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DRAFT
FINAL REPORT

Workshop Facilitation

Australian Recycled Organics Industry R&D Forum Adelaide, 27-28 Sept 2006

Prepared by

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For

Compost Australia

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Government of South Australia
Zero Waste SA

COMPOST AUSTRALIA
The peak national association for the organics processing and recycling industry

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Table of Abbreviations

ARC	Australian Research Council,
ATO	Australia Taxation Office
B/W	Black and White
CMAs	Catchment Management Authorities and their equivalent in each state, including Catchment Management Boards and Natural Resource Management Boards
CNRM	Centre for Natural Resource Management
CRC	Cooperative Research Centres, including CRC Environmental Biotechnology, CRC CARE, Chicken CRC, Pork CRC, CRC Weeds, Proposed CRC Future Farming Industries
DPI	Departments of Primary Industry
DWLBC	South Australian Department of Water, Land and Biodiversity Conservation
EPA	Environment Protection Agencies
ICE WaRM	International Centre of Excellence in Water Resource Management
NAP	National Action Plan
NHT	National Heritage Trust,
NLP	National Landcare Program
NRM	Natural Resource Management
R&D	Research and Development
RDC	Research and Development Corporations
SARDI	South Australian Research and Development Institute
SAMDB	South Australian Murray Darling Basin Region
SE NRM	South East Natural Resource Management
Zero Waste	All similar government agencies in each state and nationally,

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Summary

A Recycled Organics Industry R&D Forum was held on 27-28th September. The Forum provided an opportunity for researchers and industry from each state to present research underway, sources of funding, current research projects, research strengths, interests and perceived opportunities.

As a part of this Forum, In Fusion Consulting facilitated a workshop to:

- Identify key research areas to feed into a national research framework;
- Create collaborative opportunities;
- Identify funding bodies for additional research funds.

Seventy four people attended the workshop, with 28 speakers from South Australia, Western Australia, NSW, Queensland, Victoria and New Zealand. Existing research that was presented can be clustered under a number of themes:

- Field trials of compost
- Biological processes
- Promotion/marketing
- Integrated biosystems and catchment management
- Specific markets
- Cost benefit analysis

The speakers identified a number of issues facing the industry is each state:

- Three of the regions (SA, NSW and NZ) identified that a government shift towards waste minimisation and recovery was helping the industry, while Queensland identified a lack of support from the government as an impediment to the industry.
- Demand varied across the regions, with Queensland finding it difficult to source enough green waste to keep up with demand whereas NSW, SA, Tasmania and Victoria had problems of oversupply to varying degrees. Competition from other industries (chicken

manures etc) were seen as damaging the industry in SA and Queensland, while NSW and WA identified the cost of compost as being a hindrance to further market growth.

- Being unable to adequately identify the benefits of compost was a major concern in three states (NSW, SA and WA).
- Improving quality criteria and certification was an issue in SA, Tasmania and WA.
- Each state/country was developing niche markets.

There are different research strengths, interests and capabilities in each state which are summarised in the report.

A long list of new research ideas were suggested by the speakers, which are documented in Appendix B, summarised under the themes identified below. The highest priority issues identified by the participants (in order of priority) for further research identified were:

1. Marketing and education
2. Sustainable agricultural systems
3. Biological processes
4. Standards
5. Specific marketing opportunities

Each of these areas is consistent with research priorities identified in the "Industry Roadmap" and they are described in more detail in the report. A wide range of potential co-investors is identified for each of the priority research areas.

Background

The Recycled Organics industry has described itself as being at a crossroads[1]. While there is a strong demand for recycling organic materials by the community, there is a lack of adequate market demand for recycled products, which is resulting in a mismatch between supply and demand. The Recycled Organics industry needs to create greater demand, and is particularly targeting agricultural industries close to capital cities (where much of the supply is generated). To create this extra demand, the industry needs to invest in research to demonstrate the benefits of recycled organics to agricultural production, and to develop innovative new, differentiated and high value products that can be manufactured from organic waste streams.

The "Roadmap" identifies four priority research themes:

- Building end-user capacity
- Product development
- Sustainable farming systems research
- Building processor and distribution capacity

The Roadmap and research themes set a broad direction for the industry, which is intimately linked to innovation and research. The next step is to better understand what research is underway, and where research needs to be directed in the future to achieve the vision and objectives of the Roadmap.

A Recycled Organics Industry R&D Forum was held on 27-28th September. The Forum provided an opportunity for researchers and industry from each state to present research underway, the sources of funding, current research projects, research strengths, interests and perceived opportunities.

[1] Resource Consulting Services (2005) Compost Supply Chain Roadmap. "Translating Recycled Organics into Differentiated Products"

The purpose of the Forum is to:

- Network throughout the industry
- Showcase research to avoid duplications
- Create collaborative opportunities
- Identify and lobby funding bodies for additional research funds
- Develop a shared vision for R&D across Australia
- Develop a national research framework.

