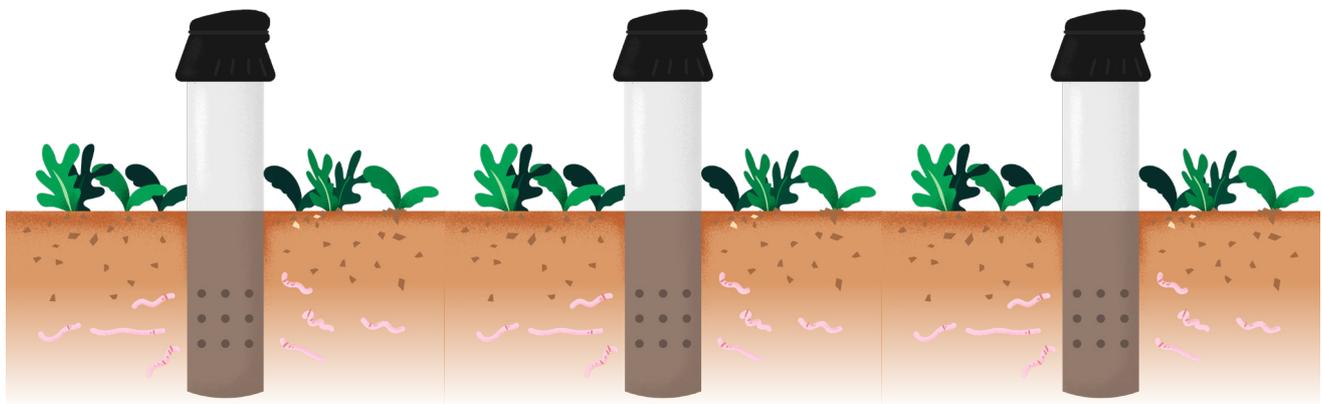


Worms, Worms, Worms!

Year 4 – Science
Year 5 – Science
Year 6 – Science



(Science; Yr 4, ACSSU073)

Living things depend on each other and the environment to survive

(Science; Yr 4, ACSHE062)

Science knowledge helps people to understand the effect of their actions

(Science; Yr 5, ACSSU043)

Living things have structural features and adaptations that help them to survive in their environment

(Science; Yr 5, ACSHE083)

Scientific knowledge is used to solve problems and inform personal and community decisions

(Science; Yr 6, ACSSU094)

The growth and survival of living things are affected by physical conditions of their environment

(Science; Yr 6, ACSHE100)

Scientific knowledge is used to solve problems and inform personal and community decisions

**Cross-curriculum
priority**

Sustainability

Worms, Worms, Worms!

How to put thousands of wriggly helpers to work in your garden!

Worms are amazing creatures that will happily dedicate their lives to improving your soil. And since healthy soil is the secret to growing a lush garden, a gardener's best trick is to encourage and feed the worms. Learn a little about worms, and build a worm tower for your very own garden bed.

Equipment:

A handful of compost worms
– tigers or red wigglers*

A bucket of moist soil

An electric drill (grab a grownup)

A length of white plastic drainpipe
about 45–50cm long

Trowels

A watering can

An old sock

A yoghurt tub full of kitchen
vegetable scraps (not including
onions or citrus)

A handful of wet straw or dead wet
grass

pH testing kits (optional)

Duration:

45 minutes

Location:

The classroom or the garden (note:
the worm tower will need to be set
up in a garden)

Notes:

Tip

Ask your class if anyone has a worm farm already to help get you started – they'll probably be able to spare a few for a new colony. If that's not possible, there are plenty of locations to purchase worms.

Worm World

- 👁 Watch **The One with the Poo**
- 🎧 Bonus Track **Nomcast Episode 4**



- ❓ Explore students' observations of worms in their gardens:
 - ◇ Where do you find worms? (Do they gallop across the cricket oval in the sun?)
 - ◇ What do they look like? (Are they big enough to eat a sneaker?)
 - ◇ What do they eat? (Rocks?)
 - ◇ How do they move? (Do they have legs?)
- These silly question prompts should show students that they know a bit about worms already.
- Discuss the facts in the box on the next page.

