Title : Growth and Survival Performance of Data-Deficient Native Tree Seedlings for Forest Restoration in Northern Thailand

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ABSTRACT

Forest ecosystem restoration in degraded areas requires the careful selection of tree species that are well adapted for the local environmental conditions. However, many native species lack field-based data on their establishment and growth performance. This study aimed to evaluate and rank the performance of 14 data-deficient native tree species planted in a restoration plot at the Nong Hoi Royal Project Development Center, Chiang Mai Province. The study site was classified as stage 3 degradation according to the Rapid Site Assessment approach.

The study was conducted on a 4.7-rai restoration area. Data on seedling growth and survival were collected two weeks after planting and again at the end of the first rainy season (July-November 2025). Performance measures included the Relative Growth Rate (RGR) of root collar diameter (RCD), height, and crown width, as well as percentage survival. Data were analyzed using two-way ANOVA, and species performance was ranked using Z-scores and Performance Index.

The results showed that tree species significantly influenced the RGR of RCD ($p < 0.05$), whereas experimental plots and the interaction between factors were not significant. The overall survival percentage across

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all 14 species was high (96%), indicating favorable site conditions for seedling establishment during the early restoration phase. *Michelia floribunda* and *Dalbergia ovata* demonstrated the highest growth rates and performance scores, suggesting strong potential for use in highland forest restoration.

These findings expand the field performance database for data-deficient native species and provide evidence-based guidance for species selection in sustainable forest ecosystem restoration in northern Thailand.

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