

# Compost for Vegetable Growers

## Fact Sheet 2: Why Use Compost?



Australian soils generally have low natural fertility, low organic matter levels and are fragile to intensive agricultural practices.

Farming practices have contributed to soil compaction and erosion, which eventually lead to lower soil productivity. These problems are exacerbated when soils are depleted in organic matter. Less productive soils require higher inputs of fertilisers, pesticides and water - at a cost to the grower and the environment.

Compost trials in Victoria and Western Australia showed improved soil organic matter levels and other aspects of soil quality including cation exchange capacity, moisture holding capacity, bulk density, pH and reduced erosion. Marketable yields for a wide range of crops were improved, especially after repeat application of good quality compost.

Compost is not a 'silver bullet' solution, but it can be an important tool for improving soil quality and crop performance.

### Sheets in this series

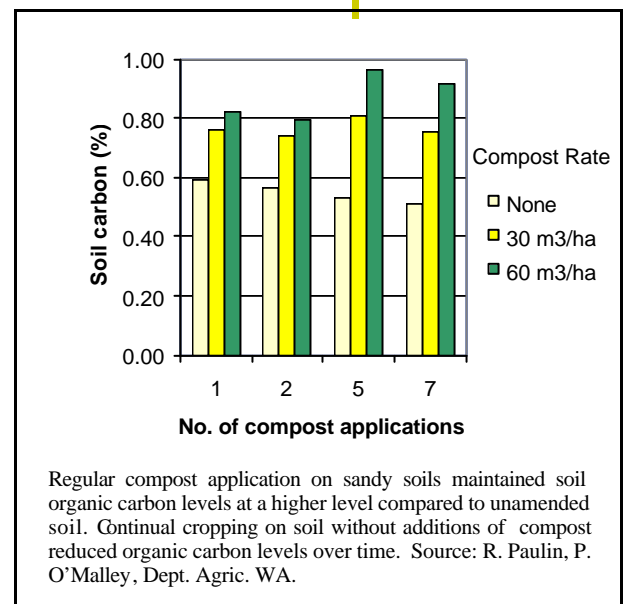
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### What makes compost so valuable?

Compost is a versatile material that can improve the physical, chemical and biological fertility of soil.

It contains a range of nutrients that contribute to crop growth, however with regular use its greatest value is its contribution to soil carbon (organic matter) levels and biological activity. This results in improved soil quality that in turn allows reduced use of fertiliser, irrigation and potentially, pesticides rates.

Compost contains and contributes to the development of soil humus, which is an advanced state in the decomposition of organic matter. Humus is responsible for many of the benefits usually attributed to soil organic matter and compost.

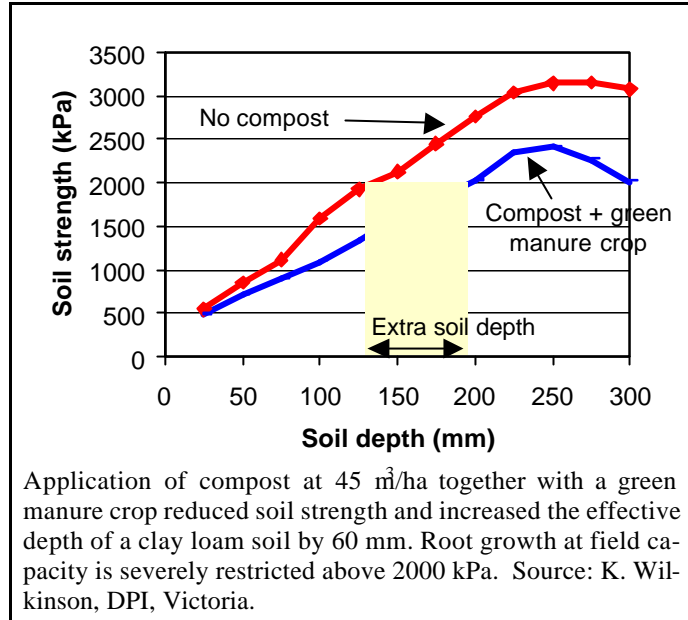




## Quality composts can:

### improve Soil Structure

Addition of organic matter reduces soil bulk density by promoting the formation of soil aggregates ('clods') which improve the friability of the soil.

