



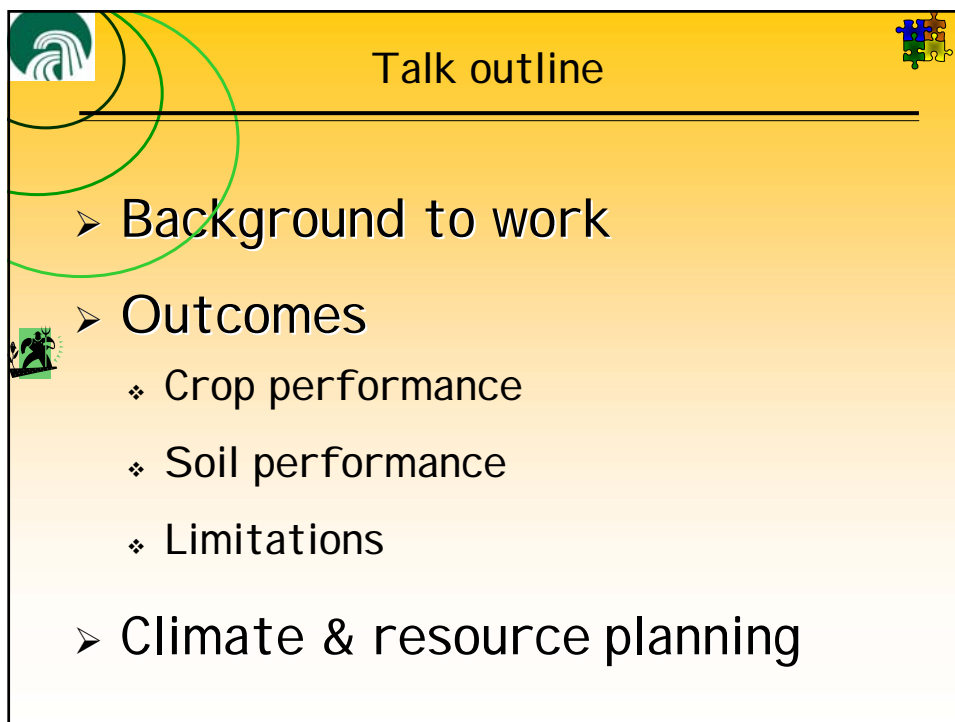
The title slide features a yellow background with a green vertical bar on the left. At the top left is the HAL logo. At the top center is the Department of Agriculture and Food logo. At the top right is the vegetablesWA logo. The main title is centered in large black font. Below the title are the authors' names and affiliation. The event details are listed below. At the bottom are logos for Compost Australia, Waste Management Board, and Natural Heritage Trust.

**Role and importance of  
compost use in vegetables  
& other horticultural crops;  
to sustainability**

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Department of Agriculture and Food, Western Australia

CODIS - Solothurn, Switzerland  
26 & 27 February 2008




COMPOST AUSTRALIA  
Waste Management Board  
Natural Heritage Trust



The talk outline slide features a yellow background with a green vertical bar on the left. At the top left is the HAL logo. At the top right is a puzzle piece icon. The title 'Talk outline' is centered at the top. Below the title is a horizontal line. The outline consists of four main bullet points, with the second one having three sub-bullet points. A small icon of a person working is next to the 'Outcomes' section.

**Talk outline**




- Background to work
- Outcomes
  - ❖ Crop performance
  - ❖ Soil performance
  - ❖ Limitations
- Climate & resource planning

## Background to work

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- Commenced 1996 - focus on intensive horticultural crops - vegetables
- Investigate benefits of using composted organic waste
- Develop markets for recycled organic products
- Identify quality requirements

