

# **Alkaline Ion Concentrations In Salt-Effectuated Agricultural Soil In The Coastal Area Of The Red River Delta, Northern Vietnam - An Application Of GIS In Soil Study –**

Dinh Thai Hung

Room 409, 4<sup>th</sup> Floor, Building No 5 Science –  
The University Of Tokyo, 7-3-1 Hongo Bunkyo-Ku, Tokyo, Japan  
E-Mail: Dinh@Nenv.K.U-Tokyo.Ac.Jp

## **Abstract**

The coastal rice field soil in the Red River Delta can be described as saline soil in the southeastern coastland and acid sulfate soil in the eastern coastland. Soil salinity and soil characteristics have affected on rice cultivation activity, especially in the dry season when salinity intrusion occurs. Chemical use and cultivation method are improved rapidly in order to attain high productive yields and soil resource optimality. The relation between soil characteristic and cultivation activity can be clarified by considering main ion concentration changing in cultivated soil layer and deeper soil layer in agricultural soils. This study aims to clarify the influence of sedimentary characteristic on cultivation activities in the coastal agricultural land by considering the alkaline ion concentration changes. The irrigation system and chemical use in the fields also are considered in the survey. Survey and sampling work carried out at the coastal rice fields represent for saline soil and acid sulfate soil. Sampling places were located by GPS handle equipment. Soil samples were taken using portable boring equipment and investigated in the laboratory. Sampling map, soil map and irrigation system map were made by GIS application. There is a difference in alkaline ion concentrations between saline soil and acid sulfate soil. The sedimentary characteristics of the Red River system and the Thai Binh River system have been mentioned as an explanation for high calcium ion concentration in saline soil and the lack of calcium in acid sulfate soil. Irrigation system has played an important role in reducing soil salinity and ion concentrations in the cultivation soil layer. The effect of “washing method” on soil improvement has been clearly explained when considering soil map, irrigation system and ion concentration changes. The relation between main ion concentrations in the surface soil layer of cultivated land and inhabitants' activities should also be investigated to clarify the complicated relationship between human activities and the changing natural environment.