

## **Mineralogical and charge properties of volcanic ash soils from west Sumatra, Indonesia**

### **ABSTRACT**

Four volcanic ash soil from two toposequences along Mt Marapi and Mt Talaniau, west Sumatra were studied in order to characterize their mineralogical and charge properties. In all the soils, the silt fraction is composed mainly of gibbsite, cristobalite and feldspars, while the clay fraction is composed mainly of cristobalite, feldspars and halloysite. Gibbsite is only present in the clay fraction of the soils from Mt Talamau, while opal-A is only found in the clay of the soil from Mt Marapi. Allophane contents, computed from Si and Al extracted by ammonium oxalate and pyrophosphate, are lower in the surface horizons than in the subsoil. This is related to higher amounts of organic matter in the topsoil. Due to higher rainfall, the soils of Mt Talamau are more weathered than those of Mt Marapi. This is reflected by lower allophane and higher ferrihydrite contents in the soils of Mt Talamau. In all the soils, the surface horizons have lower pH<sub>s</sub> value than the underlying B-horizons. The AEC is higher in the subsoil than in the topsoil, having values of 0.3 -1.1 cmol<sub>c</sub>/kg soil.

**Keyword:** Volcanic ash soils; Allophane; Charge; Selective dissolution