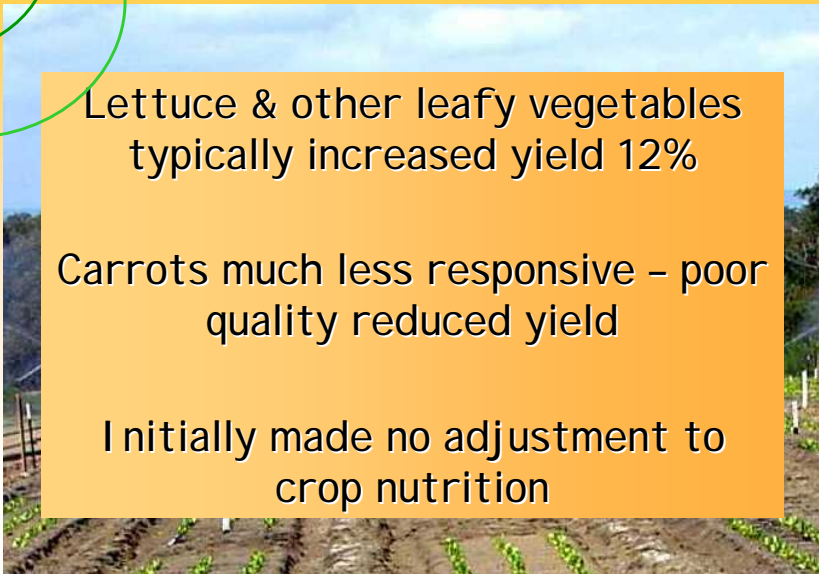
## Improved crop performance

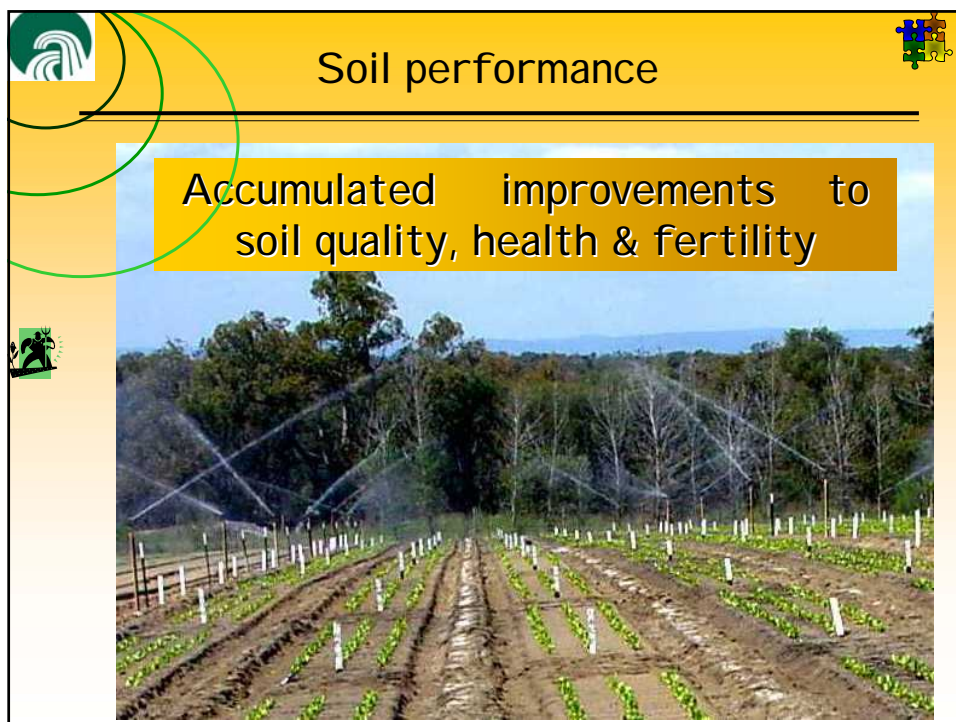
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Lettuce & other leafy vegetables  
typically increased yield 12%

