

Effect of burying depth and surface fire on germination of selected dry zone forest plant seeds in Sri Lanka

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Seeds that survive in the soil after fires contribute to post-fire recruitment. Such seeds show various adaptations to retain their viability against fire. This study examines the effect of four burying depths on survival of seeds of ten selected dry zone forest species against fire. Ripe fruits of the species were collected from Pollonaruwa, Anuradhapura, Hingurakgoda and Moneragala. Among the eight seed beds prepared at Kaudulla, two beds were allocated for each burying depth (0, 1, 3 and 5 cm). In each depth, 100 viable seeds of selected species were buried in rows. One set of beds were subjected to the fire treatment while, the other set of beds were maintained as controls. Prior to fire treatment, all seed beds were covered with forest litter to simulate the natural forest floor of the dry zone. The beds were maintained according to the standard nursery management practices. Data on germination percentage, performance of seedlings and growth of saplings were collected at two week intervals for four months.

All seeds of *Abrus precatorius*, *A. precatorius* (Black), *Cassia roxburghii*, *Bauhinia racemosa*, *Terminalia bellirica* and *T. chebula* were not germinated at 0 cm depth in the fire-treated beds. Seeds of *T. arjuna* showed germination at all depths in both fire treated and control beds. However *T. bellirica* and *T. chebula* germinated only at 5 cm depth in control beds. Seeds of *Adenanthera pavonina* were not germinated at all depths tested except for 5 cm depth in fire-treated seed beds. *Schleichera oleosa* showed germination in all depths except 0 cm in both fire treated and control beds. The highest germination percentage of *Bauhinia racemosa* was recorded at 5 cm depth in both control and fire-treated beds. Percentage germination of *C. roxburghii* seeds in fire-treated beds was higher than that of control beds at depths of 1, 3 and 5 cm. Even though the percentage viability of seeds of *Helicteres isora* and *Diospyros ebenum* were above 50%, their seeds did not germinate in both fire treated and control beds.

Of the 10 species tested, the percentage germination of *Cassia roxburghii*, *Bauhinia racemosa*, *Terminalia belerica* and *Schleichera oleosa* seeds in fire treated beds were higher than that of the control beds (one-way ANOVA, $P < 0.05$). The burying depth of seeds has a significant effect on seed germination after fire. These four species with fire tolerant seeds can be used for forestry programs in fire prone areas.