

Estimation of the aboveground biomass in a *Dillenia suffruticosa* stand, Malaysia

ABSTRACT

The natural regeneration of forests is an important part of the recovery of former shiftingcultivation areas. Regenerating secondary forests are reported to have the potential to assimilate and store large quantities of carbon. However, there is a lack of information on biomass accumulation by pioneer species that dominate early successional processes, especially in tropical Asia. This information would help quantify their role in carbon storage and sequestration. The objectives of this study were to estimate the biomass accumulation and develop a biomass estimation model for a *Dillenia suffruticosa* stand. Six 10 x 10-m plots were established in a *D. suffruticosa* stand. A destructive harvesting method was used to estimate the total and tree component (stem, branches, and leaves) biomass values. An analysis showed that the biomass relationship for each tree component using diameter at breast height (dbh) as an independent variable in a log relationship accounted for 63~89% of the variations at $p \leq 0.01$. The estimated total aboveground biomass of the *D. suffruticosa* stand was 5.2 t ha⁻¹. The high variability of the estimated total biomass in each study plot indicated that the stand was at different stages of succession, but the low biomass accumulation is a reflection of severely degraded conditions and may require a longer period for recovery. However, the natural regeneration of *D. suffruticosa* has contributed to biomass and carbon accumulation in a former shifting-cultivation area.

Keyword: Aboveground biomass; Biomass model; Carbon sequestration