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The study objective was aimed to select the strains of *Pisolithus tinctorius* (Pers.) Coker & Couch ectomycorrhizal fungi, which have good properties for producing inocula and forming ectomycorrhiza on *Pinus kesiya* Royle ex Gordon and *Eucalyptus camaldulensis* Dehnh. Seedlings.

Environtmental factors such as temperature and pH that affect the mycelial growth of 14 isolates of *P. tinctorius* which isolated from *P. tinctorius* fruiting bodies of different sources in the country were studied by using Completely randomized design (CRD), in order to select these strains for producing inocula. The results revealed the optimum temperature at 30 °C with the optimum pH between 5 to 7 with statistical confidence at P = 0.05. Selection of the suitable isolates under the optimum growth conditions obtained only 4 isolates, which were the isolates no. 1, 4, 12, and 13 from Eucalyptus plantation in Yasothon province, Pine forest in Chiangmai province, Eucalyptus plantation in Tak province, and Pine forest in Petchaboon province, respectively. These isolates were used for making inocula, for mycorrhizal formation with *P. kesiya* and *E. camaldulensis* seedlings.

The effect of inocula of selected *P. tinctorius* isolates in forming ectomycorrhizas and growth responses in *P. kesiya* and *E. camaldulensis* seedlings were studied by using Randomized complete block design (RCBD). The results revealed the increases in height, root collar diameter, dry matter of shoot, root, and total biomass of seedlings after inoculation by ectomycorrhizal *P. tinctorius*. For pine seedlings, inoculation with *P. tinctorius* isolate no. 13 increased more growth in height, root collar diameter, dry matter of shoot, root and total biomass in comparison with other isolates. Inoculation of *P. tinctorius* isolate no. 12 on eucalyptus seedlings increased more growth in stem diameter, dry matter of shoot, root and total biomass in comparison with other isolates. These were statistically verified the significant differences at P = 0.05. These research findings provide information on how to select the appropriate fungal strains to be used for research, development and production of ectomycorrhizal seedlings in reforestation program in Thailand.

ภาควิชา สหสาขาวิชาวิทยาศาสตร์สิ่งแวดล้อม ลายมือชื่อนิสิต เชิดชัย โพธิ์ศรี

สาขาวิชา วิทยาศาสตร์สิ่งแวดล้อม ลายมือชื่ออาจารย์ที่ปรึกษา

ปีการศึกษา 2541 ลายมือชื่ออาจารย์ที่ปรึกษาร่วม