Mineralogy and sand surface morphology of selected andisols from west Sumatra

ABSTRACT

Andisols from Mt. Marapi and Mt. Pasaman in west Sumatra, Indonesia were studied to characterize their mineralogy and the surface morphology of the sand grains. The minerals in the sand grains included quartz, plagioclase, hornblende, augite, hypersthene, olivine and volcanic glass having different surface morphology. The morphology surface features present are bubbles, pitted, curve platy and sponge-like. Some of the sand grains are coated with amorphous materials. Halloysite is confirmed by the presence of strong peaks of Si and Al and a weak peak of Fe on the SEM-EDX spectra. The clay fraction is composed mainly of allophane, cristobalite, feldspars and halloysite. Soils from the Mt. Pasaman have some gibbsite, while those of the Mt. Marapi have opaline silica in the surface horizons. The abundance of opaline silica tends to decrease with the age of the volcanic ash soils.

Keyword: Allophanes; Mineralogy; Morphology; Amorphous coatings material