

STUDYING THE MORPHOLOGICAL AND PHYSICO-CHEMICAL PROPERTIES OF ACID SULFATE SOILS IN CUU LONG DELTA AFTER 20 YEARS CULTIVATION

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Summary

This study aimed at investigating the morphological and physico-chemical properties of acid sulfate soils in Cuu Long delta after 20 years cultivation. Five types of acid sulfate soil (denoted HA-HG, BK-LA, TT-LA, PL-BL and TL-TG) which differed with agro-ecological, were selected for those study. Acid sulfate soils at HA-HG and BK-LA were classified as severe actual one (Epi-Orthi-Thionic Fluvisols) with jarosite mottles (2.5Y8/6) occurred at depth < 50 cm. In PL-BL, TT-LA and LP-TG, those soils were classified as lightly actual ones (Endo-Orthi-Thionic Gleysols and Fluvisols) with the jarosite mottles (2.5Y8/6) occurred at depth >50 cm and sulfidic materials appeared at depth > 80 cm. The morphology of (PL-BL) and (BK-LA) in 1992 were not much different with those in 2015 except a slight change in mottled color. In 2015 the soil profiles were had mottles along the root of layer with advancement of soil maturity. Due to cultivation processes as plowing, alternating wet and dry, soil profiles in 2015 become more and more mature with distinct stratifies without any transition layers of AB or BC'. Almost all acid soil profiles showed a slight increase in value of some chemical properties such as pH, organic matter, potassium and calcium exchange. Aluminum exchange values and total acidity tend to decrease during period time (from 1992 to 2015). Sodium exchange tends to increase at soil profile of TT-LA and decrease at soil profiles of HA-HG, BK-LA and TL-TG; specially PL-BL soil profile is fluctuated and tend to decrease in A and C layers; however, B layer is increased during cultivation process. Most of the soil profiles has EC value decreasing, except PL-BL soil profile tends to increase very high because of salty inundation for long time. In general, soil texture in five soil profiles has high clay and silt composition which was not change with cultivation time. On survey and analyses the above soil profiles revealed an increase in pH, organic matter and calcium exchange while total acid and aluminum exchange were decreased in soil. However, aluminum, iron and acidity are still high potential toxicities in all soil horizons.

Key words: Acid sulphate soil, soil morphology, soil classification, Cuu Long delta chemical properties of acid sulfate soils.