

DEVELOPMENT OF BIOMASS ALLOMETRIC EQUATIONS FOR *ACACIA MANGIUM* WILLD PLANTATIONS IN DONG HY DISTRICT, THAI NGUYEN PROVINCE

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Summary

Allometric equations can be used to estimate the biomass and carbon stock of forests. Biomass and carbon sequestration rate of *Acacia mangium* Willd plantations in Thai Nguyen Province, Vietnam was estimated at different ages from 2 to 7 years old. Allometric equations were developed and applied to forest inventory data to estimate biomass and carbon stocks for *Acacia mangium* Willd. A total of 54 sample trees were harvested and dissected into their components included boles, branches and leaves. Allometric equations having diameter (D), total tree height (H) and Age (A) as an independent variable were developed for all age levels of *Acacia mangium* Willd. We used non-linear regression to fit parameters of the typical allometric power equation. The best-fit models were selected by considering the highest coefficient of determination (R^2) value, the highest F value and the lowest SE, and residual analysis. Allometric expressions of green and dry biomass of *Acacia mangium* Willd plantations are $Y = \exp(-0.266 \cdot (D \cdot H)^{0.970})$ with correlation coefficient ($R^2 = 0.955$), $Y = \exp(-1.224 \cdot (D \cdot H)^{1.021})$ with correlation coefficient ($R^2 = 0.946$) respectively with the variable is D and H combined that showed the best predictors for biomass prediction models.

Keywords: Standard trees, aboveground biomass; allometric equations, *Acacia mangium* Willd.