✏ What Worms Want:

- Students research why citrus, onion and other acidic foods are not good for worms. Have them explore the ideal pH of a worm farm, and use pH test kits to check several locations around the garden.
- Students prepare a presentation on worm farming as a sustainable option for feeding a garden, and how worm farms can help personal and community food networks.
- Students research three different ways homemade self-contained worm farms are made. Have them draw diagrams and write instructions (procedures) for how to make them. Their written work should explain how the humus and liquid 'worm tea' is used. (Try bathtub worm farms, rubbish bin worm farms, and wheelie bin worm farms.) If resources permit, build one of the designs for garden use.

✏ Worm it Up

- The white pipe in the activity on the next page can be decorated with acrylic paint to make a colourful addition to the garden. One school added googly eyes to the sock on top of the worm tower. (It's a good idea to have an extra sock handy, as they do tend to disappear. A bit like sock drawer socks,

Resources

- ◇ ABC Gardening Australia – Building a Worm Farm – Jerry Coleby-Williams (written instructions): <http://www.abc.net.au/gardening/stories/s3827415.htm>
- ◇ ABC Gardening Australia – Mobile Free-Range Worms – Costa Georgiades (video, 2:17 duration): <http://www.abc.net.au/gardening/stories/s4488341.htm>
- ◇ Organic Gardener – Liquid Gold (including worm liquid fertilizer): <https://www.organicgardener.com.au/blogs/liquid-gold>
- ◇ University of Illinois – Herman the Worm – Excellent scientific information on anatomy, diet and the importance of worms. Suitable for primary students: <http://extension.illinois.edu/worms/>
- ◇ Worms Garden for You! By Allan Windust – A great little book, suitable for upper primary

Worm Wide Web

- Did you know that worms have five hearts? Yes, five! All of them are used to pump blood through the worm's blood vessels, just like your heart.
- Worms breathe through their skin, as long as it stays wet. This is why we must never ever let the worm farm dry out!
- Worms don't have eyes, but they do have cells on the front of their bodies that are light-sensitive.
- Worms are hermaphroditic. They are neither male nor female but have both gender organs in one body. (Two worms are still needed to mate.)

From Alice: Just like us, healthy plants need nutritious food, plenty of clean air and fresh water to grow. We want to encourage worms to live in our garden because they eat organic matter and make vermicompost, and make tunnels in the soil, allowing air and water to get in.



How

- Take the white tubing and draw a line around the middle (it doesn't need to be exact).
- (Grab a grownup) On one side of this line, drill holes (6–10) using a bit that's about 2–3mm in diameter. It's a good idea to wear reinforced gloves, and have someone hold the tubing steady (or use a vice), as the drill can be surprisingly slippery on the curved plastic piping.
- Dig a hole big enough to bury the drilled end of the tube in your chosen location. A raised garden bed is perfect, but any garden bed will do.
- Place the pipe in the hole, and compact the soil around it so it stands upright. The drilled holes should all be underground. The line you drew should be roughly at the soil line.
- Place wet straw or grass in the bottom of the pipe. Water well, and water the soil around the pipe.
- Place the worms in the pipe on top of the wet straw or grass.
- Place some kitchen scraps on top of the worms, in the pipe.
- Cover the end of the pipe with the old sock (this prevents flies from laying eggs in the worm tower).
- Water well again.

