Name	Counterpart	Title
Triadiati	B04	Contribution of coarse roots and deadwood to soil carbon and total carbon stock in lowland rainforest transformation systems on Jambi, Sumatra

Rapid transformation of natural forests into other land-use forms in lowland Sumatra, Indonesia, strongly reduces aboveground biomass and nutrient cycling. The consequences for carbon and nitrogen stocks of dead wood remain poorly understood. This study examined the carbon (C) and nitrogen (N) stocks in natural forest and jungle rubber (rubber agroforests with natural shade tree cover) and nutrient quality stored in dead wood. Standing and fallen dead wood was defined as coarse woody debris with diameter ≥ 10 cm and classified into three decay stages of wood. Biomass was estimated using allometric equations. Nutrient concentrations of carbon, nitrogen, C: N ratio and lignin were examined in each decay stage and utilized to convert biomass into nutrient stocks.

Results

Total carbon and nitrogen stocks in the natural forest (4.5 t C ha^{-1}, 0.05 t N ha^{-1}, respectively) were three times higher than those in the jungle rubber (1.5 t C ha^{-1}, 0.02 t N ha^{-1}, respectively). The stocks of carbon and nitrogen at early and advanced wood decay in the natural forest were also higher than those in the jungle rubber. The high lignin stock in dead wood of the natural forest was presumed as the long-term carbon storage. Decay stages showed different nutrient concentrations. With advancing wood decay stage the nitrogen concentration increased and C: N ratio decreased, while concentrations of carbon and lignin were variable. Abundance of dead wood biomass as well as carbon and lignin stocks were found to be higher in the early decay stage compared to the advanced decay stage; this indicated that dead wood was slowly decayed. High inputs of dead wood in natural forest indicated a good soil health, thus replacing natural forest with jungle rubber strongly reduces total carbon and nitrogen stocks. These stocks are an important source of nutrient turnover to the soil.