

Sawithree Verasathiean 2007: Development of King Bolete (*Boletus edulis* Bull. ex Fr.) Culture for Seedling Growth of *Eucalyptus camaldulensis* Dehnh.  
Master of Science (Agriculture), Major Field: Horticulture, Department of Horticulture.  
Thesis Advisor: Associate Professor Prapaporn Tangkijchote, Ph.D. 131 pages.

The appropriate medium sources affecting the growth of king bolete culture were studied. Effect of the inoculation methods of this culture, including the soil series, and nutrient application on growth of eucalyptus seedlings were also investigated. Four experiments were conducted, as follows:

The first experiment was to study the carbon and nitrogen sources and pH levels. The results indicated that fructose, sucrose and mannitol were the most suitable medium sources of carbon, while ammonium nitrate, ammonium sulphate and ammonium phosphate were the most suitable medium sources of nitrogen. These resulted in the largest diameter of the bolete culture with medium density. Moreover, this culture grew well, and had high density at the pH levels of 5.0, 5.5 and 7.0 to 8.0.

The second experiment investigated the inoculation methods and the bolete culture quantities affecting the growth of eucalyptus seedlings. The results showed that none of the inoculation methods had an effect on percentage of the bolete culture colonization. However, the seedlings inoculated with 40 and 60 grams of sorghum spawn, provided the maximum height, width, biomass, leaf area, leaf area index (LAI), crop growth rate (CGR) and content of nitrogen, phosphorus, and potassium in the shoot. Whereas, the utilization of slurry mycelium yielded seedlings with highest leaf area ratio (LAR), specific leaf area (SLA), and nitrogen and potassium concentration.

The third experiment was to study the soil series: Pak Chong (acid soil), Takhli (calcareous soil), Kamphaeng Saen (saline sodic soil), and sand (control), affecting the growth of eucalyptus seedlings after bolete culture inoculation. The results showed that the soil series did not influence the bolete culture colonization. However, the Pak Chong and the Takhli soil series provided the maximum width, biomass, leaf area and CGR. Whereas, the seedlings grown in sand had the highest phosphorus concentration, and those grown in Pak Chong had higher nitrogen, phosphorus and potassium contents in the shoot than those grown in other soil series.

In fourth experiment, the influence of nitrogen and phosphorus application on growth of bolete culture and eucalyptus seedlings was studied. The results indicated that the addition of phosphorus 10 mg to 1 kg of soil gave the highest percentage of bolete culture colonization. Whereas, the addition 10 mg of nitrogen plus 10 mg of phosphorus provided the seedlings to have the highest height, and net assimilation rate (NAR). The application of all levels of nitrogen and phosphorus had no effect on the growth, biomass and nitrogen and phosphorus concentrations, including phosphorus content in the shoot. However, the seedlings obtained 5 mg of phosphorus had the highest potassium concentration. While the application of 15 mg of nitrogen plus 5 mg of phosphorus, and 15 mg of phosphorus, gave the seedlings to have the maximum nitrogen and potassium contents.

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Thesis Advisor's signature

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