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Efficacy of seed pre-sowing treatments in *Bridelia retusa* (L.) A. Juss. for seed germination enhancement

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Breaking seed dormancy is essential for sexual propagation of some plants. This study investigates seed dormancy breaking methods of *Brideliaretusa* (L.) A. Juss. (Phyllanthaceae) as it exhibits a long dormancy period which hinders the seed germination. Seed germination of *B. retusa* was tested in moist cotton wool layered petri dishes (five replicates for each treatment containing 30 seeds) and sterilized soil medium on seed trays (50 replicates for each treatment containing 200 seeds) with pre-sowing treatments [cool water (T1), gibberallic acid (GA_3) (T2), *Phyllanthus emblica* pulp (T3), synthetic ethylene (T4), ethylene of botanical origin (T5), concentrated sulphuric acid (T6), KNO_3 (T7) and un-treated control (T8)]. The experiment was laid in a completely randomized block design. Germination of seeds and seedling characteristics were recorded daily after seed sowing. Results were analyzed by MINITAB 14. Control seeds were not germinated throughout the study period in both media. The percentage of seed germination in soil medium (28.93±4.17) was significantly higher than that of wet cotton wool in petri dish (17.74±3.00). Seedling type were identified as "Macaranga type" as during germination seedling became free from all envelopments, thin, leaf-like paracotyledons well developed and pure assimilating function. Only the germination tube was arisen in wet cotton wool medium but when transferred to the soil medium further growth was observed and proved that seeds were Macaranga type as they lacked stored food. The percentage of germination seeds was higher in cool water treatment (T1) after the 1st week. The percentage of germination increased with time in all treatments. Five weeks after sowing, the highest percentage of seed germination was detected in GA_3(T2) (81.97±0.83) that was not significantly different with seeds in cool water (T1) (61.4±0.95), *Phyllanthus emblica* pulp (T3) (79.0±1.15) and ethylene of botanical origin (T5) treatments (42.53±0.72). Therefore this study identified that cool water (T1), gibberallic acid (GA_3) (T2), and *Phyllanthus emblica* fruit pulp (T3) are appropriate methods to enhance seed germination of *B. retusa.* Hence these pre-treatments can be used in future forestry programs to overcome dormancy of *B. retusa*.

Keywords: *Bridelia*, germination, pre-treatment, seed dormancy

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