



Bellarine Worms

A BEGINNERS GUIDE TO WORM FARMING

Did you know a worm can eat its own weight in food every day?

Worm farming is a great way to reduce your household food waste. As long as you have an area in your garden that is well sheltered like a balcony, verandah, pergola etc, it's easy to do and the benefits are well worth it. Some even like to have their worm farms indoors like a laundry or garage.

The following guide will show you just how easy it is to be a worm farmer:

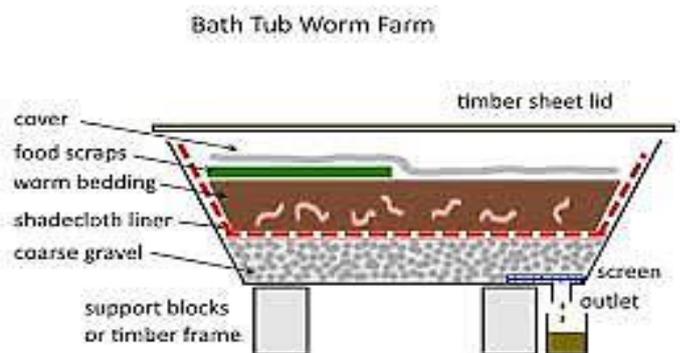
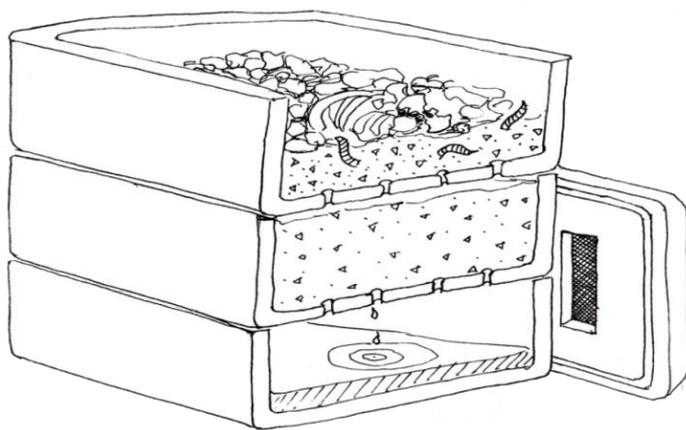
How to get started?

Finding a location:

Worms are seasonal creatures. In summer, keep your worms in a cool, sheltered environment, away from direct sunlight. In the colder months, move them into a warmer area to keep them productive as temperatures drop. Where possible, place close to your kitchen so it's easier to maintain and add food scraps.

Setting up a worm farm:

By following these basic designs you can easily build your own worm farm by using anything as simple as an old storage container.



The easiest way to get started is to buy one of our basic worm farms designed for beginners or a commercially made worm farm. These usually have 2-3 levels. If you want something larger we can assist you with several of our different DIY designs and construction methods.

What you will need:

1/ a worm farm of your choosing

2/ Compost worms – minimum 1000 (or 1000 x no. of people in your household)



3/ Worm farm bedding - shredded cardboard 50%, Coco peat 50% and a news paper

4/ Start up worm farm food and or food scraps (process in a food processor for best results)

5/ a beginners guide to worm farming

Start your worm farm by lining the base with damp newspaper or cardboard that's cut or folded to fit the base. If you have purchased one of our beginner worm farms then simply line the base of the first/bottom level with the paper supplied in your kit.

1/ FIRST-BOTTOM LEVEL

Combine and mix the worm farm bedding material in a large bucket or tub and add approx 3-4 litres of warm water and mix in thoroughly. Let soak for a good hour or so. Wring out excess moisture by using your hands, an old kitchen strainer or colander and add to worm farm. The best way to check if the bedding material is of the correct moisture level is by squeezing a large handful of bedding in your fist, if only a few drops of water drip out the bottom then the moisture level is perfect. If no water drips out then you will need to keep adding water a little at a time until you achieve the above result.

