

## ALLOMETRIC EQUATIONS TO ESTIMATE THE ABOVE GROUND BIOMASS OF BAMBOO SPECIES *BAMBUSA VULGARIS*

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### **Abstract**

Because of its high biomass accumulation potential, bamboo can contribute towards mitigating climate change effects through incorporating high amounts of carbon. However, there are only a few records about utilization and ecological significance of bamboo spp locally and much can be learned from studies elsewhere. Allometric equations can be used to estimate the aboveground biomass of introduced bamboo *Bambusa vulgaris*, which are planted widely in Kenya and other tropical regions of the world. The objectives of this research were therefore (i) to calculate allometric correlation between DBH and bamboo biomass and (ii) to compute the above ground biomass in planted and natural bamboo stands. The Study sites was in Ibusuki, Kagoshima in Japan ( 31°16'49.4"N 130°34'36.7"E). Plot of size 10×5 (m) were set in the target area in August 2016 and caliper of all bamboo plants DBH measure. 3 samples of bamboo culm were logged down to measure their total height, fresh weight of each part of the culms, branches and leaves and later dry weight of the same. The allometric relationship between DBH and height (H), weight of culm (Wc), weight of branch (Wb), weight of leaves (Wl), and total aboveground biomass (Wt) of each bamboo species were determined. The results showed that the mean diameter at base part was about 5.1cm in the both stands which was smaller than average size in previous study of *Bambusa vilgaris*. The coefficients of determination ( $r^2$ ) of D-Wb showed high value of more than 0.9. On the other hand, the coefficients of determination of D-Wl showed lower coefficient than the other relationships. Using the allometric relationship between DBH and Wt and previous carbon study data it was estimated that there is about 258.28kg C/ha in Kagoshima. This amount of carbon storage is much more prompting than the carbon storage of many other tree species. *Bambusa vulgaris* has a potential to be considered in international climate change problem for mitigating impacts more efficiently.

**Key words:** plant biomass, DBH, culm height, correlation, carbon, climate mitigation