

Bussayarat Mokmoo 2009: Genesis and Charge Characteristics of Agricultural Upland Soils Derived from Granitic Rocks in Southeast Coast, Thailand. Master of Science (Soil Science), Major Field: Soil Science, Department of Soil Science.

Thesis Advisor: Professor Irb Kheoruenromne, Ph.D. 158 pages.

Genesis and charge characteristics study of agricultural upland soils derived from granitic rocks in Southeast Coast, Thailand was carried out using soil samples collected in the areas of five soil series namely Huai Pong, Sattahip, Thai Mueang and Phang-nga series. The genesis study included the analysis of their morphology, physico-chemical properties and mineralogical characteristics based on standard methods. The charge characteristics study included the determination of i) basic cation exchange capacity (CEC_B) represented by the amount of adsorbed calcium ion (Ca^{2+}) ii) total cation exchange capacity (CEC_T) represented by the amount of adsorbed calcium ion and aluminum ion (Al^{3+}) and iii) the anion exchange capacity (AEC) represented by the amount of adsorbed chloride ion (Cl^-) of their surface soils (Ap) and subsoils (Bt and Bv) by the compulsive exchange method. Results of the study revealed that these soils are highly developed soils where their important formation processes include eluviation, illuviation, leaching, lessivage and laterization. Taxonomically, Huai Pong, Thai Mueang, Phang-nga series and Sattahip variant are Typic Kandiudults and Phuket variant is a Typic Plinthudult. Their charge characteristics based on ion adsorption characteristics of these soils can be divided into two groups; 1) soils that have good anion adsorption comprise Huai Pong series and Sattahip variant (Typic Kandiudults), 2) soils that have good cation adsorption comprise Thai Mueang, Phang-nga series (Typic Kandiudults) and Phuket variant (Typic Plinthudult). The charge characteristics of these soils can be used as a basis for formulating appropriate fertilizer and management practices of major upland soils in Southeast Coast, Thailand.

Student's signature

Thesis Advisor's signature