ABSTRACT

Setiawan, Bagus. 2014. **Inventory and Potency of Protective Tree As Carbon Dioxide Absorbent (CO_2) and Carbon Storage in Malang Highway**. Thesis. Department of Biology, Faculty of Science and Technology. The State of Islamic University Maulana Malik Ibrahim Malang. Promotor: (I) Dwi Suheriyanto, S.Si., MP. (II) Dr. H. Ahmad Barizi, MA.

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Global warming can be characterized by the surface temperature of the earth. The increasing of global temperatures caused by increasing CO_2 in the atmosphere, followed by increasing of the number of transportation, population, industry, and the feeling of trees. Increasing of CO_2 gas are produced in urban areas. One of the big cities contribute to the CO_2 gas is the city of Malang. The main efforts in reducing CO_2 are planting shade trees in the highway town of Malang. This study aims to inventory the protective covering tree species, important value index, species diversity, and potential CO_2 absorbent and carbon storage in the primary arterial road in the city of Malang.

The method used in the inventory is through vegetation analysis by the method of lines. Vegetation samples were used only tree level (diameter>15cm). Region research wode to reach 12,04 ha. Analysis of carbon dioxide (CO2) absorbent and carbon storage by using allometric equation. Allometric equation by used in research is $0{,}11\rho D^{2{,}62}$ (kg).

The results showed that found 14 family, 22 genera and 24 species. Index values are important shade tree *Pterocarpus indicus* Willd highest., and *Barringtonia asiatica* (L.) Kurz lowest. The diversity index (H') shade trees in Malang city arterial roads which 2,181 were classified as moderate. Potential CO_2 uptake and carbon storage by shade trees in Malang city arterial roads reached 3.158.075,764 kg and storing carbon reached 861.215,100 kg. Potentially large shade trees to absorb CO_2 and store carbon include *Ficus virens* W. Aiton, *Tamarindus indica* L., *Syzygium cumini* (L.) Skeels., *Swietenia mahagoni* (L.) Jacq., *Acacia auriculiformis* A. Cunn. ex Benth, *Ficus benjamina* L., and *Hibiscus tiliaceus* L.