

Composting and Worm Farming

Nature's Recycling System



Putting Northland first

**NORTHLAND
REGIONAL
COUNCIL**



Why compost?

- Every year Kiwis throw away more than three million tonnes of rubbish, of which more than 45% is food waste!
- Every 6kg of unsorted rubbish sent to landfill emits nearly 5kg of carbon dioxide – a greenhouse gas - into the atmosphere. Yet most of what we throw away could be sorted and disposed of in a far more eco-friendly way.

What is compost?

Nature's recycling system

Your household produces an enormous amount of waste each year that could be composted. Having a compost or worm bin in your backyard is a great way to reduce your waste and help protect the environment.

Home composting has many benefits

- Compost is a natural fertiliser and soil conditioner. It improves soil fertility and texture, and retains moisture and nutrients.
- It is cheap and is easy to make.
- The amount of water pollution, gas release and odour from landfills is decreased. Air pollution is reduced from burning garden waste.
- Your garden will require fewer garden chemicals because compost-rich soil grows healthier, more productive plants which often have more resistance to pests. Compost or mulch also reduces the amount of water used because soil does not dry out as fast.
- Composting is easy and you can choose a system to suit your lifestyle. You may compost at home with a compost bin or worm farm, get a garden bag company to collect your garden waste or deliver your garden waste to a composting drop-off point at your local refuse transfer station.

Acknowledgements

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Compost

Getting started

You can either buy a compost bin or make a wooden box for the compost. If you are building one, remember to leave space between the slats of wood for air circulation. A 1 x 1 metre compost bin is a good size.

All compost bins should be bottomless and placed on the bare ground in a sunny spot. They work best in a warm, moist location.

Begin with a bottom layer of coarse plant material like twigs, followed by alternate layers of garden waste and food scraps with a thin layer of soil.



What to include in your bin

You will need a variety of materials which are found naturally in your garden or come from the kitchen. They are called “Greens” and “Browns.”

- **Greens** - are nitrogen-rich wastes like kitchen food scraps, fruit peels, coffee grounds and tea bags, grass and plant clippings, hair, animal fur, blood and bone, seaweed, fish bones and chopped weeds (except for Onion Weed, Wandering Jew, Wild Ginger and Oxalis).
- **Browns** - are high in carbon and other elements. These may be dried leaves, sawdust, wood shavings, hay, peat, vacuum cleaner dust, shredded paper, and newspaper, eggshells and crushed seashells, coal ash, wood ash (untreated), chicken manure, blood and bone.



Courtesy of Auckland Regional Council.

Example of compost layers.

What to leave out of your bin

Meat, grease, fat, dairy products, large bones, food packaging, plastics, wood products, pest plants (see www.nrc.govt.nz for more information), and underground stems, for example kikuyu grass stems. Cat and dog faeces are not recommended in large amounts. They may create an odour problem and there are very little nutrients in them.

Speeding up the process

- The smaller the pieces of food and garden waste, the faster it will decompose.
- If you don't have a lid on your system, cover the compost in heavy rain.
- Keep composting material moist – don't let it dry out.
- If at first it doesn't heat up, add more 'green' material, and manure or blood and bone.
- Composting slows down in winter, but you can continue to add organic materials. It's fine if your heap freezes, but if you want your heap to continue decomposing throughout the winter, add an insulating layer of plastic over the heap.

When is it ready?

Ideally the finished product should look like potting mix. However, it will not matter if it isn't perfect. As long as most of the material is broken down (egg shells will not completely disappear) and you have material with a soil like structure, your compost is ready to add to your garden.

Caring for your compost

Your compost bin or heap is not a dump! The main ingredients for good compost are a good mix of materials, including greens like lawn clippings, to produce heat, moisture and air.

- Chop or shred garden waste up into smaller pieces and mix with other ingredients in the bin.
- Turn your heap or the contents of the bin. After it heats up and cools down, turn to mix the ingredients. The heat destroys the weeds and seeds. You may turn it into another un-layered heap or bin if you have one or just stir up the contents of your existing bin.
- Keep moist, but don't drown your compost.
- Cover your heap or bin in heavy rain. If it becomes too wet, turn it and add 'brown material'.
- Turn your heap if it develops a bad odour.

As part of being a Northland
Enviroschool, Onerahi Primary School
established a composting scheme.



Worm farming



What is worm farming?

Worm farming is also known as vermicomposting, vermiculture, worm farms, worm bins or a wormery. It is a self-contained composting system that doesn't generate heat, and retains most nutrients for reuse. This system is not able to take garden waste and some types of food waste, but they are compact and moveable, which makes them great for people who have limited space. Properly maintained, it is an odourless system and worm castings (manure) make excellent compost.

The worms, usually Tiger Worms, are exactly the same as those in a compost bin or heap, but are contained in a smaller transportable bin that can be indoors, outdoors, on a porch or verandah.

Tiger Worms are not the same as the earthworms found in garden soil. Tiger Worms will not survive in the garden and need the dark and moistness of a worm bin or compost bin to live.

Why worms?

