Ex situ conservation approaches for *Gossia* and *Decaspermum* species to safeguard plant diversity in Australia

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Myrtle rust is an invasive fungal disease in Australia caused by the pathogen *Austropuccinia psidii*. Since its introduction to Australia in 2010, the disease has posed a great threat to Australian ecosystems by impacting around 400 species in the predominant Myrtaceae family. Confirmed hosts of myrtle rust include the only two *Decaspermum* in Australia--*D. struckoilicum* and *D. humile* as well as 14 spp. in *Gossia*. Seven of these *Gossia* species as well as *D. humile* are identified as priority species for conservation action in the National Myrtle Rust Action Plan. Adding to the urgency of the situation is the status of many of these species as 'exceptional,' making them unsuitable to be conserved in seed banks. Additional actions and tools are required to conserve the remaining germplasm. This study aims to use tissue culture and cryopreservation to conserve three of the impacted *Gossia* and *Decaspermum* species including endangered *G. fragrantissima* and *G. gonoclada*. Collaborating with the Australian PlantBank, a full tissue culture protocol has been developed for *G. fragrantissima* and *Decaspermum* sp., with plants acclimatized back into nursery conditions. The successful establishment and growth of *G. gonoclada* shoots in tissue culture has also been achieved from multiple mature parent stocks. Additionally, cryopreservation has been initiated to conserve *G. fragrantissima*, with extension planned for *G. gonoclada* and *Decaspermum* sp. Preliminary results demonstrate that cold-pretreatment of donor cultures is key to regrowth of *G. fragrantissima* shoot tips after cryoprotectant exposure in a droplet vitrification protocol. The best post-cryopreservation survival and regrowth was 40% with 10-day cold pretreated apical shoot tips (2 mm) treated with 20 min loading solution and 20 min Plant Vitrification Solution 2 (PVS2). This work underpins feasibility of tissue culture and cryopreservation for these species, marking a crucial milestone to preserve the germplasm of threatened species.