Jaruwat Chuaychoo 2014: Properties and Agricultural Potential of Acid Sulfate Soils under Tropical Monsoonal Climate. Master of Science (Soil Science), Major Field: Soil Science, Department of Soil Science. Thesis Advisor: Professor Anchalee Suddhiprakarn, Ph.D. 212 pages.

The study on properties and agricultural potential of acid sulfate soils under tropical monsoonal climate was carried out on six selected areas in Nakhon Si Thammarat province. Methods of study included analysis of soil morphology in the field, laboratory analysis on physicochemical properties and mineralogical characteristics of soil samples according to standard methods. Assessment of the soil fertility status and soil fertility capability was included.

Results of the study revealed that these soils are lowland soils. Relief ranges from 1 to 5 m above mean sea level. These soils are deep to very deep. The soils have developed on brackish and marine deposits and organic materials. They are poorly developed having fine texture. These soils are ultra acidic to moderately alkaline (pH 3.1-8.3) and their organic matter content ranges from very low to very high (0.34-357.87 g kg^{-1}). They have very low to high total nitrogen (0.17-6.43 g kg^{-1}), very low to high available phosphorus (0.3-39 mg kg^{-1}) and low to very hhigh available potassium (30-169 mg kg^{-1}). They have low to very high cation exchange capacity (9.0-80.0 cmol kg^{-1}), moderate to very high extractable acidity (3.4-83.0 cmol kg^{-1}). They have low to high base saturation percentage (7.9-92.8%). Their aluminum saturation is in the range of 0-78.8 percent, very high soluble sulfate (23-5,396 mg kg^{-1}), very high extractable sulfate (145-8,701 mg kg^{-1}) and jarosite in their profiles is in the range of 54-2,559 milligrams per kilogram. The soils have kaolinite as the major mineral in clay fraction and quartz in silt fraction. These soils include three areas of Endoaquepts and three areas of Sulfaquepts.

These soils mainly have medium fertility. Their fertility capability units include two areas each of Cgk and Cagk and one area each of Cag and Cacgk. Thier agriculture limitation comprises aluminum toxicity, gleying, insufficient available potassium, and acidity associated with jarosite. Their agricultural use needs a proper control of watertable levels, liming, proper crop type selection and plant nutrient management practice particularly on potassium for crop's requirement.

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