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Contribution of Coarse Roots and Deadwood to Soil Carbon and Total Carbon Stock in Lowland Rainforest Transformation Systems on Jambi, Sumatra

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Dead wood and coarse roots in the ecosystem have an important role since they still contain carbon. While they decompose, carbon from both components contributes to the soil carbon. In Jambi, there are different types of lowland rainforest transformation system, namely rubber, jungle rubber and oil palm plantation. Natural forest has a higher vegetation diversity and abundance than those transformation system. It is assumed that it also shows a high diversity and abundance of deadwood and coarse roots. Thus, it is important to analyze the contribution of carbon from deadwood and coarse roots to soil carbon in lowland rainforest transformation systems on Jambi, Sumatra. The research was conducted in the di Hutan harapan, Muara bulian, Bukit Duabaelas National Park.

Coarse root sampling: Two soil pits per plot will be excavated to 150 cm depth. Soil monoliths of a volume of 30 cm x 30 cm are extracted. The root material will be separated into five mineral soil horizon 0-10, 10-30, 30-50, 50-100, 100-150 cm soil depth. Samples will be washed and sorted into fine and coarse root. Fine root surface area and diameter were analysed with WinRhizo (Re'gent, Quebec, Canada). These data are used to calculate root area index (RAI).

Dead Wood Sampling: Standing dead trees and fallen dead woods will be recorded within permanent plots. The dbh will be measured on standing dead trees with dbh at least 10 cm and the height is measured of each sample using vertex. Fallen dead woods will be measured at least 1 m in lenght and 10 cm mid-point at cylinder diameter. Estimation of deadwood density using Pilodyn meter. Coarse root and deadwood analysed carbon organic content.

The result showed that RAI total in forest was not significantly different with rubber plantation. But, both location were significantly different with two others study sites. Number of fallen deadwood higher than standing deadwood. Number of deadwood in forest higher than in jungle rubber. Number of deadwood with decay class 1 higher than those decay class 2 and 3. Carbon content in coarse root and deadwood is unfinished analyzed.