Simple, natural and fun!

The worms eat your kitchen food scraps and process them into castings. This reduces the rubbish you put out at your gate and makes an excellent soil conditioner.

- Worm tea is the liquid waste the worms produce. This is also an effective fertiliser.
- It's a great system for people with limited space.
- It's an easy and fun way for people of all ages to recycle kitchen waste.

Worms live to eat!

Getting started

Anyone can start a worm bin. All you need is a suitable container, bedding material, and of course, worms.

Where to buy your worms

You can buy worm bins from The Warehouse (all stores), Payless Plastics, Mitre 10 stores and some hardware retail outlets. Check online at sites such as Trade Me.

Worms are available from:

CBEC Eco Solutions Whangarei 09 438 8710
or e-mail ecosolutions@cbec.co.nz

Worms are also available through certain stores and via mail order. Try an internet search, Trade Me or the Yellow Pages.

A home for your worms

Making a worm bin

You can recycle or make a suitable container from wood, plastic or metal. Old tyres or baths make great worm bins too. The container should ideally be 20-40cm deep with a relatively large surface area (about 40 x 40-60cm) because worms like to work near the surface.

Worms need air to live, so put a few holes in the bottom of the container for aeration and drainage. If the contents get too wet, then drill some more holes.

Bins should be raised up on bricks or blocks to aid air circulation and drainage.

You can place a tray under the bin to capture excess liquid. This makes an excellent plant fertiliser. Use diluted at a rate of one part liquid to 10 parts water.

Setting up your wormery

- Old carpet and canvas are ideal for covering a ground-based worm farm.
- Place moist bedding (shredded paper or similar) in the worm bin, plus one or two handfuls of coarse sand or topsoil.
- Add tiger worms (1000 or so). You can buy these locally or via mail order. Alternatively, you can source them yourself as worms live wherever a good supply of organic material is available. Check your friends' compost bins for worms or a farmer with a mature manure heap and collect the worms. Kids will love this!
- Bury kitchen scraps just below the surface of the bedding.

- Cover with sacking or a loose fitting lid that will keep the material from drying out and provide a dark environment for the worms.
- Additional fresh bedding should be added at least every two months.

Harvesting your compost

Harvest the compost (worm castings) after three to four months and feed to your plants.

The easiest method is to use a hand fork to remove the top 150mm layer and set it aside for starting the next bin. The remaining contents can then be removed for either immediate use or stored until required. Put the top layer back into the bin with some fresh bedding to start the process again.

Alternatively, tip the entire contents of the bin onto a tarpaulin or plastic sheet. Spread the compost to form a layer approximately 100mm thick. The worms dislike light and burrow deeper. Over a period of about an hour, you can remove the compost in layers as they move deeper and you will be left with a mass of worms which can be added back into the worm bin with new bedding.

You may prefer to simply move the finished compost over to one side of the bin, place fresh bedding into the space created and add food waste to the new bedding only. The worms will gradually move over and the compost can be removed.

Top up the bin with fresh bedding to replace the compost removed. The worms require bedding in which to live and lay their eggs.



Suitable bedding includes newspaper torn into 25cm wide strips (avoid coloured print), cardboard, peat, straw, aged manure or compost. Sawdust is not recommended as it contains resin and similarly, chicken manure should be avoided as it is too acidic.

It's as simple as that.

What to feed your worms

- Feed worms left-over food scraps, vegetables and non-citrus fruit peelings, tea and coffee bags, coffee grounds and eggshells.
- Meat, fish and dairy products may be fed in moderation. Make sure you bury them in the bedding (not too deeply) to avoid odours and flies. If odours are a problem, then leave these products out.
- Don't feed your worms onions, oil, fats or oily foods, citrus peelings or acidic fruit, peppers, or spicy foods.
- Garden waste is generally not suitable for these worms. Materials such as grass clippings heat up quickly, which can kill the worms. Garden waste is best dealt with by conventional composting.

Top tips

Put your worm bin in a sheltered, shady area, away from wind and sun.

To prevent odours, slimy conditions and attracting flies, add food regularly rather than in large quantities. Food in excess will sour and rot before the worms can deal with it.

Odours generally occur because the system has been overfed, allowed to become too moist or the bedding has become packed, limiting airflow. It is important to fix this, otherwise the conditions may kill the worms.

Chopping or mincing up food scraps helps speed up the process.

Add crushed eggshells or a light sprinkling of dolomite or garden lime once a month to ensure a good environment for the worms, who don't like acidic conditions

Worms need to be kept moist, but not soggy. If they dry out too much they will die; but if things are too wet they will drown.

Be aware, that as worm farming doesn't generate heat, any seeds included with the food (eg pumpkin or tomato) may still germinate!

Using the worm compost

Finished worm compost is rich in nutrients. It can be used for potted plants or in the garden. Use in small amounts (a handful mixed into the soil when transplanting plants gives plants a good start).

Compost used as part of a potting mix or as a topdressing around potted plants should not contain worms.

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24/7 Environmental Hotline: 0800 504 639

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