

## **Accumulation of soil carbon and phosphorus contents of a rehabilitated forest.**

### **ABSTRACT**

The world's tropical rainforests are decreasing at an alarming rate as they are converted to agricultural land, pasture, and plantations. Decreasing tropical forests affect global warming. As a result, afforestation programs have been suggested to mitigate this problem. The objective of this study was to determine the carbon and phosphorus accumulation of a rehabilitated forest of different ages. The size of the study area was 47.5 ha. Soil samples were collected from the 0-, 6-, 12-, and 17-year-old rehabilitated forest. Twenty samples were taken randomly with a soil auger at depths of 0–20 and 20–40 cm. The procedures outlined in the Materials and Methods section were used to analyze the soil samples for pH, total C, organic matter, total P, C/P ratio, yield of humic acid (HA), and cation exchange capacity (CEC). The soil pH decreased significantly with increasing age of forest rehabilitation regardless of depth. Age did not affect CEC of the rehabilitated forest. Soil organic matter (SOM), total C, and total P contents increased with age. However, C/P ratio decreased with time at 0–20 cm. Accumulation of HA with time and soil depth was not consistent. The rehabilitated forest has shown signs of being a C and P sink.

**Keyword:** Soil carbon; Soil phosphorus; Tropical forests; Forest rehabilitation; Degraded soils