

Case study: Growing crops with compost



Pete Conasch of the Greater Sydney Local Land Services shows the difference between capsicum plants grown in compost blend (left) and those using conventional farming practices.
Picture: Greater Sydney Local Land Services

“Compost has a place in farming due to the benefits it delivers - we can see that through this project.

We strongly recommend compost’s use in cropping practices and encourage farmers to consider this as a beneficial alternative or addition.”

- Peter Conasch,
Senior Land Services Officer,
Greater Sydney Local Land
Services

Farming higher-yield crops thanks to compost blends

A project has demonstrated compost’s potential as a farm input to boost yields and improve soil.

Growing farm production

Compost proved to be a successful farm input in a Richmond capsicum trial, boosting fruit yields, improving root size and structure, lowering nutrient-leaching losses, increasing levels of beneficial soil biology, increasing water-holding capacity and releasing nutrients to subsequent crops.

The capsicum trial was part of a partnership project delivered by Greater Sydney Local Land Services, NSW Farmers and the Institute for Sustainable Futures, funded by a \$454,750 grant from the NSW Environment Protection Authority’s (EPA) Organics Market Development program.

Greater Sydney Local Land Services used plots to compare compost’s effectiveness to conventional farmer practices of using inorganic fertiliser or chicken manure.

“This trial has provided evidence that leaching of nutrients into ground water is reduced by compost. This not only minimises the environmental impact of farming but could also result in lower fertiliser costs to growers.”

- Dr Geoff Cresswell, research plant nutritionist, Cresswell Horticultural Services



Sydney Demonstration Farm's capsicum trial's first planting.
Photo: Greater Sydney Local Land Services

“This is a key project as part of our ongoing work to support a more productive and sustainable agriculture industry, not just in the Sydney basin but throughout NSW.”

- Bill Dixon, manager, Greater Sydney Local Land Services

Trialling crops with compost

The trial had two stages:

- a late summer capsicum crop in beds treated with compost (10 tonnes a hectare and 40t/ha), compost/slow-release nitrogen blend (10t/ha, 20t/ha and 40t/ha), chicken manure (25t/ha) and inorganic fertilizer
- A spring capsicum crop using the same beds to evaluate any long-term benefits of compost.

Compost made to Australian Standards (AS4454) from source separated kerbside food organics and garden organics was used in the treatments.

Independent agronomist Geoff Cresswell supervised and monitored each bed, using plant and soil analyses to evaluate yields, plant health and soil condition.

Compost blend outperformed other inputs

In the comparative beds, the compost/nitrogen blend (10t/ha) was the best overall performer and at the bottom of the scale was poultry manure with high salt and mineral loads.

The compost blend improved fruit yield, root size and structure, lowered nutrient-leaching losses and stimulated beneficial soil biology.

With the addition of compost, the farm's sandy loam soil structure was quickly improved. Increased microbial activity was reflected in larger root masses, increased and improved plant health and boosted yields.

The lighter soil's water-holding capacity was increased due to the addition of organic matter and this led to improved nutrient uptake.

Overall, compost proved to be a holding mechanism for water and nutrients that improved plant health and boosted yields with larger and more fruit.

The two consecutive crops emphasised compost's long-term benefits of soil stability, improved fruit quality and boosted yields.

In the first planting, the compost incorporated into the soil built some visible benefits; with the second planting these benefits escalated.

There are also valuable cost and labour implications as the compost blend is applied just once during the crop rotation, whereas inorganic fertilisers may require repeated treatments.

Greater Sydney Local Land Services works to encourage sustainable production and environmental stewardship in an area that produces 7% of NSW's agricultural production.

The way forward

NSW Farmers highlighted the research and trial results in a dedicated compost portal on aginnovators.org.au.

Sharing the news

More than 130 attendees were shown the trial results during three workshops at the Greater Sydney Demonstration Farm. After the workshops, three growers approached Greater Sydney Local Land Services to incorporate compost into their farming practices.

The Institute for Sustainable Futures conducted surveys and other social engagement measures and discovered technical, financial, knowledge-based and social barriers as well as opportunities for compost's use and demand in horticulture.

Long-term trials needed

Compost's success depends on using quality product, meeting NSW regulations and the AS4454 standard and it being custom blended to suit the specific crop, location and soil needs.

Soil testing and analysis is necessary to establish a baseline for the custom blend and application rates will vary with different farming practices.

In the short-term compost demonstrated improved productivity, soil biological activity, improved root development and reduced nitrate leaching.

The longer-term benefits are added improvements to soil, plant health and productivity, as compost progressively releases nutrients.

Greater Sydney Local Land Services believes longer-term trials are needed to investigate compost's role in soil disease suppression and to verify long-term results.



**Greater Sydney Local Land Services manager Bill Dixon (right) with a farmer at one of the workshops.
Pictures: Greater Sydney Local Land Services**



Cresswell Horticultural Services' research plant nutritionist Dr Geoff Cresswell (right) explains the benefits of compost at a workshop.

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