

Abstract

Shifting cultivation is a common type of agricultural practice in the tropics. Forest plots cleared, are cultivated for a short time then abandoned to fallow. In some areas cultivators retain some trees species. In this thesis, I systematically review the available literature to assess for what reasons farmers retain remnant trees and where they do, approximately what is the quantity of carbon retained in these trees and how do these values alter the time-averaged carbon of a cultivation system, relative to a clear-felling at field establishment. By considering carbon stock accumulated in remnant trees. I estimate how globally. This systematic review included the results from 104 publications in three agroecozones (humid, montane and dry). Cultural values such as community spiritual beliefs, taboos, socio-economic benefits such as source of future timber for fuelwood, construction purposes and making tools and use tree component for medicine and food, etc. and ecological advantages such as maintaining soil fertility and biodiversity are the most cited reasons for conserving remnant trees. The most frequently cited tree families in term of mentioned by studies were; Moraceae, Fabaceae and Malvaceae. *Ficus spp.*, *Irvingia gabonensis*, *Vitellaria paradoxa* and *Schima wallichii* were the most frequently cited tree species. The difference in time-averaged carbon attributed to the presence of remnant trees, where retained ranged from 2 Mg ha⁻¹ in Myanmar and Ghana to 35 Mg ha⁻¹ in Brazil to compare with other studies without carbon stock in remnant trees included. Present thesis also estimated a considerable amount of 2.9 PgC “missing terrestrial carbon stock” stored in remnant trees for only 10 countries thus global totals might far exceed this value, emphasising their importance as a carbon store, as well as a carbon sink.

Keywords: tropics, shifting cultivation, remnant trees, time-averaged carbon, missing terrestrial carbon stock