

Abstract

The state and fate of carbon in tropical production systems is subject of extensive research in relation to natural resources management, climate change and productivity of agricultural soils. Forest - and agricultural land uses in the tropics are of fundamental influence on the global carbon cycle. While there appears to be consensus on above-ground carbon dynamics in different land use systems, developments in soil carbon are elusive from one land use to another. In this research a) literature is systematically reviewed and analysed to determine tendencies in the effects of tree-based agriculture on soil carbon in Indonesia and b) a field study is performed in the highlands of Central Java comparing carbon in trees and soils between forest-like vegetation, agroforestry and non-tree agriculture of different management intensities. The results of both the literature review as well as the case study are subject to large variability, indicating that land uses per se have little influence on soil carbon dynamics.

Keywords: carbon stocks; above-ground carbon; soil organic carbon; land use change; Java