Determination of Photosynthetic Biomass in Early Growth Stages of Agarwood, (*Aquilaria malaccensis*)

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Accumulation of photosynthetic biomass (PB) in the plants is an initial step in the expression of life respective to primary production, which releases oxygen and water vapor into the atmosphere and absorbs solar or other electromagnetic radiation. The main objectives of the study are to estimate the PB gain in the early growth phase of Agarwood and whether this is an exponential growth relationship with the age of the early growth phase. The study was carried out in selected homegardens of Batuwangala, Neluwa, Sri Lanka (Low country wet zone). The PB accumulation in leaves at early growth stages was recorded based on field data collected, through physical measurement and direct observation. Sampling was carried out through purposive sampling in four sites which represent the early growth phase at 1, 2, 3 and 4 years, altogether, 40 individuals were selected by grouping 10 individuates at each growth phase. Fresh weight was measured from the collected leaves and analyzed to derive PB curves. Total tree height, crown height and diameter of the stem was measured from selected individuals. MS excel (2016) was used for illustrate plot graphs for variables. PB of Agarwood was showed exponential growth after the age of 3 years with reference to the regression analysis the PB had a significant relationship with age. According to the PB results obtained for the Agarwood with the tree height, crown height, and tree diameter which also showed an increasing trend. In conclusion, the species Agarwood shows an increasing trend of PB with age up to 3 years and exponential growth thereafter.

Keywords: Crown height, Early growth stage, Photosynthetic biomass, Tree diameter, Tree height