TO ESTABLISH FERTILITY EVALUATION SCALE OF SURFACE SOIL STRATUM FOR RICE PRODUCTION

Tran Minh Tien, Bui Hai Anh, Nguyen Van Bo

Summary

The fertility evaluation of surface soil stratum for rice production on 4 soil types (alluvium, saline, acid-sulfat soils, ferralitic & grey degraded soils) was conducted base on collecting 720 soil samples and interviewing 720 farmers in rice production areas in the Red and Mekong river deltas. Soil samples were analyzed parameters of soil texture, pH_{KCl}, total exchange base cations (TBC), cation exchangeable capacity (CEC), organic carbon (OC), total nitrogen (N), total and available phosphorus (P), total and available potassium (K), total and available silica (Si). Using PCA (Principle Component Analysis) and correlation statistics between soil analysis data and rice yield, we found that soil parameters of pH_{KCl}, OC, total N, P and K, TBC and CEC in soil are suitable for evaluating soil fertility for rice production. We proposed a surface soil fertility range which could be used for evaluating soil quality for rice production of which good soil fertility for rice production are slight acidity to neutral pH_{KCl} > 5 and < 7, CEC > 15 meq/100g soil, OC > 3%, N total > 0.25%, P total >0.15% P_2O_5, K total > 1.2% K_2O and TBC >9 meq/100g soil and poor soil fertility for rice production are very acidity with pH_{KCl} < 3.5, CEC <7 meq/100g soil, OC < 1.5%, N total < 0.15%, P total <0.09% P_2O_5, K total <0.9% K_2O and TBC <4 meq/100g soil.

Keywords: *Soil fertility, rice soils, soil quality evaluation, soil quality, Red river delta, Mekong river delta.*