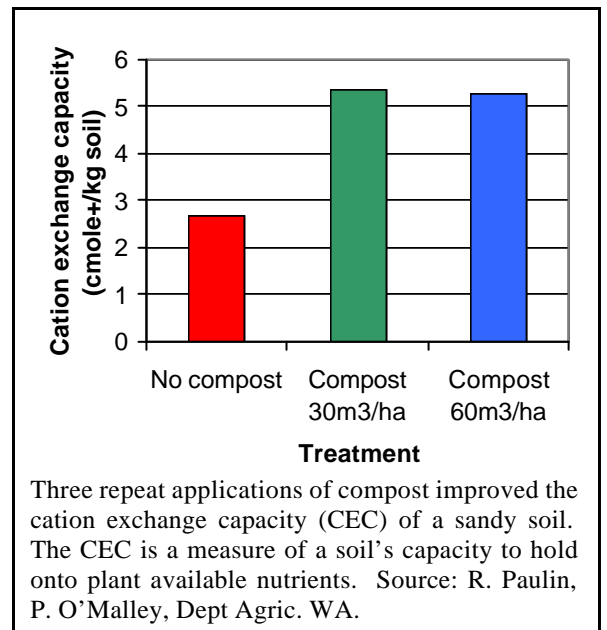


Heavy soils become more 'open' or porous and their workability, aeration, drainage and potential moisture availability improves. Composts used on lighter soils improve water holding capacity as well as aeration and drainage.

### improve nutrient management

Compost contains a range of nutrients and trace elements required for most crops.

Many of these nutrients are not immediately available to a crop because they are bound up in organic matter. Nutrients become available as a result of the ongoing decomposition of soil organic matter. Useful quantities of nutrients such as nitrogen are supplied after soil organic matter levels build up following repeat applications of compost. Organic matter in the soil contributes to cation exchange capacity that better holds on to nutrients, keeping these in the root zone where plants can use them. This means reduced losses of nutrients, lower demand for fertilisers, and less potential pollution of groundwater and waterways from nutrient run-off.





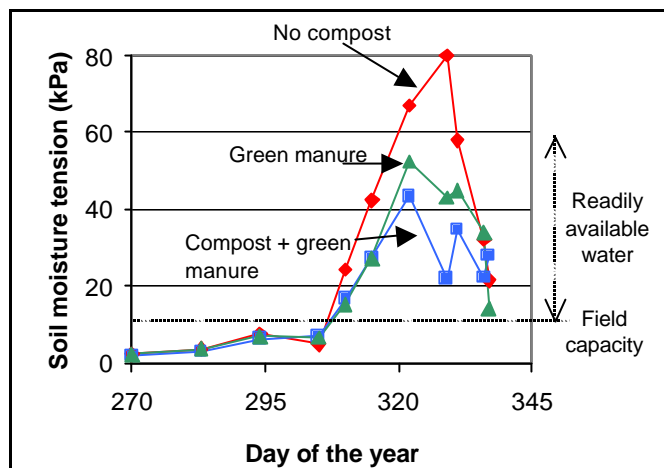
## Increase soil moisture

Soil aggregates create a vast network of pores that range in size from fine capillaries to relatively large voids. These capillaries together with humic substances greatly increase soil moisture holding capacity.

These effects can be translated into cost savings from more efficient use of irrigation water. Increases in marketable yields have also been observed as a result of increased plant available water. Increased soil moisture storage lessens the risk of moisture stress and its associated impacts on crop quality.

## Improve yields

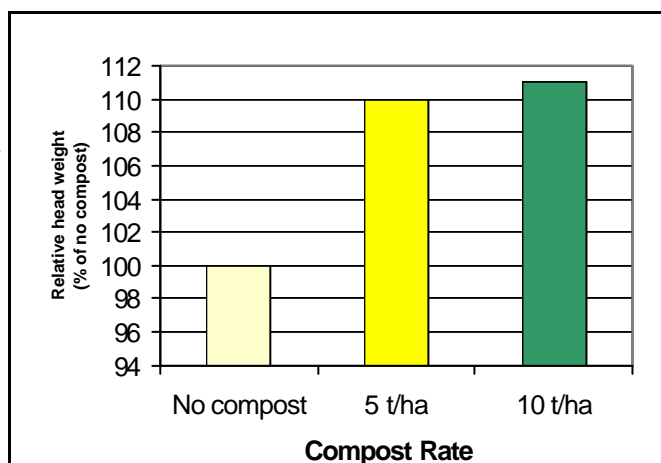
Trials on a range of vegetable crops have found that regular applications of good quality compost can progressively improve crop yields even when less water and fertilizers are used. Best results are most likely to occur on poorly structured soils and with composts containing high levels of available nutrients. In many cases, crops mature faster and more evenly with compost application. Yield and quality improvements are likely to be seen gradually over a number of crops as compost applications progressively improve the soil.



