SOIL AND AGRICULTURAL CAPABILITY OF UiTM SARAWAK, SAMARAHAN CAMPUS FARM

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SAMARAHAN CAMPUS FARM

(TANAH DAN KEUPAYAAN PERTANIAN DI LADANG UiTM SARAWAK,
KAMPUS SAMARAHAN)

ABSTRACT

Three major soil groups, three soil families and six soil series were identified in UiTM Sarawak, Samarahan campus farm. The three soil major groups are Red Yellow Podzolic (RYP), Gley and Organic. The three soil families are BEKENU and MERIT Family of RYP Group, BIJAT and TATAU Family of Gley Group and ANDERSON Family of Organic group. The soil series identified are Bekenu of BEKENU Family, Merit and Jakar of MERIT Family, Daro of BIJAT Family, Tatau of TATAU Family and Gadong of ANDERSON Family.

Agricultural capability of the area under studied is mostly classified under Class 2t-3te-4te and Class 3wi. Class 2t-3te-4te consists of Jakar, Merit and Bekenu series and is restricted for agricultural use due to the steepness of the slope. Jakar, Merit and Bekenu soils are classified in Class 2t and 3te are suitable for agricultural activities and can be planted with various types of crops such as upland rice, banana, sugarcane, cocoa, oil palm, pepper, papaya, coffee, fruit trees, coconut, cashewnut and rubber. The 4te class of Jakar, Merit and Bekenu need proper soil management due to the long term potential for soil erosion and are suitable for only an infrequent crop of hill rice or for small-holder rubber with a permanent ground cover.

Class 3wi consists of Daro series soil and naturally suitable for wet padi cultivation. However, the area has been planted with oil palm, coconut, coffee and guava; because the area has been under continuous drainage. Class 4fw consists of Tatau series soil is not suitable for agriculture due to serious fertility problem and serious wetness, but with proper water and fertilization management the soil can be planted with coconut and cashewnut. Class 04go consists of Gadong series which is also not suitable for agriculture. Generally, with good water management, the area can be improved to Class 03o which can be planted with sago.

CHAPTER 1

1.0 INTRODUCTION

Classification is a basic requirement of all science and needs to be revised periodically as knowledge increases (Isbell, 1996). Soil classification has historically been linked to agriculture uses of the soils. Because dominant soils and agricultural systems differ widely among different countries, a broad range of systems exists today. As the demands for soil information are becoming broader and include nonagricultural uses, such as those concerning environmental issues, soil classification systems are expected to be modified. Ploughing a soil does not change its classification. Of course, severe erosion may change soil classifications dramatically, but this is different from the effects of soil management. Soil management may, however, strongly change soil properties of a given soil series in a manner that is quite significant for soil use. This does not necessarily correspond with a change in classification. For example, different types of management in the UiTM farm after many years will result in different soil properties, even though the classification will not change. Biological farming resulted in a higher soil quality, expressed by higher organic matter contents, while traditional arable farming led to depletion of organic matter and a lower soil quality.

Taxonomy is that branch of science dedicated to discovering, characterizing, naming, and classifying objects or organisms so as to understand relationships between them and with the factors of their formation. Taxonomy is about identification and recognition, as well as the establishment of a hierarchy of classes which allows an orderly overview of the diversity of the objects concerned. The USDA Soil Classification (Soil Survey Staff, 1960) was a breakthrough toward classifying soil in terms of its own properties and toward defining taxa on the basis of quantitative differentiae that could be observed or measured. The selection of differentiating properties took soil formation into account, but soil-forming processes as such were no longer criteria for separating classes. As the number of soil taxa far exceeds the amount of information that the mind can

CHAPTER 2

2.0 LITERATURE REVIEW

Location and study area

UiTM Sarawak campus is located in Kota Samarahan which lies within latitude 1^0 25' and 1^0 28' north and longitude of 110^0 25' and 110^0 29' East with a total area of 121.5 hectares (300 acres) bordering it with Jalan Entingan on the East with Sg. Meranek in the south east. The distance from the campus to Kuching city is about 25 kilometer.

A semi-detailed soil survey of the Upper Samarahan Area was carried out in 1982. (Soon, 1983) The Soils and Terrain, and Agricultural Capability Maps were produced at the scale of 1: 25,000. The soils in the Upper Samarahan Area are broadly grouped, for descriptive purposes, into lowland organic soils, lowland mineral soils and upland mineral soils. The upland mineral soils occupy the bulk of the survey Area. Four major soil groups are Skeletal Soils, Oxisols, Grey-White Podzolic Soils and Red-Yellow Podzolic soils.

The agricultural capability of the Samarahan area was assessed based on the soil and terrain characteristics, and flooding hazard (Teng, 1994). The Organic Soils have limitations of high water-table and poor anchorage for crops including other limitations common to low lying areas. The Gley soils and Alluvial Soils are subjected to flooding and in the case of Gley soils, poor drainage. The Grey-white Podzolic Soils have low nutrient status and generally low nutrient retention capacity. The oxisols and Red-Yellow Podzolic Soils are only limited by topography and erosion hazard when they occur on steep hills. Skeletal soils of very steep hills are unsuitable for agriculture due to the dissected topography and shallow soil depth.

Major agricultural activities in Samarahan area are cultivation of pineapple, citrus and coconut.