

EPICOTYL SEED DORMANCY AMONG TROPICAL MONTANE FOREST SPECIES IN SRI LANKA

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Seed dormancy and epicotyl dormancy (ED) are main factors that determine the time of root and shoot emergence from a seed under normal physical environmental conditions. Epicotyl morphophysiological dormancy (eMPD) and epicotyl physiological dormancy (ePD) are the two types of epicotyl dormancy that have been identified to date. Most of the species producing seeds with epicotyl dormancy have been reported from the temperate region whereas, only a few of them are from tropics. During a study conducted to reveal the seed dormancy of tropical montane species in Sri Lanka, several species have been identified behaving as those with ED. Thus, this study was devoted to document the presence of ED in seeds of five of those species.

Mature seeds were collected from *Bhesa ceylanica*, *Gaertnera walkeri*, *Microtropis wallichiana* from Hanthana, *Nothapodytes nimmoniana* from Riverston and *Psychotria* sp. from Horton Plains. Seeds were incubated under room conditions to identify the presence of seed dormancy. Imbibition of untreated and manually scarified (MS) seeds and embryo: seed ratio of ripe and germinated seeds were compared to identify dormancy classes. Gibberellic acid treatments, moist chilling treatments and dry storage treatments were used to break the seed dormancy. Time taken to emerge cotyledons (from radicle emergence) was documented to reveal ED. Further, cotyledon development was investigated to categorize the type of epicotyl dormancy.

Seeds of *G. walkeri* and *B. ceylanica* completed germination within 30 days while, seeds of *Psychotria* sp., *M. wallichiana* and *N. nimmoniana* took more than 30 days. Untreated and MS seeds of all the species imbibed water. Embryos of *B. ceylanica*, *G. walkeri* and *Psychotria* sp. have developed within the seeds prior to radicle emergence. Thus, the seeds of *G. walkeri* and *B. ceylanica* are morphologically dormant, *M. wallichiana* and *N. nimmoniana* are physiologically dormant and seeds of *Psychotria* sp. are morphophysiological dormant. Cotyledons of all the studied species emerged after 30 days indicating that they have ED. Embryos of *G. walkeri*, *B. ceylanica* and *Psychotria* sp. developed inside the seed after the radicle emergence. Therefore, seeds of *Psychotria* sp., *G. walkeri* and *B. ceylanica* have an eMPD. Although, the development of embryos *M. wallichiana* and *N. nimmoniana* in the chalazal-micropylar plain was negligible, cotyledon development perpendicular to chalazal-micropylar plain was significant. According to current definitions; type of seed dormancy of these two species can be categorized as ePD. However, modified definitions and classification system has to be developed to include these new epicotyl dormancy types. Our observations revealed that the epicotyl dormancy is not an infrequent type of dormancy in the tropical mountain region.

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