

Nuanjun Pasda 2008: Biological Assessment on Suitability of Composts Derived from Bangkok City Sewage Sludge for Agricultural Production. Doctor of Philosophy (Soils), Major Field: Soil Science, Department of Soil Science. Thesis Advisor: Professor Supamard Panichsakpatana, D.Agr. 98 pages.

In order to find a sustainable method of disposal of sewage sludge, a study had investigated the suitability of the product for agricultural use. Monthly sampling and analysis of sewage sludge from three wastewater treatment plants in Bangkok Siphraya, Rattanakosin and Chongnonsi were carried out. Plant nutrient contents were high (i.e. total N from 19 to 38 g kg<sup>-1</sup>) but the organic matter content level was low. Heavy metal levels varied, depending on which plants the sample were taken from and were sometimes higher than the EU or US regulations for sewage sludge use in agriculture. Faecal coliforms were found to be present in the sludge. However, the C/N ratio of sewage sludge was low. Two organic by-products (wood chips and rice husk) with a high level of carbon content needs to be added. Wood chips and rice husk did not exhibit any significant differences concerning decomposition after a period of 63 days. Under experimental conditions, the use of an activator within the sludge mixtures did not improve the decomposition of organic matter contained in the mixtures of sewage sludge and rice husk or sewage sludge and wood chips.

The growth and the number of earthworms (*Eudrilus euginae*) during vermicomposting were increased. Total organic carbon levels showed a marked decrease during the vermicomposting. The C/N ratio decreased from 16 in the raw mixture to 14 in the end product. The recorded levels of faecal coliforms decreased from 5.71 to 3.96 log Most Probable Number per gram during the process.

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