

EFFECT OF HABITAT CHARACTERISTICS ON LEAF FUNCTIONAL TRAITS OF TREE SAPLINGS PLANTED IN ENDANE BIODIVERSITY CORRIDOR IN SINHARAJA FOREST LANDSCAPE

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Forest restoration efforts often fail due to insufficient consideration of habitat characteristics and plant species suitability. This problem is exacerbated by failing to examine the relationships between plant functional traits and habitat characteristics. In this study, the effects of successional history, canopy closeness, and elevation on the variations in selected plant functional traits of tree saplings were examined in the *Endane* Biodiversity Corridor while validating the known trade-offs and synergies among the plant functional traits. Selected leaf functional traits were measured using 15 replicates in 10 species interplanted across four successional categories (Marginal Tea- MT, Scrub- SC, Woodland 1- WD1, and Woodland 2- WD2) with varying shades and elevations. An analysis using a linear mixed-effect model revealed that the variation in leaf mass per area (LMA), leaf dry matter content (LDMC), leaf thickness (LT), leaf area (LA), and chlorophyll content (CC) was largely attributed to the successional stage. Still, shade and elevation contribute to a minor extent. The CC increased with the progression of succession, reaching the highest ($p < 0.001$, $\chi^2 = 47.60$) in WD1, characterized by a closed canopy. Conversely, both LDMC ($p < 0.001$, $\chi^2 = 89.01$) and LMA ($p < 0.001$, $\chi^2 = 62.16$) decreased with advancing successional age, with the highest value observed in MT. The variability in LMA was explained by both LDMC ($r = 0.41$, $p < 0.001$) and LT ($r = 0.42$, $p < 0.001$). Characterizing leaf functional traits against habitat characteristics improves our understanding of the performance of saplings during their initial growth stages in the restoration sites.

Keywords: Forest restoration, Habitat suitability, Plant functional traits, Successional history