

Selection of Potential Isolates of Ectomycorrhizal (ECM) Fungi on Growth Improvement of *Casuarina* Species in Nursery

V. Mohan* and P. Manokaran

Institute of Forest Genetics and Tree Breeding
Coimbatore 641 002, Tamil Nadu, India

*Email : mohan@icfre.org

Abstract

Mycorrhizal fungi enhance growth of tree seedlings and provide increased resistance to root diseases and climatic stress. Several types of natural and laboratory produced ectomycorrhizal (ECM) fungal inocula are used in tree nurseries. The efficiency of ECM fungi is influenced by several biotic and abiotic factors and the interaction between host plants and fungal isolates/strain. Hence, developing reliable and cost-effective technique to inoculate nursery seedlings with suitable type of inoculum of ECM fungi is essential for quality seedling production. In the present study, the potential isolates of ECM fungi (*L. fraterna* and *P. albus*) were identified and inoculated in the seedlings of *Casuarina equisetifolia* and *C. junghuhniana*. That ectomycorrhization of seedlings with different forms of inocula viz., basidiospores, vegetative mycelial and alginate bead of *L. fraterna* and *P. albus* exhibited their potential in improving the planting stock of both the species. Seedling height was higher in all ECM fungal treatments than the uninoculated control. The height increment was found maximum in *C. junghuhniana* over *C. equisetifolia* seedlings. Among different types of inocula tested, vegetative mycelial inoculum of *P. albus* was found to be the most efficient inoculum which gave maximum per cent of Mycorrhizal Inoculation Effect (MIE) in both the *Casuarina* species. Morphological and anatomical studies revealed colonization of roots of all ECM inoculated plants by *P. albus*. The total number of myco tips was more in ECM inoculated seedlings grown in sterilized potting medium than those grown in unsterilized potting medium at all age levels. ECM inoculated plant samples also showed elevated amounts of biochemical constituents (lipid, protein) during the period of observation. ECM application in seedling stage may assist the seedlings to withstand dry conditions and support the seedlings when outplanted under agro-forestry and plantation systems.