



Rosebud Community Garden

Worm Farming

Worm farming or vermiculture is a cornerstone of any organic gardening system. It allows you to recycle organic materials, produces both solid and liquid fertilisers and maintains biological activity of the soil. The worms do all this work free of charge and breed rapidly in good conditions.

Worms must be regarded as livestock and managed accordingly for the maximum benefit. Give them what they need and they will pay you back a hundred fold, neglect them and they will not flourish.

Types of earthworms

There are thousands of species of earthworms worldwide and they can be divided into two general groups.

1. The composters

These are generally called compost worms and come from moist stable environments rich in organic matter, and include the tigers, reds and blues. They generally do not burrow very deeply but stay close to the surface. **These are the type to use in worm farms.** Many Aussie native worms have also joined this group through people harvesting earthworms from their compost bins.

2. The earth workers

These earthworms come from more variable environments, are generally slower moving and burrow deep into the soil. They are usually much larger, breed slower and will not do as well on food wastes. **Do not use these in worm farms, as they are best left to roam in garden beds.**

Types of worm farms

Many types of containers can be used as worm farms including bathtubs, old compost bins, wooden structures or plastic tubs with holes. These are easy and cheap ways of setting up a worm farm and usually are very efficient.

Key goals and requirements of a worm farm:

- vermin proof as possible
- cool/moist conditions
- good drainage
- capture worm juice
- good air flow
- easy removal of castings
- protection from weather
- out of direct summer sun
- away from heat and chemical exposure
- provide a safety zone for worms that will not heat up.

Worm farms are available for purchase and usually involve a tiered tray set up with a base on legs and a tap for harvesting worm juice. The square or rectangular ones of these are the better ones and are good for smaller production of worm juice and castings.

Setting up a worm farm in a bathtub

These basic principles can be used for all worm farms.

Items needed (approx measurements):

- bathtub and a way to secure it off ground
- 4 m x 5 cm slotted pipe or bricks with holes
- 2 pieces of shade cloth or fine plastic mesh that will not break down
- bedding materials - old horse or cow manure, compost, shredded paper, hay or coconut fibre
- bucket
- compost worms.

Bathtub

First choose your site, which needs to be in a sheltered, shady spot close to where you will be gardening and sourcing food scraps. Secure the bath up off the ground so it will not tip over, is tilted slightly so water drains towards the hole and the bath is high enough to get a bucket in and out easily under the drain hole for the collection of worm juice. Use bricks and mortar, concrete blocks, wooden or metal stands like an old table frame or similar anything that will keep the bath secure and bear the weight.

That is the biggest part of the job over and done.

Drainage

Use slotted drainage pipe or a layer of bricks with holes to cover the bottom of the bath and then a layer of shade cloth or fine mesh to cover the pipe and go up the side a bit. You can fold shade cloth over a few times to gain better fine meshing. Wet cardboard in large pieces can be added on top of the shade cloth at this stage but is not essential.

Now put your bucket under the drain hole of the bath.

Your worm farm is ready for the first layer of bedding.

Bedding

I have found the best bedding to start with in any system is old horse or cow manures that won't heat up and are not volatile (don't use chook manure). However, you can use any of the materials listed above and in any combination. The main aim of the bedding is to provide a safe area for the worms to live and breed. You will need a layer at least 10 cm deep of this start up bedding in the bottom of the bath.

Pre-soak the bedding in water for up to 12 hours and then squeeze or drain out excess water. This ensures moist and not wet conditions for your worms. The ideal moisture content is when the damp bedding is squeezed several drops of water will come out. Add it directly on top of the layer of shade cloth to a depth of about 10 cm, more is OK but less is too shallow. If you do not have enough for the whole bath then start up the top half but make sure it is deep enough. Allow excess water to drain into the bucket.

This bedding layer is the safety zone for your worms and is essential if conditions elsewhere become unsuitable so keep an area like this at all times in your worm farm.

Worms

Now you are ready to add your worms. Make a hole in the middle of the bedding and add all your worms at once into the hole and then cover them over quickly with bedding. Now cover the worms and bedding with damp cardboard or hessian and then cover the whole inside of the bath with a piece of shade cloth using a couple of bricks or similar to hold it down. Younger worms and egg capsules move easiest and have a higher survival rate than the big breeders but, in saying that, the big breeders will get down to business quicker! Compost worms can be bought in hardware stores or over the internet, or you could ask a friend for some if they have a worm farm set up.

Leave your worms to settle for a day.

Feeding

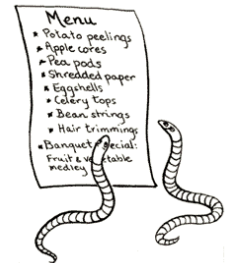
The quickest way to bulk up your worm farm is to add more old manure and bedding. The amount of food consumed will depend on the number of worms and may be slow to start.

When feeding always put small amounts on top of the bedding and do not add more until it is almost gone. The smaller you cut the food the better and if you presoak the food in some water it will be eaten quicker. If you water lightly before adding the food the worms will find the feed sooner.

Do not feed dairy and meats as these will rot and attract vermin, and food high in cane sugar will attract mites and other soil dwellers.

