

## Fire tolerance capacity of seeds of selected Sri Lankan forest plant species

D. A. A. Niranjan and R. M. C. S. Ratnayake

Department of Botany, University of Kelaniya, Kelaniya.

### Abstract

Dry forests of Sri Lanka are susceptible to fires during the dry season and seeds of forest plants exposed to fire are probably killed. Seeds of forest plants in those fire-prone areas show various adaptations to retain their viability against fire damage by storage of seeds within insulating soil or by remaining within hard fruit coats. The present study examined the effect of buried depths (1 cm, 2 cm, 3 cm and 4 cm) on survival of seeds in 14 forest species against fire. While a set of seed buried beds were subjected to the fire treatment, the other set of beds were maintained as controls. Prior to the experiments, viability of each seed lot was tested by Tetrazolium test. The seed coat thickness, seed coat percentage and increment of internal temperature according to a given external temperature of seeds were measured.

Among 14 species tested, the percentage germination of seeds, height of seedlings and the number of leaves in *Syzygium cumini*, *Bauhinia racemosa*, *Terminalia belerica*, *Schleichera oleosa*, *Strychnos potatorum*, *Abrus precatorius*, *Cassia stamea* and *C. fistula* seeds in fire treated beds were higher than that of control (one-way ANOVA,  $P < 0.05$ ). Among four depths tested the buried depth of 2 cm showed a significantly high emergence of seedlings of above fire tolerant species (one-way ANOVA with Tukey's test,  $P < 0.05$ ). Internal temperature increment of the seeds of above species was comparatively low (30-43 °C) relatively to the given external temperature (100 °C). Seeds in some selected species (*Bridelia retusa*, *Drypetes sepiaria*, *Grewia tiliifolia*, *Pterospermum canescens* and *Diospyrous ebenum*) did not germinate under field experimental conditions. Seed coat thickness and seed coat percentage was high in seeds of above fire tolerant species.

The eight species having fire tolerant seeds can be used for forestry programs in fire prone areas and the information gathered during the study can be used for restoration of degraded land in fire prone areas.