

How to Build a Wormery



Compost worms can eat about half their body weight in food waste in one day. Worm composting can turn kitchen and garden waste into nutrient-rich compost and liquid fertiliser called worm tea!



You will need:

- Two plastic boxes that fit together. The top box needs a lid.
- An electric drill or awl for punching holes (with supervision)
- Kitchen waste and/or a small amount of garden waste
- Plenty of newspaper or cardboard
- Compost or soil
- Worms! - Tiger Worms (*Eisenia fetida*) are best
- Two bricks, or something of a similar height

- Optional - a tap attachment for collecting worm tea



Video: [Watch Rachel from The Royal Zoological Society of Scotland explain how to build your wormery and how to take care of these fantastic ambassadors for recycling!](#)



Instructions:

1. Start by drilling holes around the top and base of one of your boxes. If you want more than two layers, do this for all but one of your boxes. Always leave one box with no holes in it to form the base of your wormery.
2. If you are installing a tap: use your drill to make a tap hole as low down as possible in the bottom box. If you do not want to install a tap, you can just empty the bottom box into a jug every so often.
3. Fill your top box with compost or soil and mix in plenty of small pieces of paper or cardboard.
4. Add the worms gently and then include some kitchen waste.
5. Place your top box onto your (empty) bottom box.
6. Place it on top of two bricks and cover it with cardboard to keep it warm and dark inside.

Caring for your worms:

- The most important rule is to add food waste **in small quantities and often** to keep your worms happy.
- If you're using multiple layers you can add food to the upper boxes once the first box is full. The worms will move into the upper boxes and you can take the full box of compost for the garden. Just keep cycling the layers around.
- You can include crushed eggshells, tea bags, most vegetables (but not onion or garlic) fruits and leftovers such as breadcrumbs and pasta.
- Small quantities of green garden waste can be added.
- Avoid dairy products and meat because they contain fats that can go rancid and attract pests.
- Avoid spicy or acidic foods like onions, garlic and citrus fruits as these can irritate the worms' skin.
- Make sure they have plenty of newspaper and cardboard as well as kitchen waste.
- Avoid shiny paper or paper with paint or glue on it because chemicals in inks and coatings are not good for worms.
- Woody garden waste like branches or prunings aren't very tasty to Tiger Worms and will take too long to compost in a wormery. Try putting this material in a bug hotel instead.
- Keep the wormery close to the kitchen somewhere sheltered and warm between 5 to 20 degrees Celsius
- Over winter wrap the wormery with old carpet or cardboard and put it in a shed for shelter.
- If you will be away for a while, put in plenty of moistened cardboard and paper to keep the worms happy.
- Empty the worm tea out of the bottom box every once in a while. Dilute to about 1 part worm tea to 10 parts water and use in the garden.



Worm Facts:

- Charles Darwin spent 38 years [studying earthworms](#).
- Worms are invertebrates, which means they do not have a backbone.
- Composting with worms is also called vermicomposting and caring for composting worms is called vermiculture.
- Earthworms eat decaying plant material and [do not damage growing plants](#).
- Earthworms loosen and mix soil as they move around, helping distribute nutrients and improve drainage.
- Worms 'breathe' [through their skin](#), which is why they need to be in a moist environment.
- Worms [become paralysed](#) if they are exposed to the light for too long (approximately 1 hour) and are unable to burrow somewhere dark.
- Worms detect light through their skin as they have no eyes.
- Worms can [regenerate some segments](#) of their body depending on where the cut happened, but you can't get two worms out of cutting a worm in half (as many people seem to believe).
- Worms are cold-blooded and [their blood is red](#) just like ours, as it contains haemoglobin.
- On average worms live [about two years](#) but can live as long as eight years.
- Believe it or not, worms have [tiny hairs](#) in each of their ring segments!
- Worms are [hermaphrodites](#), which means they are both female and male, but they can't reproduce by themselves.
- Baby worms hatch from [cocoons](#).
- The longest species of worm is the [Gippsland Giant](#) in Australia, and they can reach up to 3m long (9.8ft).
- Worms have been around for about [600 million years](#). They were here before the dinosaurs!

Extension tasks for further learning:



Keep a diary of looking after your worms. Weigh how much waste you feed them to keep track of how much they are turning into compost. You could add observations of the conditions in the wormery or stories from the worm's point of view. What foods do the worms seem to like best? How do they move around the wormery? What food waste composts the fastest? You can do this in a floorbook or flipchart as well, writing pupils' observations of the worms or descriptive words.



Did you know that here in the UK we have 29 different species of earthworms? And that they can have up to 5 pairs of little pumps that act like hearts?

With much care, study one of your worms with the help of a magnifying glass and make a drawing of everything you can see. Label your drawing using books or the internet try to identify the different parts of the body of a worm. Once your wormery is established, try to find worms at different life stages - eggs, adults and young worms.



Worms naturally aerate soil by making tunnels. They have bristles (called setae) on each segment that help the worms grip as they stretch and contract to move through the soil. Can you see these bristles on your worms?

You can observe worms mixing layers of soil with a simple classroom experiment. Layer soil and sand in a large jar, moisten and cover with wet leaves. Add a small number of earthworms (not your Tiger Worms) and cover with a cloth to keep the light out. Make sure you punch holes in the lid for air.

Watch over the course of a month or so to see the worms mix the layers. When you have finished observing the earthworms, let them go in a suitable place in your school grounds. You can also try a larger version of this experiment [using an old window](#).



Investigate the fertilising power of worm tea! Once your wormery has been working for long enough to produce worm tea, conduct a plant growth experiment with five identical plants.

Give one plant only water, the second 10% worm tea, the third 20% worm tea, the third 50%, and the last 100%. (Remember you need to dilute the worm tea before you use it). Record what you think will happen before you begin the experiment, then observe differences between the plants as they grow. What is in the worm tea that benefits plants?

You can try this experiment with the compost generated by your worms too. Again, use five of the same type of seed or small plants and grow one in plain soil, and the rest in increasing amounts of compost - one in 10%, one in 20%, one in 50% and one in 100%. Keep all other conditions the same, and record your hypothesis before you start: what do you think will happen? Record your observations as the plants grow. Do they all grow the same amount? In the same time? If you chose plants that fruit is the harvest the same? Write up your results to share.

Can it go in the wormery?

Yes Please



Fruit and vegetable waste like apple cores, or carrot peelings



Plain paper and cardboard ripped into small pieces

A Little Bit



Green garden waste like leaves, weeds, or flowers



Cooked food waste like pasta, rice, vegetables or fruits

No Thank You



Acidic or spicy foods like onions, garlic, citrus and peppers



Meat, dairy and fish



Salty or processed foods like pizza or crisps



Shiny paper, paintings or paper with lots of colours or glue



Woody garden waste like branches, sticks or prunings