Recycled Organics Unit

Composting Science for Industry

2007
Third Edition

An overview of the scientific principles of composting processes

Recycled Organics Unit
PO Box 6267
The University of New South Wales
Sydney Australia 1466

Internet: http://www.recycledorganics.com

Contact: Angus Campbell

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THE UNIVERSITY OF NEW SOUTH WALES

COMMPOST NEW SOUTH WALES

ecoRECYCLE VICTORIA

RESOURCE NSW

This package has undergone national peer review by a range of technical and industry experts (see acknowledgments) and has been endorsed by COMMPOST NSW and the NSW branch of the Waste Management Association of Australia.

Recycled Organics Unit
PO Box 6267,
UNSW, Sydney, Australia, 1466
www.recycledorganics.com

Preface to the *Composting Science for Industry* Information Sheets

The *Composting Science for Industry* package of Information Sheets has been produced to support the continuing development of the Recycled Organics (RO) industry in New South Wales though a greater focus on operation and management for quality.

Understanding the fundamentals of composting enables operators to manipulate the process to maximise the rate of decomposition of the organic material and meet other environmental or quality specifications.

Please note that these Information Sheets will provide you with a background in:

- variety of composting systems available;
- temperature and how this can be managed in composting systems;
- the importance of oxygen in composting systems;
- how water affects the composting process;
- optimising the physical properties of the composting mix;
- nutrients required for rapid composting;
- role of pH;
- the compost recipe, processing time and curing.

We hope that the Information Sheets will assist operators of composting facilities better understand the principles behind their processes, permitting better process management and formulation of quality products that meet the needs of their customers.

1. Information Sheets in "*Composting Science for Industry*"

This package contains a collection of nine Information Sheets:

- Information Sheet No. 5-1: Composting science for industry
- Information Sheet No. 5-2: Composting systems
- Information Sheet No. 5-3: Temperature
- Information Sheet No. 5-4: Oxygen
- Information Sheet No. 5-5: Water
- Information Sheet No. 5-6: Porosity, structure, texture and particle size
- Information Sheet No. 5-7: Carbon to nitrogen ratio (C:N) and other nutrients
- Information Sheet No. 5-8: pH
- Information Sheet No. 5-9: The compost recipe, processing time and curing

2. Other Packages

A series of eight packages are available on important aspects of recycled organics industry development. These are listed below.

- Package 1: Establishing a licensed composting facility;
- Package 2: Guide to developing a process control system for a composting facility;
- Package 3: Producing quality compost
- Package 4: Guide to selecting, developing and marketing value-added recycled organics products;
- Package 5: Composting science for industry;
- Package 6: Buyers guide for recycled organics products;
- Package 7: How to use recycled organics products;
- Package 8: Occupational health and safety and commercial composting.

All of these packages are obtainable from http://www.recycledorganics.com

3. Who should read the Information Sheets?

The series of nine Information Sheets have been developed for all stakeholders in the RO sector who wish to gain a better understanding of the basics of composting science, and how these basics can be applied to commercial-scale composting processes for the purpose of maximising the rate of decomposition of the organic material, and to meet other environmental or quality specifications.

More specifically, the Information Sheets have been developed for:

- existing manufacturers and suppliers of products containing RO;
- prospective RO processors;

- local council waste management officers;
- Resource NSW officers;
- NSW EPA officers;
- Planning NSW officers;
- industry consultants;
- waste educators, and
- marketing agencies.

4. Terminology

Terms used throughout this package of Information Sheets have been officially adopted by the NSW Waste Boards (now Resource NSW) in July 2000 in the form of the *RO Dictionary and Thesaurus: Standard terminology for the recycled organics industry*, produced by the Recycled Organics Unit. This document is freely downloadable from http://www.rolibrary.com

5. How to cite this publication

This publication consists of a series of Information Sheets that are compiled into a set. When citing information from this publication, the set of Information Sheets must be cited (not individual Information Sheets), as shown below:

Recycled Organics Unit (2007). *Composting Science for Industry: An overview of the scientific principles of composting processes.* Third Edition. Recycled Organics Unit, internet publication: http://www.recycledorganics.com

6. Acknowledgements

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- Dr Kevin Wilkinson, Program Leader, Institute for Horticultural Development, Agriculture Victoria.
- Mr Darren Bragg, Manager (Organics), Resource NSW.
- The committee of COMMPOST NSW.

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