Stuff

Electric drill and **white plastic drainpipe** about 45–50cm long and **trowel** and **watering can** and an **old sock**

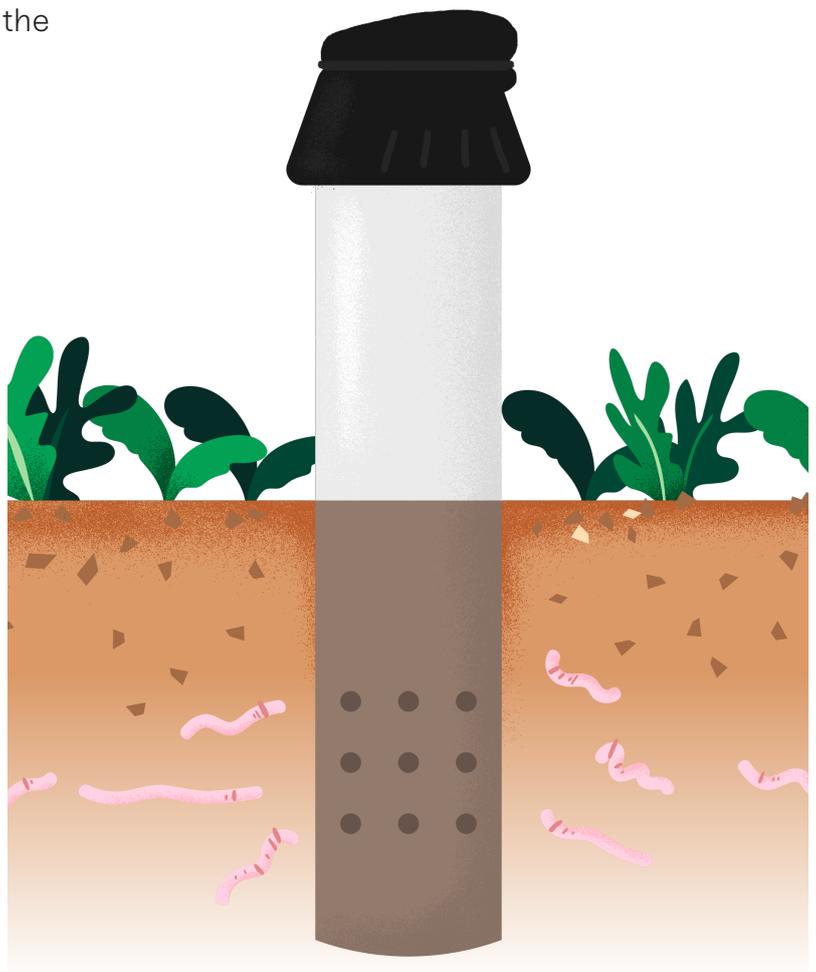
What

Handful of compost worms – tigers or red wigglers*

Bucket of moist soil

Yoghurt tub full of kitchen vegetable scraps (not including onions or citrus)

Handful of wet straw or dead wet grass



Types of worms

There are about 1800 different types of worms in the world. In all environments, worms are important recyclers of plant material into soil.

In worm farms and garden compost systems, people generally use one of three types:

- Red Wigglers – dark pinkish red, the colour of uncooked hotdogs
- Tiger Worms – you can see the stripes when they move
- Indian Blues – bluish pink in colour and great for warmer regions in Australia

Using garden worms (the longer, pale fat worms you find in the soil) is not recommended in a worm farm. Those guys are burrowers rather than intense feeders. If you want worm compost and rich plant-feeding worm tea, you need intense feeders to eat your kitchen scraps and turn them into black.

Top Tips

- The worms will eat the scraps and use the holes to zip out into the soil, leaving lovely rich humus wherever they go.
- Half fill the pipe with fresh kitchen scraps about twice a week.
- DO NOT give the worms onions, citrus or cheese. Worms do not eat meat or bones. They love potato, pumpkin, banana skins and all leafy vegetable scraps.
- On hot days, place a wad of wet scrunched up newspaper in the pipe to insulate the worms.
- Leave that sock on top to keep out pests!

Lexicon

hermaphrodite	An organism that has both male and female organs in one body.
humus	Nutrient-rich organic matter made from decaying plant or animal matter (such as chicken or worm poop).
vermicompost	The rich dark soil made by worms.
vermiculture	Looking after (farming) worms. Usually refers to large-scale operations.