Most other food waste is good and even small amounts of onion and citrus will be eaten once the volatile oils break down. Small amounts and a variety of food are always best.

Rotting food and acid conditions are bad for worms but if you have overfed just take out the offending food, fluff up the bedding to allow air flow and do not feed for a couple of days. Some farmers add dolomite or garden lime to sweeten the bedding, though keep in mind that if over used this will reflect in alkaline worm juice and castings.



Water

Water the top of the bedding with small amounts and often in hot weather and less in cold. The bedding needs to be damp not dry or wet. To test you can squeeze some of the bedding and only a few drops of water should come out. You can use an automated system or hand water. A small amount of water often is better than flooding the system once a week. If too much rain is an issue you can cover the bath with a roof.

Always remember to check the bucket so it doesn't overflow!

Worm juice

The water that drains from your worm farm is great fertiliser and will eventually become a near magical brew! Always water it down so that it is the colour of weak tea before using it on plants, then it will not burn your plants and once filtered of large particles is safe to use as a foliar spray. It will start off as a brownish liquid and eventually will be almost black.

You will be able to harvest and use worm juice often. Once your farm is well established you can occasionally water more heavily on top to get more worm juice, but not more than once a month or the castings will not be as good and you may flood your worms.

Harvesting

Over time your bath will fill with worked over bedding and worm manure (castings) and you will be able to harvest these castings. It will fill quicker if you continue to add old manure as well as food scraps. Good healthy castings are dark brown to black and very fine and silky.

To harvest start to feed and water only one end of the bath and most of the worms will move to that area. You will know what your worms love to eat so encourage them quickly but it may still take a few weeks.

Once most of the worms have moved to the feeding end you can remove the unoccupied castings and use them one third with washed sand as potting mix or add them to your pots or garden under mulch. There will always be a few worms left in the castings and you can remove them as described later. As long as most are up the feeding end all is well.

Now you have an empty half of your bath so add manure, bedding, water and feed.

Over time the worms will move to that area and when it is to the level of the other end you can start only feeding and watering the new area and then remove the castings from the older end. This system works really well and provides a lot of good castings and juice.

*Bath worm farm harvest
(looking from above)
Then reverse the order*



Other worm facts

Breeding

Worms are hermaphrodite and two worms will mate and fertilise each other's eggs. The thick band around their 'necks' is the clitellum and this is where the egg capsules form, which are then laid through the mouths of each worm. So if you see two worms in a headlock embrace they are mating.

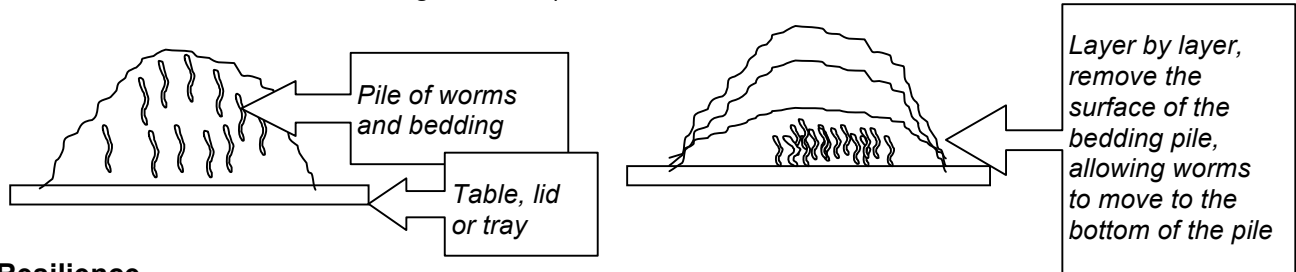
Worms can lay a capsule or two (see photo) per week and several babies will hatch from each capsule a few weeks later. These young worms will mature in 30–90 days depending on temperature. This means compost worms under ideal conditions are able to double their population every few months.



Worm capsules start off bright yellow and darken to amber just before they are ready to hatch

Removing worms from castings

The simplest way to harvest worms from castings, if you cannot use the feeding method or are impatient, is using their love of darkness and hate of sunlight – see steps below.



Resilience

Compost worms under ideal conditions will breed well and produce worm castings and worm juice continuously. In time you will see the younger worms ball up under the food en masse while the adults tend to move freely through the bedding, mating and laying capsules. Warmer weather means higher rates of feeding and breeding but very hot days can dry the bedding out and full sun on your worm farm can kill your worms, so be sure to check your worm farm regularly.

Egg capsules are very resilient and can survive unhatched until suitable conditions return. Adult and young worms get skinny before they starve and will survive some neglect except lack of watering. This is where horse/cow manure is good as it is a food and also retains water. So if you are going away for a short while, add manures and water well rather than over feed.

If you find worms trying to leave your farm you will need to remove rotting food and work the bedding gently to allow air into the mix. Sometimes odd worms do leave and this is not a worry. Make sure you are not overwatering and add more bedding. Always make sure you have the safety zone for your worms.

Sharing the love

Please share your composting worms and knowledge with friends and family once you have a successful worm farm up and running.

Happy worm farming to all 😊

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