



From food waste to smart compost formulations

The challenge

Compost has a long history and provides a valuable contribution to horticultural and broad-acre farming. Tailoring nutrient delivery to crops improves yield, and the organic nutrients in composts are also beneficial. For example, organic nitrogen in the form of amino acids can boost seedling establishment, root development and crop resilience, all of which positively influence crop yield.

The value and role that the addition of food waste plays in compost formulations has not been scientifically evaluated in Australia. Similarly, the impact of various food waste feedstocks on plant health is not well mapped to crop and food outcomes.

In South Australia alone, there are 300,000 tonnes of organic waste going to landfill each year at the cost of \$140-350 per tonne. Much of this material can be processed by the existing manufacturing capacity of compost facilities in South Australia, with no need for infrastructure investment.

Diverting this waste from landfill to high-value compost products provides an opportunity for both the South Australian environment and economy.

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Our plan

Healthy, nutritious and plentiful food and animal feed, produced sustainably, is the gold standard for our future. This 12-month project is the first step in designing and characterising the benefits of various smart compost formulations that convert food waste into compost, focussing on nutrient delivery. This research will inform future high-value compost formulations with quantifiable benefits for crops, environment, producers and consumers. It is estimated that by improving the nutrient delivery of the smart compost granules, the value of compost granules will double from a current \$250-300 per tonne to an estimated \$500 per tonne.

This project will produce prototype high-value compost products that will increase the use of household food waste by the industry partner by 50,000 tonnes per year. According to Peats Soils, adoption of this innovation across the compost industry could increase the use of food and organic waste in compost by more than 200,000 tonnes per year and an annual market value of \$125 million. Customer groups are likely to include turf farmers and farmers cultivating vegetables.

In addition to the effective repurposing of household food waste, the smart compost formulation has the potential to replace a significant portion of mineral fertilisers used on farms. Blending smart compost granules with additional nitrogen and phosphorus will tailor nutrients to the crops' needs. The return of the nutrients and energy of food and organic wastes back into the production of food crops will support the transition away from conventional inorganic fertilisers. Such fertilisers are generated at high energy cost and, in the case of phosphorus and potassium, are mined from non-renewable mineral deposits. As such, the use of smart compost formulations is an essential step along the path to enabling the circular economy in food production.

This project will create new knowledge about the sustainable use of food waste in smart compost formulation products. Dissemination of this knowledge will be through the Australian Organic Recycles Association (AORA) to organic recyclers across Australia.

Project Leader

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Timeline

February 2020 - January 2021

Participants



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