

EFFECTS OF LENGTH OF SOAKING IN 100 °C WATER AND EMS ON GERMINATION OF *Neolamarckia cadamba* AND *Leucaena leucocephala* SEEDS.

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Abstract

A study was conducted to determine the effects of length of soaking in 100°C water and EMS on the germination of *Neolamarckia cadamba* and *Leucaena leucocephala* seeds. The seeds were exposed to one of the three treatments: (1) untreated (control); (2) soaking in 100°C water for 20 s followed by soaking in water for 24 hours and 48 hours at room temperature to assess the dormancy period (CDP), cumulative germination (%) (CGP), mean daily germination (%) (MDG) and co-efficient velocity of germination (CVG) in *N. cadamba* and *L. leucocephala*. Results showed that soaking in 100°C water for 20 s and then soaked in water for 48 hours had the highest speed of germination, higher cumulative germination (%) (CGP) and shortened period of complete dormancy over soaking duration of 24 hours or no soaking of seeds before planting. The germination speed of seeds increased with increasing soaking for the durations of 0, 24 and 48 hours. Production of the first true leaf was earliest with 48 hours soaking and least with the seeds that were not pre-soaked in water. For EMS study, three different concentrations (i.e., 0.1, 0.3 and 0.6%) of ethyl methane sulphonate (EMS) were used to treat *N. cadamba* and *L. leucocephala* seeds to assess seed germination percentage, lethality, seedling height and survival percentage after 6 months of planting. It was noted that the germination percentage, survivability and seedling height were decreased; whereas lethality increased with increasing mutagenic doses. Higher lethality over control was observed at 0.6% EMS for *N. cadamba* (57.1%) and *L. leucocephala* (75.6%). So, the effect of chemical mutagenesis on seedling with 0.6% EMS treatment was much more beneficial as compared to 0.1% and 0.3% EMS. The effectiveness of the three treatments on *N. cadamba* and *L. leucocephala* was ranked as 0.6>0.3>0.1.

Keywords: *Neolamarckia cadamba*, *Leucaena leucocephala*, Germination speed, EMS, Survival

1. INTRODUCTION

Neolamarckia cadamba or locally known as Kelampayan belongs to family, Rubiaceae. It is a fast growing tree and suitable for reforestation in watersheds and eroded areas and for windbreaks in agroforestry systems. It is stated to be one of the most frequently planted trees in the tropics and suitable for ornamental use and agroforestry practices. Germination takes place after 2-3 weeks and when the seedlings are 8-12 weeks old, they are transplanted to nursery beds or plastic bags. *Leucaena leucocephala* Lam or locally known as lamtoro belongs to family Leguminosae. It is a fast growing tree. The common type is widespread and shrubby. It is also known as white lead tree, *leucaena*. It is a perennial leguminous tree native to Central America with a wide distribution in the tropics and subtropics, and successfully suitable for growing in marginal and submarginal lands with a wide assortment of uses. It is cultivated for multipurpose, e.g. forage or fodder (Lefroy *et al.* 1992), lumber, Germination rates are commonly 50 to 98% for fresh seeds (Daguma *et al.* 1988; NAS 1984). Scarified seeds germinate 6 to 10 days after sowing; unscarified seeds germinate 6 to 60 days after sowing (Parrotta 1992).