

Vermiculture

Background

Vermiculture literally means farming with worms. Vermicomposting describes the process of using worms to break down organic materials to create nutrient-rich compost which can be used as a soil amendment. While worms consume decomposing matter, most of their nutrition comes from bacteria and fungi that are involved in decomposition.

Worms excrete vermicast which contain large amounts of beneficial bacteria that continue to assist the decomposition process. In addition to the vermicast, a black leachate (named worm 'tea') is created from the water in the vegetable waste. This fluid is very rich in organic components and can therefore be used as an excellent organic fertilizer concentrate.

Major benefits

The benefits of vermiculture include the following:

- It reduces food waste at the landfills.
- It reduces methane gas formation in landfill, therefore reduces global warming.
- It improves soil structure and aeration.
- Fertiliser (worm 'tea') brewed from vermicast provides nutrients to plants.
- The potential to make money from the sale of worms, the vermicast and the worm 'tea'.

Caring for your worm farm

Living environment (or bedding)

To provide a suitable environment for a compost worm, its habitat must have the following characteristics:

High absorbency

The bedding must be able to absorb and retain water fairly well.

Good bulking capability

Airflow is essential for the worms to survive. Different materials affect the overall porosity of the bedding through a variety of factors, including the range of the particle size and shape, the texture, and the strength and rigidity of its structure.

Low protein and/or nitrogen content

A high carbon to nitrogen ratio will provide a more ideal habitat for the worms.

Worm food

Compost worms are big eaters. The general rule-of-thumb is that worms devour half of their body weight per day. The following table shows the dos and don'ts when it comes to worm food:

Dos	Don'ts
Vegetable scraps	Do not overfeed citrus (no more than 1/5 of worm food)
Tree and bush leaf, and grasses	Meat and fish
Fruit scraps and peels (mould/rot is fine)	Greasy foods
Mouldy bread and grains	Dairy products
Used tea leaves	Twigs and branches
Non-greasy food leftovers	Dog/cat faeces
Coffee grounds	Magazines and colour newsprint
Crushed egg shells	
Most moist paper products	

Moisture

Worms breathe through their skins, therefore if a worm's skin dries out, it dies. The bedding must be able to hold sufficient moisture. The ideal moisture content in the bedding is more than 50%.

Aeration

Worms are oxygen breathers and cannot live anaerobically. Factors such as high levels of grease in the feedstock or excessive moisture combined with poor aeration can cut off the oxygen supplies in the worm bed. This can cause the entire system to become anaerobic and will kill the worms very quickly.

Temperature control

Although temperature control is crucial to both vermicomposting and vermiculture processes, heated buildings or cooling systems will not be necessary.

The ideal temperature for vermicomposting efficiency and productive vermiculture operations is between 15°C and 20°C. In general warmer temperatures (above 20°C) stimulate reproduction. Compost worms can survive temperatures in the mid-30s, but temperatures above 35°C will cause the worms to leave the area or die.