



## Estimation of Carbon Stock and Absorption of Carbon Emission in The agroforestry System of Peatland

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**Abstract:** One effort to maintain C stock vegetatively in nature is through agroforestry program on peatland. Through agroforestry system the concentration of CO<sub>2</sub> in the atmosphere can be reduced, and the result is carbohydrate accumulated in plant biomass. The level of CO<sub>2</sub> uptake in the atmosphere varies depending on the types of constituent plants and the age of land. The objectives of this study were to analyze 1) the carbon content stored in agroforestry system on peatland, 2) the ability of agroforestry system on peatland to absorb carbon emission (CO<sub>2</sub>), 3) the economic value through agroforestry on peatland. The benefits of this study were to provide important information in the effort to rehabilitate the degraded peatland, which was developed through agroforestry system. Moreover, the results of this study could be used as the reference data to implement the program of Reducing Emission from Deforestation and Degradation (REDD).

The results showed that 1) the number of carbon content for jelutung plants in agroforestry pattern was 1.4430 tons/ha, and for intercrops 4.185 tons/ha which consisted of corn, mustard, chili and leek, 2) the ability of staple crops and intercrops to absorb CO<sub>2</sub> in agroforestry pattern was 20.496 tons/ha, and 3) the benefit value which was obtained by agroforestry pattern on peatland was IDR 375,322,625 in a year, where the intercrops could be cultivated several times a year. It is suggested to conduct further study to calculate the carbon content of staple crops and intercrops and the ability of other staple crops and intercrops to absorb CO<sub>2</sub>.

**Keywords :** peatland, agroforestry, carbon emission.

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