Impact of agricultural practices on slope land soil properties of the mountainous region of Northern Vietnam: A case study in Bac Ha District, Lao Cai Province

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Abstract: In the mountainous region of Northern Vietnam, there are various systems for agricultural land use. This paper describes the impact of agricultural practices on the original properties of slope land soils with special reference to changes in soil fertility and weathering in relation to soil erosion. Soil fertility was not extremely low in the higher commune, where the cooler climate would be more dominant factor controlling productivity. Therefore, the people made well-managed terraces to maintain their fields. On the other hand, in the lower commune, shifting cultivation is a dominant way of agriculture supported by the warmer climatic condition. Weathering status of soils was not greatly different among the three communes, but the current climatic conditions would affect the reactivity of soils. The clay dispersion ratio of all the sites studied was very low. In addition, the clay dispersion ratio and clay content were not different among different land uses. This means that soil erosion would not have a strong impact under current farming systems in the three communes. However, activity ratios of Al and Fe (Alo/Ald and Feo/Fed) became lower after cultivation, and therefore, in the long term, slight but continuous erosion might have occurred to reduce the activity of soils.

Author Keywords: Bac Ha; Contour planting; Shifting cultivation; Slope land; Soil erosion; Soil fertility; Soil weathering; Terracing; Vietnam

Index Keywords: agricultural practice; mountain region; soil erosion; soil fertility; Asia; Eurasia; Lao Cai; Southeast Asia; Viet Nam

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