Carrots much less responsive - poor  
quality reduced yield

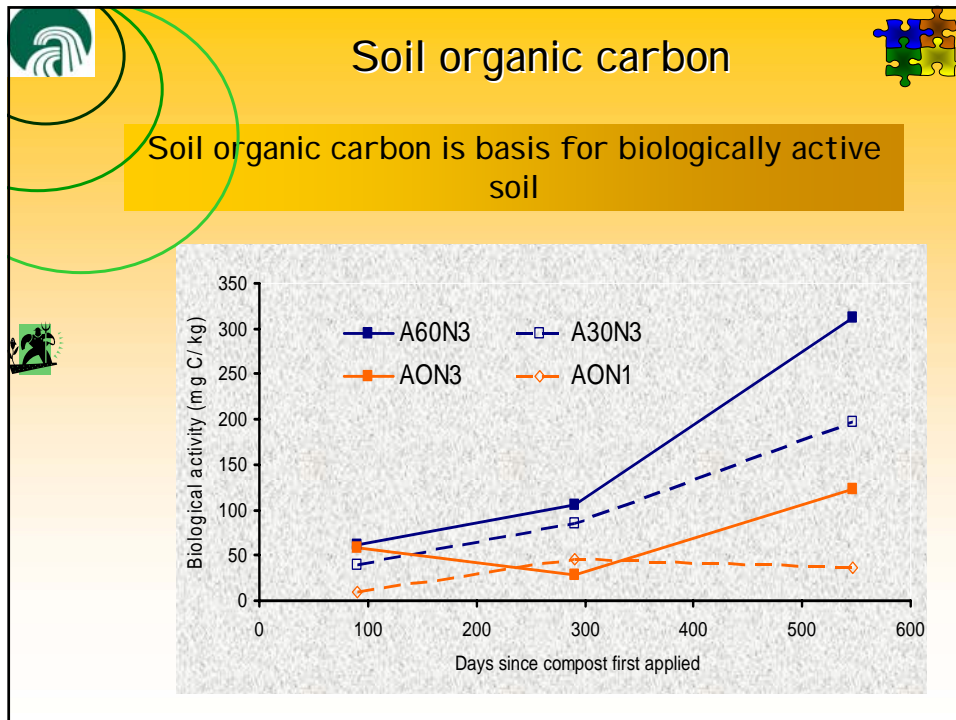
Initially made no adjustment to  
crop nutrition





Accumulated improvements to soil quality, health & fertility

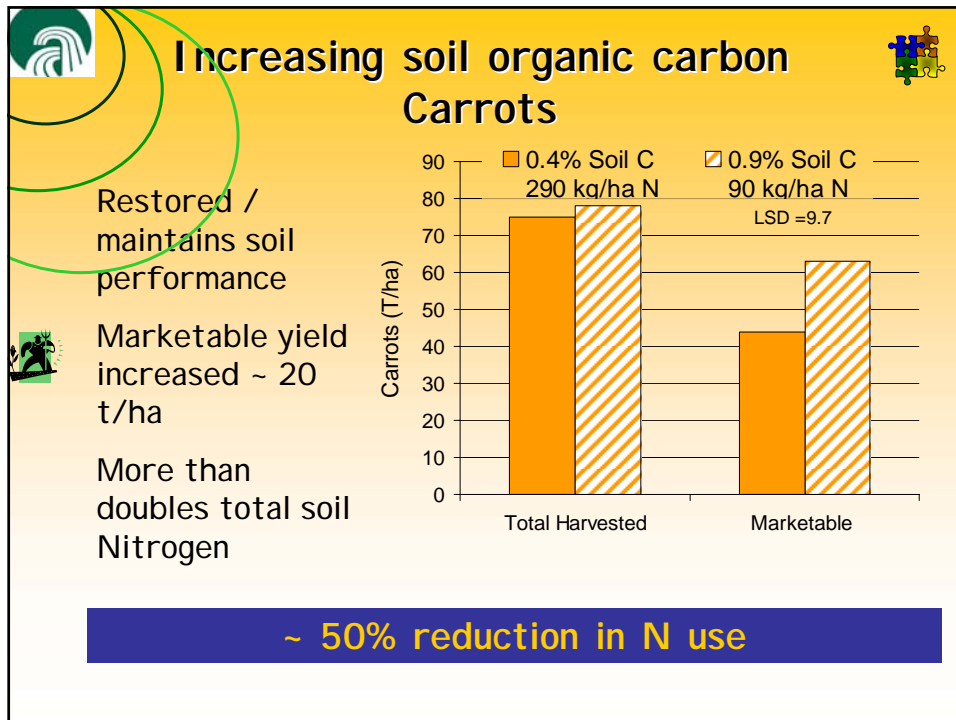
| Treatment                    | Organic carbon (%) | Bulk density (t/m <sup>3</sup> ) | Volumetric water (%v/v) | CEC (c mole /kg) | pH (Calcium chloride) | Total N (kg/ha to 30cm) |
|------------------------------|--------------------|----------------------------------|-------------------------|------------------|-----------------------|-------------------------|
| Control                      | 0.51               | 1.43                             | 10.1                    | 2.71             | 5.9                   | 625                     |
| Compost 30m <sup>3</sup> /ha | 0.75               | 1.36                             | 12.0                    | 6.17             | 6.8                   | 1,115                   |
| Compost 60m <sup>3</sup> /ha | 0.91               | 1.32                             | 14.3                    | 8.53             | 7.0                   | 1,580                   |



