

Thesis Title A Study of Disposal of Plastics
 by Biological Method

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Date of Graduation 12 January B.E.2539(1996)

ABSTRACT

The present work involved study of biodegradation of starch-plastics blends and commercially-established type of biodegradable plastics, by the action of microorganisms, namely *Bacillus subtilis*(Bs) and *Pseudomonas aeruginosa*(Pa), and studies of degradation of starch-plastics blends by the action of termites. Surface morphology and tensile properties changes of the material subjected to the test were also studied. Evidences of surface morphology changes were obtained from scanning electron microscopic study of the specimens. It was also found that Pa could grow in the liquid medium which contained starch-plastics blends as nutrient source, whereas Bs could not. However, Pa has been reported to be incapable of hydrolysing of starch. Therefore, it was not

clear whether Pa could actually cause biodegradation of starch-plastics blends.

For the studies of action of termite on starch-plastics blends, starch-plastics blends having different starch contents (25%, 50%, and 75% by weight) were prepared and subjected to field test. Significant losses of plastics mass were observed. For 25% starch content, the weight loss was 11.7% after 69 days; for 50% starch content, the weight loss was 21.5% after 224 days and for 75% starch content, the weight loss was 13% after 175 days. The results obtained indicated that disposal of plastic waste by the action of termites might be feasible and further study might be worth undertaken.