Soil Properties under Various Stages of Secondary Forests at Sarawak, East Malaysia

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Abstract

Changes in the forest community during secondary succession are influencing in various soil properties. However, there is limited information available on the soil properties under different stages of secondary forests in Sarawak. The aims of this study are to clarify the soil morphological and physicochemical properties at secondary forests under different age stands after similar land change (slash and burn). Field surveys were conducted at 3, 5, 10, and 20 years old of secondary forests in Sabal, Sarawak. Different fallow time influence changing soil properties in various stage secondary forests. A number of soil properties affected soil development process and land use change. Soil morphological and physicochemical properties differed under different stages of fallow periods. The results showed that the soils under different stages of fallow lands after shifting cultivation in the study sites was categorized in acidic soil as indicated by pH (H_2O) values of below than 5 and the low content of T-C and T-N as well as exchangeable bases. The close relationship can be assumed between soil development process and vegetation succession. The knowledge of forest soil properties is essential to understand the change and development process under various stages secondary forests. The comprehensive understanding about soil properties and development process is important in order to conserve and manage secondary forests.

Keywords: secondary forest, fallow age, shifting cultivation, soil morphological properties, soil physicochemical properties

1. Introduction

Shifting cultivation has been practiced all over the world and two-thirds of the world's secondary forest in 1980 was shifting cultivation fallow (Lanly, 1982). Historically, shifting cultivation has created much impact on the general landscape of rural Malaysia particularly in Sabah and Sarawak over the last 100 years (Latiff & Zakri, 1998). In addition, about 49% of the area deforested annually in tropical Asia is attributed to shifting cultivation (Lanly, 1982). Shifting cultivation is accounted for some 28% of land use and it has been suggested that some 3.2 million ha in Sarawak are subject to shifting cultivation (Jomo *et al*., 2004).

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