Application of compost at 45m<sup>3</sup>/ha together with a green manure crop increased the readily available water (RAW) content of a clay loam soil. RAW is the amount of water in soil that is easily obtainable by plants. Source: K. Wilkinson, DPI, Vic.

## Reduce erosion & compaction

Improved soil aggregation increases the soil's resistance to compaction and erosion. Wind erosion, for instance, is a major problem in the establishment of crops in sandy soils.



Incorporation of a compost at 5 or 10 t/ha in a red-brown earth soil resulted in about a 10% increase in the head weight of lettuce. Source: K. Wilkinson, DPI, Vic.



## Quality composts can:

### Support beneficial soil organisms

Soils with high organic matter content usually support a vast number of organisms ranging from relatively large worms and arthropods to nematodes, fungi, protozoa and bacteria. These organisms play important roles in nutrient cycling and soil aggregation.

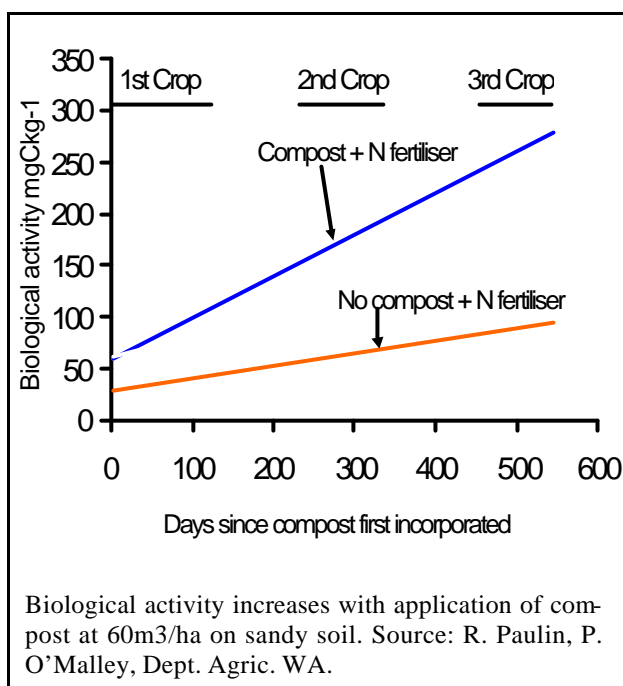
Biologically active soils are less likely to support disease-causing organisms. Compost has been shown to contain certain micro-organisms that can suppress or kill disease causing organisms such as root rots and nematodes.

Further information is available from:

Primary Industries Research Victoria (PIRVic) Knoxfield Centre, Private Bag 15, Ferntree Gully Delivery Centre, Victoria 3156.  
Phone: 03 9210 9222  
[www.dpi.vic.gov.au](http://www.dpi.vic.gov.au)

EcoRecycle Victoria Level 2, 478 Albert St. East Melbourne Victoria 3002  
Phone: 03 9639 3322  
[www.ecorecycle.vic.gov.au](http://www.ecorecycle.vic.gov.au)

Department of Agriculture, Western Australia, Locked Bag 4, Bentley Delivery Centre, Western Australia 6983,  
Phone: 08 9368 3333  
[www.agric.wa.gov.au](http://www.agric.wa.gov.au)



### Stop Press

Regular use of quality compost in WA and Victoria has shown the following benefits:

- Yield increases of up to 15% for lettuce and broccoli and 1-2% for carrots
- Irrigation water savings of 10% in summer on sandy soils
- Significant fertiliser savings, especially for K and P, and less for N
- Faster maturation of crop and more even crop quality

Taking the cost of compost application into account these benefits were calculated to save a carrot grower about \$270/ha!