### Compost quality

WA Vegetable research - sandy soils  
Critical values for vegetables




|  |       |
|--|-------|
| Carbon : Nitrogen ratio                        | <20   |
| Total Nitrogen                                 | >1.0  |
| Soluble N (NO <sub>3</sub> + NH <sub>4</sub> ) | >100  |
| NO <sub>3</sub> :NH <sub>4</sub> ratio         | >0.14 |



### Limitations to growing the horticultural market

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- Cost increases financial risk
- Cheaper alternatives
- Lack of knowledge



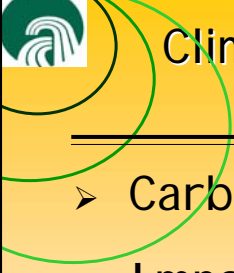



## Limitations to growing the horticultural market

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Approaches:


- Minimum standards
- Promote range of benefits
- System approach – soil C & productivity
- Explore reducing cost





## Climate change, land use and sustainability

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- Carbon abatement
- Importance of soil
- Land use planning
- Community health









## Climate change, land use and sustainability

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### Carbon (GHG) abatement

- Soil C
- Methane emissions
- Fertiliser and other input savings
- Environmental and social benefits






## Carbon sequestration

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- Europe's annual C emissions mitigated by increasing arable soil C 0.3%/year –  
(from Favoino data presented at W&R 07 Conference, Perth, Western Australia)
- An achievable target - long term agricultural management studies  
(Rothenstead, UK and LTRAS, Davis University)

Associated with improved agricultural productivity

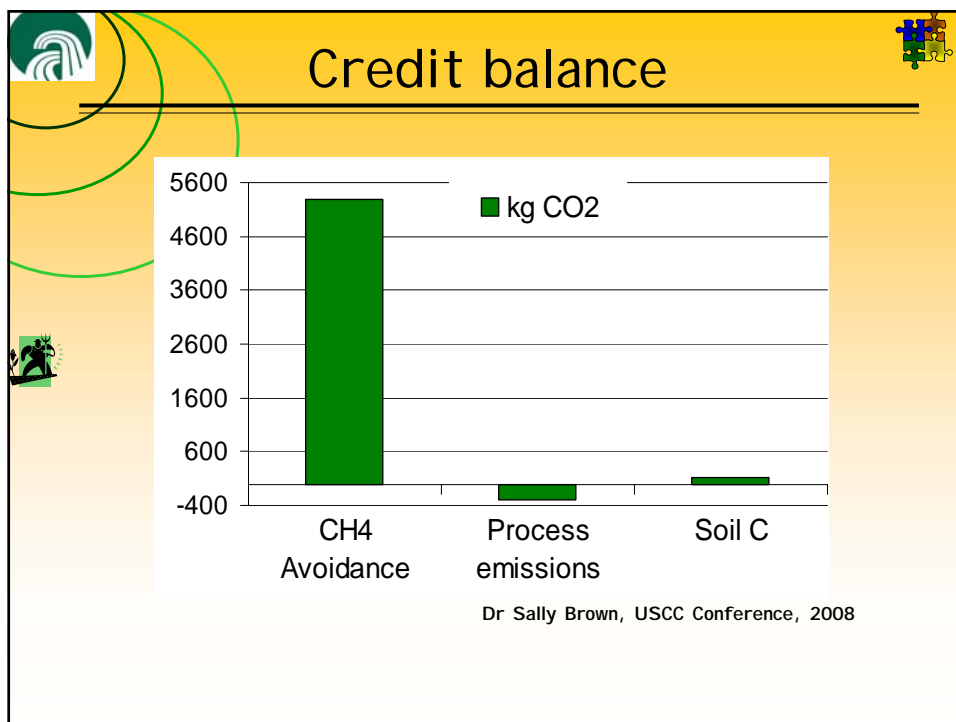




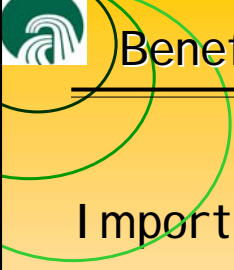
## Benefits of land applied organics

Apart from Land fill diversion - current carbon accounting provides limited encouragement to organic recycling in terms of:

- reducing inputs - fertiliser etc
- Managing soil, water and air quality
- Biodiversity, soil workability, acidification, ecotoxicity, etc

Benefits associated with organic recycling are much broader than GHGs








## Benefits of land applied organics

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### Importance of soil

- Managing soil, water and air quality
- Key to developing a sustainable society
- A nation that destroys its soil, destroys itself (- Franklin Roosevelt ?)

