

Thunyapunporn Pattanachareon 2008: Effects of Plubplanarai Municipal Solid Waste Compost from Chanthaburi Province on Growth Development and Yield of Chinese Kale (*Brassica oleracea* var. *alboglabra* Bailey) and Lettuce (*Lactuca sativa* L.). Master of Science (Environmental Science), Major Field: Environmental Science, College of Environment. Thesis Advisor: Associate Professor Sombun Techapinyawat, Ph.D. 173 pages.

The municipal solid waste compost of vegetables and fruits residual from Plubplanarai, Chanthaburi province, were fermented using concrete block technology. This compost contained 0.44%nitrogen, 0.60%phosphorus, 0.14%potassium and high levels of micronutrients (i.e., 109.50 mg/kg zinc, 925.50 mg/kg manganese and 104,613.50 mg/kg iron), but only low level of heavy metal (2.05 mg/kg lead). The compost was tested for its potential used as fertilizer on Chinese kale (*Brassica oleracea* var. *alboglabra* Bailey) and lettuce (*Lactuca sativa* L.). It is interesting to find that applying this waste compost at 6 tons/rai gave similar yield of Chinese kale at harvest (50 days) (55.03 g/plant) as compared to using 50 kg/rai of chemical fertilizer (56.65 g/plant). Using the combination formula of 9 tons/rai compost with 100 kg/rai chemical fertilizer gave the best growth and yield of Chinese kale, i.e., 47.07 cm in height, 9.2 leaves/plant, 35.02 cm<sup>2</sup> of leaf areas, 86.48 g/plant of fresh weight and 8.975 g/plant in dry weight. The essential elements such as nitrogen, phosphorus, potassium, zinc, manganese and iron were also found at highest level. For the lettuce, application of this waste compost at 3 tons/rai gave similar yield of lettuce at harvest (42 days) (45.75 g/plant) as compared to using 25 kg/rai of chemical fertilizer (46.08 g/plant). Upon using the combination formula of 9 tons/rai compost with 50 kg/rai chemical fertilizer the best growth and yield of lettuce were achieved giving 24.26 cm in height, 13.5 leaves/plant, 9.97 cm<sup>2</sup> of leaf areas, 78.47 g/plant of fresh weight and 4.157 g/plant in dry weight. The essential elements were also found at highest level but the lowest content of lead (5.35 mg/kg). Our results indicated the feasible use of this compost as a potential fertilizer for vegetables growth.

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Thesis Advisor's signature