2/ MIDDLE LEVEL/S – To be used at a later date.

Add your worms and leave uncovered for 20 minutes to encourage worms to migrate down into the bedding. Cover with approx 4 sheets of damp newspaper and or worm blanket then farm lid and you're ready to go. Over time your worms will eventually eat the newspaper as well so simply replace with new damp newspaper when required.

Depending on your choice of worm farm purchase or DIY design, once the 1st tray is full to the brim of nearly pure castings, you can then add the next tray and so on. Start by placing food in a new tray, cover with damp newspaper and or worm blanket and your worms will gradually move upwards to live and feed. For single level designs it's time to harvest.

3/ SUMP-BASE LEVEL - The Toilet

This is where the worm wee (leachate) gathers.

The following information is quite important and very misunderstood so please read carefully.

Leachate vs. Worm Tea:

Keeping the distinction between these terms is actually quite important.

Definitions:

Leachate/Worm Juice – The liquid run off (or seepage) that settles in or below the bottom of a worm farm. Check for accumulated leachate in your worm farm frequently.

Worm Tea – The end result of suspending pure worm castings in highly oxygenated water (brewing).



Leachate:

Leachate can contain phytotoxins (toxins that can harm plants and humans). Some of these toxins are created by bacteria. Every worm farm has good and bad microbes. This is ok of course, as long as the good ones outnumber the bad ones. Some leachate can contain harmful pathogens because it has not been processed through the worm's intestinal tract. It should not be used on edible garden plants.

During decomposition, waste releases liquid from the cell structure. This liquid or leachate seeps down through the worm farm into the collection area. The leachate should be drained regularly and if you are getting more than a few mL's of liquid in a day, the worm farm is probably too wet! We recommend leaving your tap open with a container underneath to catch the leachate to avoid having it build up in your system. Just keep an eye on it to make sure your container doesn't overflow!

While leachate can have value as a liquid fertilizer it should be treated with caution. For every story extolling the benefits of using leachate there is one lamenting the problems from having used it. If you decide you want to use the leachate we recommend taking some extra steps.

1. DO NOT use it if it smells bad! Pour it out on an area where it cannot harm other plants.
2. Dilute it ten parts water to one part leachate (10:1) minimum
3. Aerate it with an air pump if available.
4. Use it outdoors on shrubs, ornamentals or flowering plants only. DO NOT use on plants you intend to eat.

Worm Tea:

Worm tea is known mostly for its ability to boost microbiological activity in soil by adding bacteria, fungi, acinomyces, and protozoa to the soil. It is brewed by either soaking a porous bag full of worm castings in water or simply dumping the castings into a container of clean chemical free water. Molasses (an optional food source) is then added to the water as a catalyst to stimulate growth of the microbes. Then last, an air pumping system is installed to increase an aerobic (oxygenated) environment for the microorganisms.

Worm tea is beneficial in so many ways. The microbes delivered in worm tea help plants by out-competing anaerobic and other pathogenic organisms and by occupying infection sites on plants' root and leaf surfaces.

The purpose behind creating worm tea is to speed up the growth rate of microbes such as bacteria, fungi, protozoa, and nematodes, and to multiply their numbers exponentially. One reason for applying the tea to your plants is that it is absorbed more rapidly by the plant than castings, which are released over time.

When you spray or pour the tea on the soil not only are you feeding the plant, but you increase the number of beneficial microbes in the soil, thus crowding out the bad. It has been proven that the tea, along with the castings, can significantly increase plant growth, as well as crop yields, in the short term (a season) and especially the long term over a period of seasons.

Along with these great benefits come a boost in the plant's own immune system to be able to resist parasites like the infamous aphid, tomato cyst eelworm, and root knot nematodes. Plants produce certain hormones (like the jasmonic hormone) that insects find distasteful so they are repelled. Worm tea also helps a plant to resist diseases such as Pythium and Rhizoctonia.



