EARLY PERFORMANCE OF SELECTED EXOTIC AND INDIGENOUS TREE SPECIES WITH AFFORESTATION POTENTIAL IN THE DRY ZONE : BATTICALOA DISTRICT

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Abstract

The early performance of selected exotic (*Casuarina equisetifolia*, *Gmelina arborea*, *Tectona grandis*, *Acacia auriculiformis*, *Terminalia catappa*, *Leucaena leucocephala*, *Eucalyptus camaldulensis*, *Eucalyptus citriodora*) and indigenous (*Azadirachta indica*, *Berrya cordifolia*, *Drypetes sepiaria*, *Terminalia arjuna* and *Anacardium occidentale*) tree species were studied in the field (regosol of Batticaloa) and green house.

Soil and vegetation of the site was surveyed, prior to experimentation. Total (N), available (P), exchangeable (K), organic matter and bulk density of soil were estimated. Frequency and foliage cover of plant species were recorded. The study showed that, soil was poor in major nutrients and vegetation was patchy. It was noted that a) *Memecylon umbellatum* and *Gardenia latifolia* were abundant where available (P) was above than 16ppm; b) *Desmodium biarticulatum* was abundant where (P) was in the lower range of 7-10ppm c) *Cynodon dactylon* and *Geniosporum tenuiflorum* were abundant where (P) was widely distributed over the range of 7-16ppm.

The main focus of the study was the evaluation of species in the field. Height, survival, number of branches, taproot length, number of lateral roots and their length, girth, diseases and herbivory of plants were recorded. *A.auriculiformis*, *C.equisetifolia*, *E.camaldulensis* and *A.indica* showed large height increment and high percentage of survival. The effect of fertilizer and water were also studied in the field. *T.grandis*, *E.citriodora*, *C.equisetifolia* and *T.catappa* showed positive response to fertilizer ($P>0.05$). Mortality was significant ($P<0.05$) in all species, when water was not added.

The effect of the size of pot and addition of mulch on seedling growth were studied for five selected species (*A.auriculiformis*, *A.occidentale* , *Syzygium cumini*, *B.cordifolia* and *A.indica*) in the green house. Plant height, number of leaves, taproot length, volume of roots were recorded for experimental species. The studies showed that the standard size (10 cm width and 22 cm length) polypot (polythene bag) used in nurseries were not adequate for shoot and root development of the plant. Addition of mulch significantly ($P<0.05$) reduced the mean height and number of leaves in *B.cordifolia*. Preference of pot size for growth varied among species. Wider pots were preferred by *A.indica*, *A.occidentale*, *S.cumini* and *A.auriculiformis* whereas deeper pot by *B.cordifolia*. *A.indica* and *A.occidentale* showed positive response to addition of mulch, whereas *A.auriculiformis* and *S.cumini* showed no effect.

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