We have wide spread decline in soil productivity





## Benefits of land applied organics

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### Importance of soil

Need to balance recycling and energy recovery (AD) from organic wastes







## Role of Land use planning

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Australian and other countries, focus:

- Urban growth at expense of rural areas
- Cost driven food agenda
- Difficult to quantify environmental & social benefit of rural areas








## Benefits of land applied organics

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Land use planning - current focus

- Urban growth at expense of rural areas
- Cost driven food agenda
- Do not include -environmental & social benefits











## Benefits of land applied organics

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Strategic land use planning needs to focus on

- Rural planning - FIRST
- Urban planning second and 'Recognise food security as essential to sustainability'







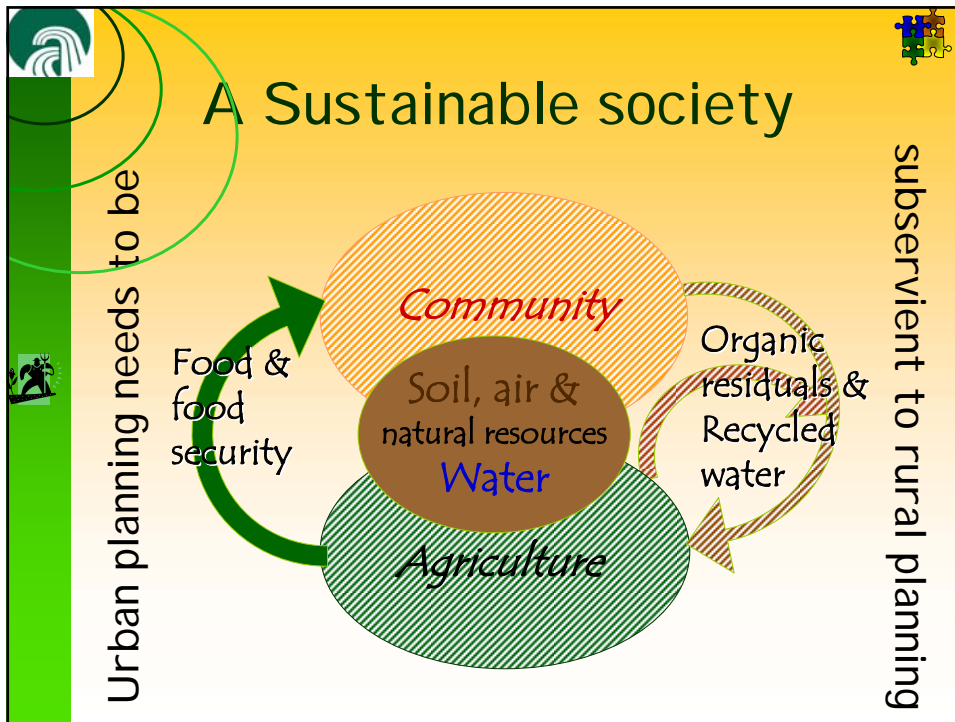
## Benefits of land applied organics

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Community health? – soil performance relates to food quality

- Diet responsible for 40-50% of health costs
- Rising cost of health as % of GDP
- Energy to produce unit of food energy increased 10 fold in past 25 yrs ; (Schiff, Thesis, Murdoch University)





**RECYCLING ORGANIC WASTES TO AGRICULTURE  
- MEETING THE CHALLENGE**

Identifying the benefits of composted soil amendments to vegetable production

**CD AVAILABLE FROM DAFWA**

Department of Agriculture and Food Waste Management Board  
AUSVEG  
HAL  
ecorecycle  
Victoria  
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The slide features a central circular image of a compost pile. Below the main title, there are two small inset photos: one of a tractor in a field and one of a vegetable field. The slide includes logos for the Department of Agriculture and Food Waste Management Board, AUSVEG, HAL, ecorecycle, and Victoria. The copyright notice at the bottom reads '© State of Western Australia 2006'. The slide has a yellow header, a green vertical bar on the left, and a puzzle-piece icon on the right.

