



Tropentag, September 16-18, 2015, Berlin, Germany

“Management of land use systems for enhanced food security:  
conflicts, controversies and resolutions”

## Smallholder Management Practices and their Effects on the Carbon and Nutrient Status of Peat Soils under Oil Palm Cultivation in Sebauh Sub-District, Sarawak, Malaysia

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### Abstract

Recently the development of industrial plantations and cultivation of oil palm on peat lands has created numerous discussions due to its future potential but also because of its adverse social and environmental effects. On tropical peat land in Malaysia, in particular in Sarawak with its big peat swamp areas, oil palm production is increasing. Due to high market prices, governmental support and the convenience of the peat land, more smallholders are getting involved in cultivating oil palm on peat soils, even though initial cost and labour for drainage might be required and land ownerships issues are creating conflicts. Industrial estate plantations on peat soils have been studied in terms of carbon emissions and management practices, but there is currently no information available when it comes to smallholder management practices and their future possibilities for more sustainable practices in a sensible environment like peat lands. Due to the lack of information, extension officers, and resources, most of the smallholders tend to copy their management strategies from the neighbours and only rely on chemical fertiliser without being aware of alternative strategies. Therefore this study aimed to investigate soil management practices that are applied by small scale oil palm producers cultivating on peat soils in Sebauh Sub-District, Sarawak Malaysia, and the effects of these management practices on soil nutrient characteristics. Furthermore, it is intended to evaluate the potential for more sustainable management practices. To characterize the variety of practices, influencing factors, and to measure soil nutrients, interdisciplinary methods are being carried out in the field and in the lab. The qualitative methods used, are a variety of PRA's, interviews and a questionnaire survey. Additionally quantitative methods in terms of soil sampling in selected sites were incorporated to relate applied soil management practices to the state of the soil nutrients.

**Keywords:** Oil palm, peat, smallholders, soil management, sustainable management