As part of this Froum, In Fusion facilitated a Workshop in the afternoon of the second day. The purpose of the Workshop was to:

- Identify key research areas to feed into a national research framework.
- Create collaborative opportunities
- Identify funding bodies for additional research funds

This report describes:

- Existing research and research capability in Australia;
- Major issues identified for the Recycled Organics Industry in each state;
- An analysis of the strengths of the industry and research capability in each state;
- A prioritized list of research priorities;
- A list of potential co-investors.

Project Approach and Methodology

The Agenda for the Workshop (Table 1) was designed to make use of the information collected from the speakers at the Forum. Participants in the Workshop were asked to refine, group and prioritise research ideas.

Table 1. Agenda for Workshop

1. Present a summary of:

- Past and ongoing research
- Most significant issues as identified by the speakers
- Existing investors in research, in order of quantum invested
- Strengths and interests by state
- Potential research opportunities and interests

2. Break into groups. What outputs or products of the research proposed in the Summary Report will deliver major improvements in the profitability of the industry: Information, Models, Decision support, Answers to specific questions? What will be the benefits to industry of these research outputs?

Stay in groups. What have we missed? What do we need to add? What can we access from other industries?

Present back to the main group

As a whole group, clump and split themes where needed.

Vote for highest priority research

Brainstorm co-investment opportunities

Workshop Outputs

The workshop outputs are presented in five parts:

1. Existing research
2. Current issues
3. Strengths of research in each state
4. Proposed new research
5. Potential funding

Seventy four people attended the workshop, with 28 speakers from South Australia, Western Australia, NSW, Queensland, Victoria and New Zealand. The existing research can be clustered under a number of themes:

Existing Research

Field trials of compost

- Nutrients
- Soil carbon
- Disease
- Yield
- Quality
- Erosion
- Water use efficiency
- Salinity
- Establishment

Biological processes

- Disease suppression
- Bio-remediation
- Bio-filtration
- Microbial amendments

Integrated biosystems and catchment management

Promotion/marketing

Specific markets

- Potting mix
- Turf raising
- Golf courses & turfs

Cost benefit analysis

Key Issues

The speakers identified a number of issues facing the industry in each state (Table 2).

- Three of the regions (SA, NSW and NZ) identified that a government shift towards waste minimisation and recovery was helping the industry.
- Queensland identified a lack of support from the government as an impediment to the industry.
- Demand varied across the regions, with Queensland finding it difficult to source enough green waste to keep up with demand whereas NSW, SA, Tasmania and Victoria had problems of oversupply to varying degrees. Competition from other industries (chicken manures etc) were seen as damaging the industry in SA and Queensland, while NSW and WA identified the cost of compost as being a hindrance to further market growth.
- Being unable to adequately identify the benefits of compost was a major concern in three states (NSW, SA and WA).
- Improving quality criteria and certification was an issue in SA, Tasmania and WA.
- Each state/country was developing niche markets.

Table 2. Issues for the industry identified by the speakers

	Qld	NSW	NZ	SA	Tas	Vic	WA
Government Support							
No Government Support	■						
Compliance with EPA Guidelines	■						
Policy shift towards waste min. and recovery		■	■	■			
Demand							
Not enough green waste to meet demand	■						
Plenty of landfill, low landfill costs					■	■	
Landscape market growing, but still slow		■					
Oversupply vs demand for "fit for purpose"						■	
Oversupply		■		■			
Willingness by community to pay for organics recycling,						■	
Only one commercial operation					■		
Mainly wood fibre as organics source					■		
Gate fees static		■					
Marketing and branding							
Competition and mis-information	■			■			
Need to reduce cost of composts							■
Affordability of product is the main barrier		■					
Compost price falling		■					
Poorly defined benefits		■		■			■
Standards and QA							■
Quality criteria							■
Certification of pathogen status				■	■		
Need for industry training			■				
Contractual problems		■					
Development of new markets							
Renewable energy						■	
Systems research, not agronomic R&D						■	
Development of markets							■
Bioremediation				■			
Lots of biosolids – potential for re-use					■		

Research Strengths

There are different research strengths, interests and capabilities in each state which are summarised below:

NSW	• State government support • Dedicated research facility • Industry depth and skills • High levy and local government rebate • Water/catchment research
Queensland	• Committed compost producers • Product differentiation
SA	• Using compost to solve particular issues (low OM, high disease) • Research clusters • Consolidated industry • Advanced composting technologies • Strong quality control potential backed by DNA technologies
Tas	• Disease protection mechanisms • Commercial production and application technology
Victoria	• Compost processing and standards • Soil science and agronomy • Field Experimentation
WA	• Horticultural uses for compost • Clusters of research capability

New Research Ideas

A long list of new research ideas were suggested by the speakers, which are documented in Appendix B, summarised under the themes identified below. The audience was divided into groups and asked to identify priorities for research. These were then collated under a number of themes and the audience was invited to vote on them.

