



Thesis Abstract

Germination and Storage of *Dyera costulata* Hook F. and *Macaranga gigantea* Mull. Seeds

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High percentage of seed germination and vigor are the most important factors to be considered in the production of high-quality tree seeds for commercial plantations. The study aimed to enhance the germination and storage condition of commercially important tree seeds, *Dyera costulata* Hook F. and *Macaranga gigantea* Mull. It intended to develop tetrazolium test for rapid detection of seed viability. Paper, sand, soil, forest soil, coconut husk and paddy husk were the germination media tested for best germination. Three storage conditions (i.e., refrigerated at 10 oC and 20oC and ambient at 30oC) and four storage periods (i.e., 0, 31, 89, and 181 days); three plant growth hormones (i.e., GA3, BAP, and kinetin) at four concentrations (i.e., 0.1, 0.2, 0.5, and 10 mg/l) were used to determine the best conditions for storage and growth promoter for both *D. costulata*. and *M. gigantea* seeds. Also, three germination media (i.e., sand, soil, and forest soil) and light regimes (i.e., at 25%, 55%, and 75% relative light intensity) were used to determine the best condition for seedling growth.

Results of the study indicated that the best germination media for both tree seeds was the sand, followed by forest soil and soil. The best temperature for storage was found to be at 20oC, giving 85-97 percent seed viability. However, storage of more than 89 days tend to reduce the germination rate when stored at 10oC and 20oC, and more than 30 days if stored at 30oC. Among the three types of hormones, GA3 at 10 mg/l was found to be the most effective at 65 percent viability for germination and 74 percent viability when combined with excised seedcoat. Among the concentrations used, application at 10 mg/l gave the overall best result for all the hormones in enhancing the germination process. Also, growth was significantly better at 75 percent light in forest soil condition.

The study also found that buried seeds had better germination rate than freshly collected seeds. Comparison of the anatomical structures of buried seeds and fresh seeds of *M. gigantea* were done using scanning electron microscopy (SEM). Results showed that buried seeds had a thinner pericarp, full endosperm, and better-developed embryonic axis compared to that of fresh seeds. Differences were also evident within the radicle area where structures from fresh seeds were not as well organized as those of buried seeds.