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## Spatial Variability of Maize-Cassava Productivity in Uplands of Northwest Viet Nam

LARS BOLL, PETRA SCHMITTER, THOMAS HILGER, GEORG CADISCH

*University of Hohenheim, Institute for Plant Production and Agroecology in the Tropics and Subtropics,  
Germany*

### Abstract

With rising population and high world market prices for crops such as maize, the pressure on upland fields for agricultural production has reached a new all time high. Therefore, deep slopes, decreasing soil productivity and high erosion rates do not hinder farmers of using such fields in mountainous regions. The overall goal of this study is to better understand the impact of land-use intensification on maize-cassava productivity and related nutrient flows at landscape level. Five fields were selected in the Chieng Khoi watershed, Son La province, Northwest Viet Nam to study the impact of field accessibility, based on distance from village, crop performance and soil fertility. At each of the five fields three plots were marked in the upper, middle and lower slope position and will be monitored during the 2008 cropping season to assess crop performance, based on plant density, ground cover, leaf area index and greenness of leaves. In addition, yield parameters will be collected. For linkage towards soil quality, soil samples will be collected from each plot till a 40 cm depth before planting and after harvest to assess changes in soil fertility. Soil texture, particle size distribution, pH, organic matter, water retention and bulk density are of interest as well as nutrients. Amount and quality of runoff as well as total eroded soil within the cropping season will be monitored by Gerlach troughs established on upper, middle and lower slope positions and erosion pins. The focal point will be on soil degradation, crop performance and their spatial distribution within and across selected fields as affected by distance to village or homestead, slope gradient and field cropping history. The expected results will allow predicting the long term soil loss of the current production practice (maize-cassava). Thus, this study will contribute to recommendations on an improved management for increased productivity in this ecologically fragile and economically disadvantaged mountainous region of Southeast Asia.

**Keywords:** Crop performance, erosion, field accessibility, intensification, land use, soil degradation