EFFECTS OF ACACIA MANGIUM ON MORPHOLOGICAL AND PHYSICOCHEMICAL PROPERTIES OF SOIL

S Tanaka1, *, S Kano1, J Lat2, W Mohd Effendi3, NP Tan4, A Arifin5, K Sakurai1 & JJ Kendawang6

1Kochi University, Nankoku, Kochi 783-8502, Japan
2Forest Department Sarawak, Kuching, Sarawak 93660, Malaysia
3Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak 94300, Malaysia
4The United Graduate School of Agricultural Science, Ehime University, Matsuyama, Ehime 790-8655, Japan
5Faculty of Forestry, Universiti Putra Malaysia, Selangor Darul Ehsan 43400, Malaysia
6Sarawak Planted Forest Sdn Bhd, Kuching, Sarawak 93660, Malaysia

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INTRODUCTION

Acacia species planted on degraded forest and grassland for the purpose of reforestation or rehabilitation have been known to restore soil conditions (Yamashita et al. 2008, Inagaki & Titin 2009, Yang et al. 2009). Many of such studies were conducted in subtropical monsoon, semi-arid or arid climates. In contrast, several studies conducted under tropical humid climate have reported a decrease or no change in soil C, N and other nutrients over time after planting with Acacia (Norisada et al. 2005, Nykvist & Sim 2009, Vijayanathan et al. 2011).

In Sarawak, Malaysia, a large area of land (i.e. 480,000 ha) was designated as Planted Forest Zone (PFZ), within which 125,000 ha were planted with Acacia mangium in 2011. The PFZ was established mostly on non-degraded secondary forests caused by shifting cultivation or logging activities. Due to its industrial purpose, a short-term rotation system was adopted in the PFZ. The climate is characterised by high annual precipitation of 3800 mm. Although detailed soil information is required to attain sustainable management of industrial forest plantations using fast-growing tree species in short-rotation systems (Mackensen et al. 2003), soil condition after planting has yet to be investigated in the PFZ. The purpose of this study was to assess effects of planting and harvesting A. mangium on morphological and physicochemical properties of soil in the PFZ.

* sotatnk@kochi-u.ac.jp

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