

CHAPTER 2

LITERATURE REVIEW

In 1962 the mineralogical and chemical composition of the clay in the northeast of Thailand has been studied by Santhad Rajanasoonthon of Kasatsart University and F.R. Moorman of F.A.O., who modified the scheme of soil classification in the soil map of Thailand which was previously made by the late Dr. R.L. Pendleton. This modified soil classification has been used until now. (4)

Also in the same year, Sorasith Vacharotayan have shown that the clay mineralogical compositions of the surface soils covering a wide area of Thailand consist of Kaolinite, illite and montmorillonite. (14)

In 1965, Nedeco made an assumption from his study that the mineralogical composition of young marine and terrestrial sediments of the Chao Phraya Delta consisted of illite from 60 to 70%, Kaolinite about 10% and 5-20% montmorillonite. (14)

Eide (1967) has summarized from his analysis of the Chao Phraya Delta which indicate that the clay minerals are mainly consisting of chlorite, illite and some montmorillonite. (14)

Haley and Aldrich in 1968 have made a report from their study of the mineralogical composition from one sample at the depth of 7.5 m. at Bangkok by using X-ray diffraction analysis. Their analysis indicates that the

clay mineral fraction consists of 35% illite, 30% montmorillonite, 10% kaolinite, 15% quartz and 10% of unidentified.
(15)

In 1969 Kawaguchi and Kyuma, study soil in the Central Valley, in the Korat and the Chieng Mai basin. All samples were drawn up from the elev. 0-1 m. These results were published in the series "Low Land Rich Soil in Thailand". From the results one can concluded that the dominated clay minerals of Bangkok plain is kaolinite about 40 - 50%, illite about 20 - 30%, some montmorillonite and vermiculite about 10 - 20% and very small amount of chlorite.(4)

In 1971 L. Barden & G.R. Sides used electron microscope to study the structure of South East Asian marine clays from Bangkok clay. Conclusion was made from the study by electron microscope, that clay structure in Weathered, soft and stiff clay zones has shown similar flocculated clay structure surrounded by some coarser silt size particles.(11)

In 1977 Lief Peterson did some study of soil in the central plain. Three locations were selected at Bang Khen, Klong Luang, Suphan Buri. The soil sampled were drawn up from elev. 0 - .65 m. From his studied it can be concluded that the dominant clay minerals are illite, kaolinite and montmorillonite. For particle size less than 2μ , there exists illite content is about 30 - 35%, kaolinite 25 - 30%, montmorillonite 20% and very small amount of quartz and feldspar. Chemical composition of clay fraction consist of: (5)

SiO ₂	50 - 60%
Al ₂ O ₃	25 - 29%
Fe ₂ O ₃	4 - 7%
CaO	0.07 - 0.17%
MgO	0.64 - 0.70%

Na ₂ O	0.64 - 0.70%
K ₂ O	2.31 - 2.51%
Loss on ignition	9.10 - 10.06%

Most of these studies were made from the top soil at the depth of elev. 0.0 + 0 - 100 cm. the main purpose of the reviewed studies was for agricultural usage of land.