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Desiccation response of seed of *Clianthus* spp., *Carmichaelia muritai*, *Pittosporum crassifolium* and *Pittosporum eugenioides*

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ABSTRACT

New Zealand has a rich, diverse and unique of plant life. However, the conservation status of the New Zealand indigenous vascular flora is deteriorating, with 7.6% of this flora regarded as threatened with extinction. A series of conservation approaches are required to protect species against further loss. Developing *ex-situ* conservation of these species requires basic information such as seed storage behaviour and seed germination requirements to be determined. However, for many species this information is missing or incomplete.

The objective of this study was to determine seed storage behaviour (response to desiccation), and/or seed coat characteristics in selected New Zealand native species. Five native tree and shrub species were studied: *Carmichaelia muritai*, *Clianthus puniceus*, *Clianthus maximus*, *Pittosporum eugenioides*, and *Pittosporum crassifolium*.

Seeds of *Clianthus maximus*, *Clianthus puniceus*, and *Carmichaelia muritai* were found desiccation tolerant at low moisture content (down to ~2.5%), suggesting the storage behaviour is orthodox; storage trials need to be conducted to confirm this. In contrast, the storage behaviour of *Pittosporum eugenioides* and *Pittosporum crassifolium* appears to be non-orthodox since there was some loss of viability upon drying to low moisture contents. Moisture sorption isotherms were determined for *Pittosporum eugenioides* and *Pittosporum crassifolium*.

This research also demonstrated that loss of water impermeability occurred with desiccation of *Clianthus maximus*, *Clianthus puniceus*, and *Carmichaelia muritai* seeds, to ultradry moisture as a result of cracking to the seed coat surface, in particular the extrahilar and lens area.

The findings of this study provide further seed coat morphology, seed biology (seed storage behaviour and germination) information that will contribute to the development of *ex-situ* conservation strategies for New Zealand's indigenous flora.

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