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**DEVELOPMENT OF AN EXPERT SYSTEM
FOR BETTER MANAGEMENT OF
SOLID WASTE COMPOSTING
BY PRADESHIYA SABHAS
IN SRI LANKA**

By
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A thesis submitted in partial fulfillment of the requirement for the Degree of
**Master of Science
in
Environmental Engineering**



Research work supervised

By
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ABSTRACT

The increasing population and the ever-changing life style of the public have begun to add to the growing solid waste problem in Sri Lanka.

As a solution to the growing solid waste management problem in Sri Lanka, Local Authorities, NGOs, researchers and environmentalists have implemented several composting projects. As waste characteristics of municipal solid waste in Sri Lanka show a very high proportion of organic matter (60-85%), high moisture content (60-75%) and low calorific value (1000-1200kcal/kg).

Most of these projects are currently abandoned or operating under poor conditions due to social, economic and technical problems encountered and none of options have solved the solid waste management problem itself. A key issue that is highlighted is the lack of qualified personnel (experts) to advise and assist Local Authorities to adopt the best solid waste management practices.

Decision Support Systems and Expert Systems are favourable tool to overcome these problems. Therefore by capturing past mistakes, weak points and considering past experience, a user friendly Expert System called BESTCOMP was developed for better management of solid waste composting by Pradeshiya Sabhas in Sri Lanka. This research mainly focused on the behaviour of the physical, chemical and biological process in composting. The model is geared towards decision making as well as providing required expertise to solid waste composting hierarchy.

BESTCOMP consists of many decision models such as compost process and control, pictorial database, site selection, technology selection, waste analysis reports, expertise information, Government laws and regulation on solid waste management, information desk for researchers and training tool, such that the user can identify problems faster, examine various alternatives and make prudent choices. It performs all the functions of a decision support system.

The developed system will guide the Local Authorities of Sri Lanka to find the most suitable composting solution to solve solid waste management problem with the available resources in their area and aid their decision making process on solid waste composting. It also helps in determining resource deficiencies when the user utilizes the data provided in an instructive manner.

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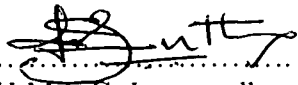
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Declaration

This thesis is a report of research work carried out in the Department of Civil Engineering, University of Moratuwa, Sri Lanka, between December 2000 and April 2002. The work included in the thesis in part or whole, has not been submitted for any other academic qualification at any institution.



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**To My Darling Dad, Mum and Dr. Ajith De Alwis
For their great assistance and unflagging encouragement**



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