



ABSTRACT BOOK

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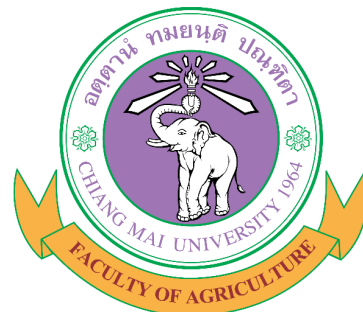
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Performance in nurseries and analysis of native microbial symbionts of Australian Acacia hybrid seedlings in Northern Vietnam (Phu Tho Province)

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Abstract

Australian Acacia hybrids (*Acacia mangium* x *Acacia auriculiformis*) have been crucial in Vietnam's afforestation and economic development since 1990. As leguminous trees, their sustainable and productive growth in poor soils relies crucially on effective microsymbionts in the soil. Despite considerable attention given to the selection of high-yielding Acacia hybrid clones, research on their symbionts (including both root-nodule rhizobia and Arbuscular Mycorrhizal Fungi) has been widely neglected. This oversight has resulted in the suboptimal performance of Acacia hybrid plantations in Vietnam.

Phu Tho Province, a key province for production of Acacia hybrid clones, provides seedlings to both Northern and Central Vietnam. Seedlings produced either by tissue culture or cutting methods were included in the investigation of thirteen private nurseries in the province. Plant performance, root mycorrhization, nodulation and rhizobia diversity were measured. Interviews conducted with nursery owners revealed a lack of traceability of the clone origins and intensive management practices (ie. high rate of mineral fertilizers). Consequently, AMF colonization was very low (3% to 16%) and nodulation was poor (from 14 to 49 nodules per plant). Despite a low nodulation, a high genetic diversity among rhizobia was discovered. Surprisingly, clustering based on restriction fragments length polymorphism (RFLP) of the intergenic spacer region (IGS) did not align with the seedling type (tissue culture or cuttings), the nursery or the soil characteristics. Predominant genera of rhizobium discovered from the nodules included *Mesorhizobium* (December 7-9, 2024, Chiang Mai, Thailand) (*Mesorhizobium* sp.), *Bradyrhizobium* (*Bradyrhizobium* sp., *Bradyrhizobium elkanii*,

Bradyrhizobium guangdongense) and *Rhizobium* (*Rhizobium tropici*). Our study paves the way for further benefits on soil health and plantation productivity of Acacia hybrid in Vietnam by unveiling the potential of effective native rhizobia strain utilization to reduce chemical inputs.

Keywords : Australian Acacia hybrids; Vietnam; rhizobia genetic diversity; Root mycorrhization; Nurseries