ABSTRACT

Allometric equations can be used to estimate the biomass and carbon stock of forest vegetation. However, the equations for bamboo forests have not been specifically developed. In this study, allometric equations were calculated for the parring bamboo as commercial species of community forest in Tanralili. The data were collected in bamboo's community forest, Tanralili Subdistrict, Maros Regency, South Sulawesi, Indonesia. The number of bamboo's samples in this research were 60 samples where 30 samples used to formulate allometric models and 30 samples for model validation. Diameters at breast height (D) were used as predictors for dry weight of total biomass (W) and carbon stock (CS). Model comparison and selection were based on average deviation, slope coefficient of the regression, and paired t-test and coefficients of determination ($R^2$). Fixed carbon of parring bamboo was determined based on ASTM D-3175. Validation model used to test the reliability of allometric equation model and to predict the amount of biomass in parring bamboo. The results showed that the fixed carbon in parring bamboo was 49.08%. Allometric equation model can be used to predict biomass and carbon stock and in stem, twigs, leaves and total mass of bamboo except for the root. Based on statistical indicators, the most suitable allometric equation model to estimate the amount of biomass and carbon stock of parring bamboo were $W = 0.348D^{1.830}$ and $CS = 0.171D^{1.830}$. These equations were reliable to estimate the biomass and carbon stock of parring bamboo from community forests of Tanralili.