

## ABSTRACT

ISTOMO. The Content and Distribution of Phosphorus and Calcium in Soil and Vegetation of Peat Swamp Forest (Case Study in Bagan Sub Unit of Forest Management Area, Regency of Rokan Hilir, Riau Province). Under supervision of F. GUNARWAN SURATMO as chairman, and ENDANG SUHENDANG, SUPIANDI SABIHAM and M. SRI SAENI as members.

Research on the distribution and content of P and Ca nutrients in the soil and biomass was conducted in a primary forest with peat thickness ranging between 2.5 to 6.5 m in the forest concession area (HPH) of PT. Diamond Raya Timber, Bagan Siapi-api, the Riau Province. The objective of the research was to obtain data on the content of P and Ca in the vegetation and peat soil layers at several levels of peat thickness.

Research results showed that although vegetation biomass constituted only 6 % of the total biomass of vegetation and peat soil, contain of P nutrient as much as 37 % and Ca 28 % out of the total P or Ca nutrients occurring in vegetation and peat soil. Increasing of peat thickness cause the total content of nutrients in the peat soil also increased, although the average content of nutrient per depth interval of 50 cm decreased. Increasing of peat thickness also increased the content of P or Ca for tree stage vegetation, on the other hand, the content of P or Ca in herbs and shrubs, decreased. This phenomenon shows that on peat thickness more than 3 m only higher vegetation (trees vegetation) could survive properly. Contents of P or Ca nutrients occurring at above ground tree stage vegetation reach 64 % and 74 %. While for tree stage vegetation, the biggest nutrient content occurred in branches, nas follows 44 % for P and 40 % for Ca.

Forest logging under selective cutting system by the forest concessionaires (HPH) with average extraction of 28 trees per ha has caused nutrients to go out of the forest by the amount of 22.23 kg ha<sup>-1</sup> for P and 127.29 kg ha<sup>-1</sup> for Ca (in the form a clear bole without bark). On the other hand, nutrient left in the forest floor were 34.37 kg ha<sup>-1</sup> for P and 201.00 kg ha<sup>-1</sup> for Ca (in the form of branch, twigs, leaves, and barks). The impact of such logging were decreasing the nutrient stored in the forest stand by amount of 26.86 % for P and 22.37 % for Ca in the form of nutrient removed out of the forest by amount of 10.58 % for P and 8.68 % for Ca, and those left in the forest floor by amount of 16.28 % for P and 13.70 % for Ca.

Key Words : peat thickness, biomass, P and Ca nutrients, vegetation, peat layers.