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Marginal Uplands in the Philippines: Characteristics, Soil Fertility Constraints and Sustainable Management

Victor Asio[1], Marlito Bande[2]

[1] *Visayas State University, Dept. of Soil Science, College of Agriculture and Food Science, Philippines*
[2] *Visayas State University, Institute of Tropical Ecology and Environmental Management,*

Abstract

Marginal uplands can be defined as undulating and steep lands ranging in elevation from near sea level to about 1000 m elevation and having low crop productivity due to physical and chemical constraints. They are widespread in the Philippines as a result of soil erosion and other degradation processes which were brought about by decades of deforestation and unsustainable cultivation practices. Until now, very limited data on the nature of these lands had been published. In fact, even its definition is still a subject of debate. Our research in the last decade has shown that the common plant species in marginal uplands which can be used as indicator plants are Cogon (*Imperata* cyclindrica), Bugang or Talahib (Saccharum spontaneum), C). Carabao grass (*Paspalum conjugatum*), and D) Hantutuknaw (Melastoma malabathricum). Native guava (*Psidium guajava*) is almost always present in marginal uplands. The marginal upland soils possess various constraints to crop production. Depending on the soil genesis and land use history, the constraints may include physical such as shallow depth, compaction, unfavourable slopes, and low infiltration rates as well as chemical constraints such as acidic or alkaline pH, low OM and nutrient contents. The soil fertility constraints vary widely among marginal upland soils. Agroforestry is widely accepted as the sustainable form of land use for marginal upland soils. An innovative form of agroforestry developed by the ViSCA-GTZ Applied Tropical Ecology Program at Visayas State University in the 1990s which has been formally endorsed by the Philippine government to rehabilitate denuded lands is called Rainforestation Farming which focuses on the use of native tree species. More research is needed on the bio-physical characterisation of marginal uplands in many parts of the country to support the government's food security and environmental protection programs.

Keywords: Degraded lands, marginal soils, marginal uplands, Philippines, rainforestation farming, soil fertility constraints

Contact Address: Victor Asio, Visayas State University, Dept. of Soil Science, College of Agriculture and Food Science, Upper university campus, Baybay City, Philippines, e-mail: vbasio_ph@yahoo.com