

Investigation ectomycorrhiza in dry evergreen forest ecosystem.

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ABSTRACT

Mycorrhiza is a symbiotic association between roots of a higher plant and a fungus. Being an efficient nutrient absorbing organ, mycorrhiza plays an important role in host nutrition, particularly in infertile soils and adverse sites. Besides, ectomycorrhiza provides forest trees with growth regulating substances, and increase the resistance to diseases and drought. Therefore, mycorrhiza research has become increasingly significant in Thailand over the last few decades in view of plantation, particularly on afforested lands.

Survey of mycorrhiza in the dry – evergreen forest ecosystem was carried out at the Sakaerat Environmental Research Station (SERS), Pak Thong Chai District, Nakornrajima Province. The objective of study was to investigate the distribution and formation of ectomycorrhizal trees growing in the natural habitats. Lateral and short roots of most trees growing in the dry – evergreen forest belonging to 45 families, 104 genera and 140 species were dug out and identified. Small pieces of cleaned roots were cut and fixed in 3% glutaraldehyde by containing root samples in the different sizes of collected vials.

Modified Phillips and Hayman's technique was applied for clearing and staining roots for the rapid assessment of fungal infection of ectomycorrhiza, ectendomycorrhizae and endomycorrhizae (V – A mycorrhizae) in this study. Compound microscope and scanning electron microscope (SEM) were conducted as the tools for mycorrhizal examination.

Results showed that studied roots of 4 families, 6 genera and 8 tree species or 5.71% indicated ectomycorrhizae, particularly in Caesalpiniaceae: *Azelia xylocarpa* Craib; Dipterocarpaceae: *Dipterocarpus alatus* Roxb., *D.costatus* Gaertn.f., *Hopea ferrea* Pierre, *H. odorata* Roxb., *Shorea henryana* Pierre; Fagaceae: *Lithocarpus thomsonii* Rehd.; and Rubiaceae: *Randia siamensis* Craib. Ectendomycorrhizae were detected and found in the 4 families, 4 genera, and 4 tree species or 2.85% Vesicular – Arbuscular mycorrhizae (endomycorrhizae) or V-A

mycorrhizae were found by far the most common type of mycorrhizae in the ecosystem. V-A mycorrhizae mostly occurred in the 42 families , 89 genera and 113 tree species or 80.71 % of the whole forest ecosystem. No mycorrhizae occurrence of trees were evaluated in 11 families , 14 genera and 15 species or 10.71 %

Ectomycorrhizal fruiting bodies that lived in close contact with rhizospheric soils and grew under trees in the ecosystem were observed , collected and identified. A total of different mushrooms in 6 families, 8 genera and 10 species had been classified. The most common species including Russulaceae : *Russula aeruginea* Lindb. , *R. albida* Pk. , *R. delica* Fr. , *R. lepida* Fr. , *Lactarius hygrophoroides* & C., *L. volemus* Fr. ; Amanitaceae : *Amanita caesarea* Fr. ; Boletaceae : *Boletellus obcurecoccineus* Hoehn. , *B. olivaceirubens* Corner ; Cortinariaceae : *Cortinarius alboviolaceus* Fr. ; and Sclerodermataceae : *Astraeus hygrometricus* (Pers) Morg.

As a result demonstrated in this study forest trees of the families Dipterocarpaceae , Caesalpiniaceae and Fagaceae are predominantly associated with ectomycorrhizal fungi. Additionally they are still need further research on culturing and inoculating techniques to the proper trees before planting to assure the regeneration programs of our tomorrow's forests.