

**Title :** Influence of Heat and Charcoal on Germination of Three Native Tree Species in Northern Thailand

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## ABSTRACT

Fire plays a significant ecological role in many forest ecosystems, influencing processes such as seed dormancy and germination. In fire-prone environments, certain species have developed mechanisms that promote or inhibit germination in response to fire-related cues like heat and charcoal. This study investigates the effects of heat and charcoal on seed germination in three native tree species—*Acrocarpus fraxinifolius* Wight ex Arn., *Cassia fistula* L., and *Prunus cerasoides* D. Don—in Doi Suthep, Northern Thailand. Seeds were exposed to six treatments: control, charcoal, and heat exposure at 300°C for 10 and 20 seconds, with or without charcoal. Germination rates were measured and statistically analyzed using two-way ANOVA ( $p < 0.05$ ). The results revealed significant species-specific responses, with *P. cerasoides* exhibiting the highest germination percentage, followed by *C. fistula* and *A. fraxinifolius*. Treatment effects were significant, with prolonged heat exposure (300°C for 20 seconds) reducing germination across species, suggesting heat stress as a limiting factor. In contrast, charcoal had no significant effect on germination. These findings contribute to understanding fire-adaptive strategies in tropical tree species and highlight the role of heat exposure in seed dormancy release. The study also provides insights into how fire-related processes can be considered in forest restoration strategies, particularly in fire-prone ecosystems.

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