ABSTRACT

YUNIAWATI. Estimation of Carbon Mass Potency of Plant Fiber Wood In The Peat Land (Case Study In Areal HTI Fiber Wood PT RAPP Sector of Pelalawan, Riau Province). Under direction of ELIAS and AHMAD BUDIAMAN

The role of forests as carbon sinks and storage is very important in the prevention of the greenhouse effect that leads to global warming. Among the various types of forest, peat forest serves as the largest carbon storage. The research objectives were to obtain an alometric equation of carbon mass for A. crassicarpa tree, and measure the potential carbon mass of A. crassicarpa trees on the peat land of HTI fiber wood as well as the potential of carbon mass in peat soil. The results showed that the potential biomass in the stand of A. crassicarpa for the age groups of 2, 3, 4 and 5 years was respectively 44.98 tons/ha, 70.35 tons/ha, 134.05 tons/ha and 234.78 tons/ha. The potential carbon mass in the stand of A. crassicarpa trees for the age group of 2, 3, 4 and 5 years was respectively 12.09 tons/ha, 36.23 tons/ha, 76.09 tons/ha and 133.10 tons/ha. The best alometric equation for estimating tree biomass is \( W = 0.398918D^{2.041}H_{bc}^{0.165} \) and for carbon mass is \( C = 0.131D^{1.246}H_{tot}^{1.175} \). The potential carbon mass of harvest waste on average was 4.89 tons/ha or 6.7% of the potential carbon mass of the tree before harvesting. The potential carbon mass of understorey for the age group of 2, 3, 4, 5 and 0 years was respectively 0.86 tons/ha, 1.27 tons/ha, 1.50 tons/ha, 2.31 tons/ha, and 0.27 tons/ha. The potential carbon mass of litter for the age group of 2, 3, 4, 5 and 0 years was respectively 1.64 tons/ha, 1.54 tons/ha, 2.06 tons/ha, 2.72 tons/ha and 0.32 tons/ha. The potential carbon mass of peat soil for the age group of 2, 3, 4, 5 and 0 years was respectively 1394.07 tons/ha, 1339.14 tons/ha, 1271.11 tons/ha, 1262.68 tons/ha and 1473.62 tons/ha. The potential carbon mass on the ground stand of A. crassicarpa was 3.89% of the potential carbon mass in peat soils.

Keywords: Biomass, carbon mass, peat soil, alometric