When worm tea is sprayed on leaves and foliage, the bad disease-causing microbes are again outnumbered and cannot populate to the levels of taking over a single plant. The tea also aids the plant in creating the “cuticle”, a waxy layer on top of the epidermis, or plant skin. This waxy surface protects the leaves from severe elements and reduces attacks by certain harmful microorganisms and insects.

Always use only unchlorinated water, rainwater, pond or distilled water.

Brewing nutrients also influence the finished worm tea. To encourage the development of fungi in the tea and good bacterial dominance, feed 50ml of molasses and 10ml of kelp or seaweed extract to every 20 litres of worm tea. For the molasses, you can substitute with brown sugar, honey or maple syrup if you like.

SOLIDS - known as ‘castings’, worm poo will develop in the layer/s where your worms live - the top, middle and lower layers of your farm. Castings take longer to accumulate than wee, and can be harvested every 4-6 months. Scrape away the top level and harvest the castings below that look like rich, dark soil.



Worm farm

We prefer to be placed in shade in summer and in the sun during winter. Please cut organic material into small pieces as we have only small mouths.

✓ Yes	✗ No
✓ Vegetable scraps 	✗ Pineapple 
✓ Egg shells 	✗ Citrus 
✓ Organic fruit (no pesticides) 	✗ Onions and garlic 
✓ Shredded paper 	✗ Oils 
✓ Tea bags (remove string and staple) 	✗ Meat or dairy products 
	✗ Fresh grass clippings & raw sawdust 

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Feeding your worms:

YES - Fruit and vegie scraps, teabags (staple removed) coffee grounds, crushed eggshells, composted sheep, horse and cow manures, moist cardboards and newspapers etc.

NO - Onion, garlic, chilli, dairy, citrus fruit (lemons, limes or oranges), meat and bones, fish, oils or grease, dog or cat faeces etc.



FAQ:

Is my worm farm supposed to smell bad?

A well managed worm farm should smell pleasantly earthy. If your farm has a bad smell, remove any rotting food and make sure you're not overfeeding your worms. You can also gently aerate your bedding with a garden fork and add moistened newspaper to help counter the effects of overfeeding.

Remember also that your worms like moisture - if you don't get a few drops when you squeeze a handful of bedding, then spray with a little water. You can also use a sprinkling of dolomite or garden lime to re-establish your worm farm's pH - these are available from your local garden and hardware suppliers.

What happens when I go away on holiday?

Worms can live for up to 4 weeks without fresh food. Put damp newspaper in the worm farm and leave in a cool location. Empty the 'worm juice' before you go and leave the tap open with a container underneath it to collect the liquid.

Why are there flies in my worm farm?

A well-managed worm farm shouldn't attract flies as they have difficulty breeding where food is being quickly consumed by worms. If flies become an annoyance, reduce how much you feed your farm or try covering it with a hessian sack or shade cloth.

How do I stop pests invading my worm farm?

Insects like slaters, beetles, springtales and mites are all a part of the natural decomposition cycle and are fine to have in your worm farm. Ants often indicate your worm farm is too dry, so add a few drops of moisture if they become a problem. You can also place the legs of your worm farm in bowls of water to cut off their pathway.

REMEMBER:

Worm farms process less food than a compost bin, so make sure you're not overfeeding your worms. Uneaten food will begin to smell and attract unwanted pests. Only feed again when the previous lot of feed has nearly gone.

Each day a worm will consume approximately its own body weight in food. This means you can feed your worm farm a few handfuls every few days. Once it's established and the worms are breeding, you can try feeding them more.

Cutting food into small pieces and or processing in a food processor makes it easier and quicker for the worms to consume



Here are some interesting worm facts:

Worldwide, approximately 6,000 species of earthworms are described in 20 families, eight of which are represented in Australia. Australian natives are estimated to total 1,000 species belonging to three of these families.

Invertebrates make up 97% of species on earth without backbones and worms are just one of them.

