS BY DROPLET VITRIFICATION; TRYING TO SOLVE THE REGENERATION PROBLEM

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Cassava is an important root crop cultivated in the tropics and source of starch and animal feed. Pests, diseases and monocultures pose a major threat to its genetic resources. Through cryopreservation, we can protect the wide variety that exists in this species.

Cryopreservation, using 2 different droplet vitrification methods was investigated and the response of 3 different accessions of *Manihot esculenta* (Cassava) was compared. Apical and axillary meristems were excised from 4, 8 and 16 weeks old in vitro grown plants. Higher viability, shoot growth and plant regeneration percentages were observed for apical shoot tips compared to axillary shoot tips. Overall viability and shoot growth rates where high (average of 78.3% and 73.56%). Plant regeneration percentages, however, varied considerably for the 3 accessions (between 1.26% and 30.9%; average of 11.7%).

Subsequently three different regeneration media were investigated by using apical and axillary meristems. Again, the overall viability and shoot growth were high (respectively 91.1% and 77.1%), while the plant regeneration achieved only 10.7%. When the regeneration of the three different accessions are compared, the M. Bra 856 scores significant the best with a percentage of 24.0%, while the other two accessions CM 3306-4 and CM 507-37 reached only a regeneration percentage of respectively 4.4% and 3.9%. Regeneration frequencies on the three different culture media show no significant differences.

A cyto-histological study shows some damaged meristematic zones after the shoot tips underwent cryopreservation protocol. This could be linked to the observation that despite high viability and even high shoot growth frequencies are obtained; the formation of rooted shoots is still difficult.