

# The case for compost: Why recycling food waste is so much better than sending it to landfill

June 13 2023, by Susanne Schmidt and Nicole Robinson

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Credit: AI-generated image ([disclaimer](#))

Most food and garden waste in Australia comes from homes. Australian households waste [3.1 million tons of food each year](#). That's more than five kilograms each household per week.

[Over half](#) of all household waste is food organics and garden organics, also known as "[FOGO](#)". These scraps and clippings take up space in landfill and, when they rot, emit dangerous greenhouse gases.

The federal government's [National Waste Policy Action Plan](#) aims to increase the [organic waste](#) recycling rate from 47% to 80% by 2030 and halve the amount sent to landfill. This won't happen on its own—we need investment and action.

Food and garden waste can be captured and turned into compost. Composting is no longer just the domain of the home gardener or eco-warrior. It's happening [at commercial scale](#), through services such as council collection from homes.

A federal government [fund](#) is building [new composting facilities](#) and supporting other food and garden organics recycling projects. The South Australian government has invested in council trials of [weekly green bin collection](#) and fortnightly rubbish collection.

But more must be done. Recycling [food waste](#) into high-quality compost is a win-win solution, for people and the planet. Here, we explain why.

## **Compost is a winner for the climate**

When food rots in landfill, in the absence of oxygen, the process releases a potent greenhouse gas called methane.

Composting is different because the microbes can breathe. In the presence of oxygen, they transform waste into valuable organic matter without producing methane. They recycle [organic carbon](#) and nutrients into compost, which can be used to improve [soil health](#) and productivity.

This process also captures and stores [carbon](#) in the [soil](#), rather than

releasing it as [carbon dioxide](#) (CO<sub>2</sub>) to the atmosphere.

In Australia, organics recycling (including food and garden organics, biosolids and tree wastes) saves an estimated [3.8 million tons of CO<sub>2</sub>](#) from entering the atmosphere each year. That's equivalent to planting 5.7 million trees or taking 877,000 cars off the road.

Soils can profit from compost because globally an estimated [116 billion tons](#) of organic carbon has been lost from agricultural soils. This has contributed to rising CO<sub>2</sub> levels in the atmosphere.

Promisingly, compost can restore soil organic carbon while also boosting health and fertility. Compost improves soil structure and water retention. It's also a source of essential nutrients that reduces the demand for costly fertilizers.

The opportunity presented by soils to draw down atmospheric CO<sub>2</sub> levels was brought to global awareness in the 2015 global Paris Agreement, via the ["4-per-mille" initiative](#).

Translated from French, it means increasing the organic carbon stored in global soils by 0.04% each year (4 per 1000) would neutralize increases in atmospheric CO<sub>2</sub>. In other words, CO<sub>2</sub> would remain constant rather than continue to increase. That would make a substantial contribution to mitigating climate change.

## **Farming with precision**

[Our research](#) has investigated how compost can benefit global agriculture.

We found that in most cases where compost is applied as a generic product to agricultural land, the benefits are not fully realized. But if

suitable composts and application methods were aligned with target crops and growth environments, crop yields can be increased and organic carbon in soils replenished.

We call this a "precision compost strategy". Using a data-driven approach, we estimate global application of this strategy has potential to increase the production of major cereal crops by 96.3 million tons annually. This is 4% of current global production and twice Australia's annual cereal harvest.

Of great relevance for Australia's farms, precision compost has the strongest effects in dry and warm climates, boosting yield by up to 40%. We now need to develop this strategy for the specific needs of farms.

Compost has the potential to restore 19.5 billion tons carbon in cropland topsoil, equivalent to 26.5% of current topsoil soil organic carbon stocks in the top 20 cm.

## **Give FOGO a go-go**

The amount of food and garden waste in Australia is [growing](#) at a rate six times faster than Australia's population and 2.5 times faster than GDP.

But [less than a third](#) of Australian households have access to food waste collection services. A national rollout has been pushed back from 2023 to the [end of this decade](#) so there is time to overcome some roadblocks. This includes uptake by community and high quality composting.

This [waste stream](#) offers a huge opportunity for landfill diversion and compost production. The cost benefit alone is compelling: councils can save up to A\$4.2 million a year on landfill levies by diverting 30,000 tons of waste (based on A\$74 to 140 per ton of waste, with levies

increasing).

Preventing food in the home from being wasted should be top priority. But for unavoidable food waste, turning it into high-quality [compost](#) makes perfect sense.

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