The highest priority issues (in order of priority) for further research identified are documented in Table 3, which also matches the prioriities for research identified at this workshop with those identified in the "Industry Roadmap":

Table 3. Research Priorities identified in the Workshop compared to those in the "Roadmap"

Workshop derived priorities	Roadmap priorities
1. Marketing and education (39 votes)	• Building end-user capacity • Building processor and distribution capacity
2. Sustainable agricultural systems (33 votes)	• Sustainable farming systems research • Product development
3. Biological processes (23 votes)	• Product development
4. Standards (21 votes)	• Product development
5. Specific marketing opportunities (4 votes)	• Product development

Marketing and education

- Research markets to identify those with the greatest potential for market growth and sustainability to focus national research and marketing efforts
- Develop credible Cost:Benefit Analyses for a number of key markets with major potential
  i. Extract data from demonstration/experimental work undertaken
  ii. Use a standard methodology
  iii. Minimum of 3 years of data collection
- Training (sales people/agents, agronomists/advisors/extension officers, government agencies and contractors, government policy makers)

Sustainable Agricultural Systems

- Development of Sustainable Growing Systems for a number of major crops and locations
  iv. Minimum effective rates
  v. Training, certification and branding
  vi. Clear differentiation in benefits from competitors (agri-chemicals, uncomposted manures
  vii. Risk assessment and management systems (pathogens, odour, endocrine disruptors, salts, phosphorous, nutrients etc)
- Development of Sustainable Growing Systems for rehabilitating degraded soils
  i. Salinity
  ii. Low organic matter soils
  iii. Identify national interest (carbon, pollution, salinity, water savings)

Biological processes

- Disease suppression
- Nutrient cycling
- Soil structure development
- Lowest effective rates for optimal economic return to growers

Standards

- Product specifications that address risk and target expressed grower needs and agronomic performance
- That is consistent nationally
- That have a minimum standard, and extra standards for products that are designed "fit-for-purpose"
- Integrates with product quality systems required of growers by major corporations (food distribution and sales)

Specific Marketing Opportunities

- Identification of markets and development of appropriate products for potential new markets such as"
  i. transport corridor remediation
  ii. improving soils in peri-urban areas: improving quality of soils for parklands and gardens; urban catchment management

Potential Co-investors

The audience identified a number of potential co-investors for each of the priorities, which are shown in Table 4.

Table 4. Potential co-investors

Co-investor	Marketing Education	Sustainable systems	Biological Systems	Standards	Specific Markets
NLP/NHT			■		
DPI					
EPA	■			■	
Water Industries	■	■	■	■	■
Universities and ARC	■	■	■	■	■
Rural Industries RDC			■		
CRCs	■	■	■	■	■
Zero Waste	■	■	■	■	■
Composting Industry	■	■	■	■	■
CMA's					
Foundations					
Other Countries					
Multinationals	■	■	■	■	■
Local Government	■				■
AusIndustry					■
ATO	■	■	■	■	■
Large Customers			■		
Organic Farming Orgs	■	■	■	■	
Regional Assistance Program					■
Premiers Agricultural Fund (SA)					■
Mining Indsutries					■
Transport Departments					■

(NLP = National Landcare Program, NHT = National Heritage Trust, DPI = Departments of Primary Industry, EPA = Environment Protection Agencies, ARC = Australian Research Council, RDC = Research and Development Corporations, CRC = Cooperative Research Centres, Zero Waste = all similar government agencies in each state and nationally, CMAs = Catchment Management Authorities and their equivalent in each state, ATO = Australia Taxation Office)

Appendix A. Australian Recycled Organics Industry R&D Forum Programme

Wednesday 27th September 2006
Venue: ***SARDI Plant Research Centre Auditorium, Waite Campus, Urrbrae***

