

## Seed dormancy and storage behavior of twenty plant species of tropical montane forests in Sri Lanka

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### Abstract

Montane forests in Sri Lanka are very important as the catchment area of main rivers providing water for irrigation and hydropower projects and also for their rich biodiversity. Restoration and rehabilitation of degraded montane forests using native plants is important in order to gain their economic and ecological benefits continuously. Knowledge on seed dormancy and seed storage behavior is important to produce seedlings from seeds for these restoration activities. Therefore, the objective of this study was to gather basic information on dormancy and storage behavior of seeds of native plant species of 20 important mountain forest species in Sri Lanka.

Seeds were collected from Knuckles, Loolecondra and Hantana for the laboratory experiments conducted at University of Peradeniya. Seed moisture content (MC), seed drying experiment and cold storage experiment were used to determine the seed storage behaviour. Imbibition test, germination of untreated and manually scarified seeds and seed: embryo measurements were used to determine seed dormancy class. Dormancy breaking treatments (GA3 treatment, cold stratification and dry storage) were used to classify seed dormancy.

Seeds of the 20 species studied fell into two dormancy classes or nondormancy. Nine species produced nondormant seeds (*Aporusa acuminata*, *Elaegmus latifolia*, *Glochidion pycnocarpum*, *Lasianthus sp.*, *Maesa perrottetiana*, *Osbeckia aspera*, *Sarcandra chloranthoides*, *semecarpus nigro-viridis* and *Thottea siliquosa*) while nine species had physiologically dormant seeds (*Exacum trinervium*, *Litsea sp.*, *Myristica dactyloide*, *syzygium assimile*, *Psychotria gardneri*, *Eurya ceylanica*, *Wikstroemia indica*, *Callophyllum sp.*, and *Callicarpa tomentosa*). Seeds of *Pittosporum ceylanicum* and *P. tetraspermum* were morphophysiological dormant. Seed storage behavior was identified in seeds of 11 species. Since, *S. chloranthoides* seeds lost their viability within two months of picking, they were categorized as recalcitrant although, they have 7.18% MC. All the other recalcitrant seeds had >15 % MC and they failed to germinate when dried < 15 % MC. Of the 11 species examined, 36.4% species (*E. trinervium*, *G. pycnocarpum*, *M. perrottetiana*, and *P. gardneri*) produce orthodox and 63.6 % species (*A. acuminata*, *Callophyllum sp.*, *E. latifolia*, *Litsea sp.*, *M. dactyloide*, *S. chloranthoides*, and *S. assimile*) produce recalcitrant seeds.

**Key words:** Native plant, morphological dormancy, morphophysiological dormancy, physiological dormancy, orthodox seeds, recalcitrant seeds.