

Assessment of carbon stock in chronosequence rehabilitated tropical forest stands in Malaysia

ABSTRACT

The loss and degradation in tropical forest region are some of the current global concern. Hence, these issues elevated the role of rehabilitated forests in providing ecological products and services. The information on the carbon stock is important in relation to global carbon and biomass use, but lacking from the tropical region. This paper reports the assessment of tree and soil carbon stock in a chronosequence rehabilitated tropical forest stands in Malaysia. The study site was at the UPM-Mitsubishi Forest Rehabilitation Project, UPMKB. 20{\times}20m plot was established each and assessed in 2009 at 1-, 10- and 19-year-old sites while an adjacent 23-year-old natural regenerating secondary forest plot was established for comparison. The overall total carbon stock was in the order of 19-year-old>23-year-old>10-year-old>1-year-old. When forest carbon stock is low, the soil component plays an important role in the carbon storage. The forest carbon recovery is crucial to increase soil carbon stock. The variations in the carbon stock showed the different stages of the forest recovery. Species survived after 19-years of planting are potential species for carbon sequestration activities in rehabilitated forest. Human intervention in rehabilitating degraded forest areas through tree planting initiatives is crucial towards recovering the forest ecological role especially in forest carbon stock capacity.

Keyword: Biomass; Carbon; Rehabilitated tropical forest; Natural regenerating secondary forest