

# **Evaluation of Biomass Production of Plantation Forest in Tropical Area**

**A Case Study of Acacia Plantation Forest, P.T. Musi Hutan Persada, Indonesia**

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This paper discusses on dynamic analysis of tree growth and biomass production of Acacia plantation forest in South Sumatra, Indonesia. The data used in this study came from permanent plots established in the operational plantations of *A. mangium* managed by PT. Musi Hutan Persada (MHP) at Unit V in Subanjeriji area, South Sumatra, Indonesia. The analyses were based on the long-term inventory data of planted stands from 2000-2005 that recorded from 2001 to 2006 (1-6 years old). The effects of block area, stand age, and the correlation among tree growth parameters were evaluated. Annual increment was calculated and its relation with annual rainfall was discussed.

The standing tree volume was not significantly affected by the block area at Unit V, as well as the diameter at breast height (dbh) and tree height. However, those parameters increased significantly with plantation age. In rotation of 6 years, the height and dbh of 1-year-old acacia forest ranged from 2.2 to 6.7 m and from 2.5 cm to 7.4 cm, respectively. After 5 years of planting, the height and dbh of acacia trees ranged from 12.8 to 21.1 m and from 13.3 cm to 19.9 cm, respectively. The average stand volume of acacia recorded in 5-year-old stand was 188 m<sup>3</sup>/ha. The biomass of standing tree at 5 years of age could be estimated at around 94 Mg/ha, with the estimated carbon content of forest biomass was about 72 Mg C/ha.

It seemed that there was any correlation between annual rainfall and annual tree growth, especially in the early stages. However, there were no statistically significant annual increment patterns in this research. Therefore, it should be continuously conducted the assessment of C dynamics associated with the expansion of the time scale and location.