

Food waste? Rubbish!

Nationwide, Singapore generated 788,600 tonnes of food waste in 2014, of which only 13 per cent was recycled. The rest was incinerated. A two-year food waste treatment pilot is under way at two hawker centres, one in Ang Mo Kio and the other, Tiong Bahru. The National Environment Agency estimates that each market generates 2 or 3 tonnes of food

waste daily, with the bulk of it coming from stalls in the wet market and table cleaning operations. If the pilot is successful, the recycling could reduce total waste generated from these hawker centres by up to 80 per cent. The Straits Times looks at the waste machines and how the food waste is collected, processed and finally converted into bio-fertiliser.

At the Tiong Bahru market: 3 tonnes of food waste generated per day



- Food waste is segregated and collected in buckets before being emptied into the machine's sink.
 - A micro-organism solution, which helps in the digestion of the food waste, is added concurrently (above).
 - A mixture of water and biological cleanser is added to the waste.

- The mixture suppresses odours, kills bacteria (such as E. coli and Salmonella) and promotes breakdown of the oils and greases.
- The same liquid is used to clean the food waste buckets (above).

Refill inlets for micro-organism solution and cleanser

- A built-in grinder reaks up the food waste into smaller pieces. At the same time, the micro-organism solution is added (below).



- The resulting slurry is pumped into 15 storage tanks, each with a 1,000-litre capacity, on the premises. When the tanks are full, their contents will be transported to a storage site, where they will be left to ferment. This takes about 28 days.

- After the fermentation, the liquid and solids are separated. They then undergo a further 14 days of biological incubation before they can be used to produce various grades of nutrient-rich biofertiliser, which are used in local farms and even exported.

An odour-control system mists hourly to sanitise and deodorise the work area.

1,000-litre storage tanks
Each tank can take about 300kg of food waste

Intermediate tank for slurry

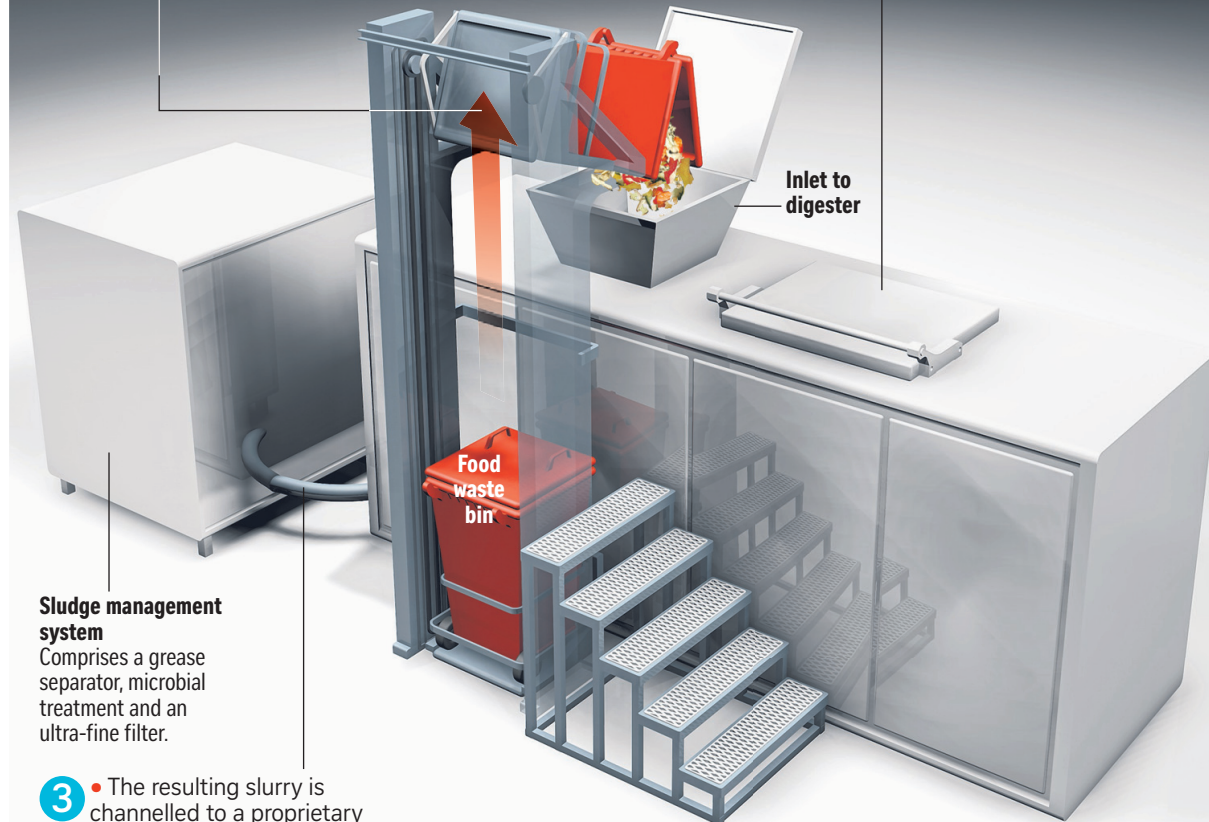


One of the end products is HumiSoil, a topsoil-equivalent which enhances soil productivity and helps prevent plant diseases.

At the Ang Mo Kio Block 628 market: 2 tonnes of food waste generated per day

- Bins filled with recyclable food waste are hoisted by a mechanical lift and the contents emptied into the digester.

- Customised microbes in powder form are added to the food waste in the digester (right) to speed up the decomposition of the waste to convert it into slurry.



Sludge management system
Comprises a grease separator, microbial treatment and an ultra-fine filter.

- The resulting slurry is channelled to a proprietary sludge management system. The end product is recycled water.
 - Specially formulated enzymes are used to deodorise the recycled water.
 - The set-up converts 1 tonne of food waste into about 800 litres of water in 24 hours.

- The water collected is then used by the machine for self-cleaning or to clean the bin centre.