9.00am	Registration Desk opens	
9.30am	Welcome – Rob Thomas, Chief Scientist Sustainable Systems (SARDI)	
9.40am	Compost Australia Introductory Remarks Steven Marshall, Chairman Compost SA	
10.00am	**Forum Session 1 – Victoria – Bill Grant (Sustainability Victoria)**	
10.15am	VIC Session 1	Participatory on-farm trials with RO products, Fiona Barker-Reid (DPI VIC)
10.30am	VIC Session 2	RO for processing tomatoes in Northern VIC and Southern NSW, Katie Webster (EcoResearch)
10.45am	VIC Forum Panel Discussion	
11.00am	Morning Tea	
11.15am	**Forum Session 2 – South Australia Overview – Ross Ballard (SARDI)**	
11.30am	SA Session 1	Development of innovative compost formulations, Matthew Ayres (SARDI)
11.45am	SA Session 2	Biostabilisation Testing of Composted Green Organics, Andy Ball (Flinders)
12 noon	SA Session 3	Bioremediation applications for organics, Richard Stewart (Flinders)
12.15pm	SA Session 4	Projections for the animal industries, Michael Moore (PIRSA)
12.30pm	SA Session 5	Building Soil Carbon, Jeff Baldock (CSIRO)
12.45pm	SA Forum Panel Discussion	
1.00pm	Lunch	
1.45pm	**Forum Session 3 – Tasmania - Dean Metcalf (Biocontrol Pty Ltd)**	
2.00pm	TAS Session 1	Specialised Composts for Crop Disease Control, Dean Metcalf
2.15pm	TAS Session 2	Value Adding of Onion Industry Waste, Dean Metcalf
2.30pm	TAS Session 3	Compost Extracts for control of foliar crop disease, Alice Palmer
2.45pm	TAS Forum Panel Discussion	
3.00pm	Afternoon Tea	
3.30pm	**Forum Session 4 – NSW – Darren Bragg (DEC NSW)**	
3.45pm	NSW Session 1	CBA of Using RO in Intensive Agriculture, Aquatic Weed Composting, C.Dorahy (NSW DPI)
4.00pm	NSW Session 2	Catchment Management Trials, Mark Jackson (DEC NSW)
4.15pm	NSW Session 3	Biofiltration of Landfill Gas Using RO, Stuart Dever (GHD Pty Ltd)
4.30pm	NSW Session 4	DEC (NSW) Organics program 2006-2009, Darren Bragg (DEC NSW)
4.45pm	NSW Session 5	RO in Stormwater Treatment, Eric Love (CORE)
5.00pm	NSW Session 6	Mulch Specifications for Viticulture and Orchards, Compost Teas Overview, Greenhouse Abatement, Disease Suppression, CA Industry Survey, Angus Campbell (NSW DPI)
5.15pm	NSW Forum Panel Discussion	

5.30pm Close
5.40pm Bus Departs for Accommodation

7.00pm Industry Dinner – Lion Hotel, Cellar Room
Speaker; Professor Mark Tester, Federation Fellow, Australian Centre for Plant Functional Genomics and The University of Adelaide 'GM crops after dinner – science and politics clash again'.

Thursday 28th September 2006

7.15am Industry Breakfast – Lion Hotel – Dean Metcalf
"Using composts for disease suppression in vegetable growing"
8.30am Bus Departs for SARDI Plant Research Centre Auditorium

9.00am Forum Session 5 – Western Australia – Bob Paulin (AgWA)
9.15am WA Session 1 - Understanding how compost works, Peter O'Malley (AgWA)
9.30am WA Forum Panel Session

9.45am New Zealand Session – Soil3 Program at Massey University, Beatrice Dias-Wanigasekera & Jonathon Hannon

10.15pm Morning Tea

11.00am Forum Session 6 – Queensland – Pam Pittaway (Chysalis Landscape Consultants)
11.15am QLD Session 2 – Appropriate tests/controls for composts, Pam Pittaway
11.30am QLD Forum Panel Discussion

11.45pm The Recycled Organics Unit Library – Angus Campbell – ROU, University of NSW

12.05pm Lunch

1.15pm Industry Workshop Part 1 – Dr Paul Dalby

Afternoon Tea available continuously

5.00pm Closing Remarks - Peter Wadewitz, Compost Australia Chairman

Appendix B. Future Research and Development Priorities identified by the speakers

Marketing and education

- Grower Management tools

Sustainable agricultural systems

- Develop production systems focussed on soil carbon.
- Examination of compost applications that minimise environmental stress
- Impacts on soil carbon
- Establish relationship between soil and water quality
- Quantify benefit against triple bottom line
- Cost benefit analyses for different industries

Biological processes

- Extend the use of trichoderma to control disease
- Management of soil borne disease – potatoes
- Disease suppression in tomatoes
- Examine generic disease suppression capacities

Standards

- Quality standards that indicate nitrogen mineralisation
- DNA Diagnostics for compost certification
- Define lowest rates of application for measureable effects
- Bio security and quarantine certification

Specific marketing opportunities

- Effect of compost tea extracts on wine characteristics
- Quality control of compost for tea production
- Broadacre applications – low volume functional product
- Bio-remediation of contaminated feed stocks
- Renewable energy
- Develop markets for organics in urban catchments
- Identify horticulture and viticulture markets near Melbourne
- Bio fuels
- Influence of partical size on storm water filtration
- The longevity of bio filters

Other

- Define the mode of action of compost tea extracts
- Define rates of mineralisation rate of nitrogen in Queensland
- Co-composting with animal waste