Worms are most definitely a gardener's friend and are vital to soil health. As they burrow beneath the ground, they consume soil, feeding on decomposing organic matter such as roots and leaves, sand grains and microorganisms. As the organic matter passes through their digestive systems, vital minerals and nutrients are transported and it's been shown that not only is worm digested soil healthier, it also has more phosphorous.

Worms are a sign of healthy soil. If there's no food they'll go elsewhere. The more worms in your soil, the more nutritious it is, not only for them but for your plants! If you don't see any signs of worms, simply add more organic matter and they will find it.

The burrows that worms create act as ducts that water and oxygen can pass through, helping to keep soil moist and aerated, vital for good plant growth allowing roots to grow and develop.

Worms are hermaphroditic (they have both male and female reproductive organs) but they need to mate with other worms to produce offspring. After they've mated, worms form tiny, grain sized cocoons that are buried. They can produce up to two cocoons a week, each containing 1-7 hatchlings. After a two to four-week gestation period, the baby worms emerge.

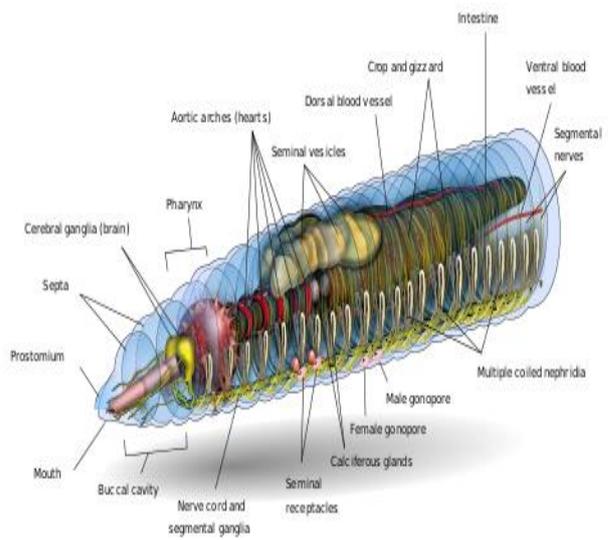
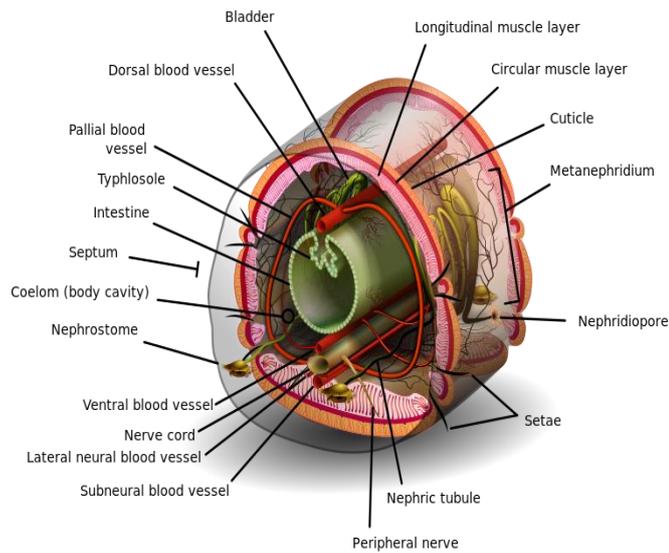
Lots of animals like birds and chooks love to eat worms but there's enough for them in a healthy garden to cater for them all – there could be as many as 1,000,000 worms living in an acre lot of land.

Worms don't have lungs, they breathe through their skin. If there's too much rain, worms will rise to the surface to breathe as they may become starved of oxygen in water drenched soil. However, light paralyses worms so if they're out in it for more than an hour, they can't retreat back into the safety of darkness and will die.

During darkness worms often feed on the soil surface. If you head outside with a torch you'll spot them all diving back under cover when they see the light, just like a pool full of synchronised swimmers.

Worms have no eyes, ears or teeth but can have up to five hearts.

Contradictory to popular belief, if you chop a worm in half it won't grow again and will die... twice.



BELLARINE WORMS

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