

An *in vitro* assay for drought-tolerant coconut germplasm

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Summary

The feasibility of developing an *in vitro* technique for screening drought-tolerant coconut germplasm has been investigated. Embryos excised from mature nuts of Sri Lanka-tall coconut were cultured as described previously. Water-stress in the culture system was progressively increased with each passage, by incorporating polyethylene glycol (PEG-6000), mannitol and sodium chloride into the culture medium. PEG was reported to be a potent growth inhibitor in action even at low concentrations and these two compounds were abandoned. In NaCl-stressed media, about 21% of randomly selected Sri Lanka-tall embryos died before reaching the 170 mM NaCl. About 78% survived 170 mM NaCl and only 12.6% were able to resist 320 mM NaCl. When zygotic embryos derived from two known drought-susceptible cultivars of coconut, CRIC-65 and Dwarf (from *pumila*) were tested using the same technique, 29% and 73% of embryos respectively died due to stress damage caused by 170 mM NaCl and none of either cultivar survived a salt concentration above 230 mM.

However, embryos originated from two putative drought-tolerant cultivars showed a higher survival rate when subjected to salt stress. At 170 mM NaCl, all the embryos had developed into seedlings. In fact, percent germination of embryos was somewhat higher in 170 mM NaCl than in the control, that was devoid of NaCl. However, percent survivors gradually dropped with increase in salt concentration and about 18% survived the 330 mM NaCl. The technique seems to have great potential in screening drought-tolerant coconut germplasm.