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# Worm Bin Composting: Recycling with Worms

**Grade level** – K-12

**Subjects** – Science, natural systems

**Teaching time** – One hour for set-up and weekly maintenance

**Skills** – Observation, math

**Materials** – Container to serve as worm bin, hand rake or trowel for burying food waste, red worms, newspaper, leaves or cardboard, and soil. See “Tips” for each step.

## Objectives

Students will learn about nature’s version of recycling and how they can make use of it themselves to further their recycling practices.

## Procedure

### Making the bin

For classroom demonstration purposes, start with a container that is at least 2’x3’x2’. Lots of different containers can be used, but whatever you choose, be sure it’s dark inside and has a good lid, air holes, and drainage. The lid needs to cover the top, but doesn’t have to attach securely to the container. Air holes are needed somewhere on the container. For example, if you have chosen to use a Rubbermaid storage tub, poke holes in the top half of the sides all the way around, about three to four inches apart.

### Tips

#### Use

- a wood box or old drawer
- an old Styrofoam cooler
- a plastic storage tub
- a halved barrel

#### Don’t use

- an old aquarium
- a clear plastic storage container
- a cardboard box

## Setting up the worm bin

You will need some bedding materials to provide the worms with a balanced diet and a damp place to live. Many materials can be used, but the easiest to acquire are shredded newspaper, leaves, soil, and water.

**Step 1** Shred newspaper and immerse in water.

**Step 2** Squeeze the excess water out of the newspaper and pull it apart so it is nice and loose.

**Step 3** Gather some non-waxy, brown leaves (or cardboard pieces).

**Step 4** Mix the leaves and damp newspaper together in the bin.

**Step 5** Think of the bedding materials as a salad. The leaves and newspaper are the greens (lettuce) and the soil is the dressing. Pour soil onto the leaves and newspaper and “toss the salad!”

**Step 6** Add the worms!

### Tips

- Do not use glossy or waxy paper or waxy leaves (e.g. laurel or rhododendron leaves) or pine needles.
- If no brown leaves can be found, shredded and moistened cardboard can be used.
- If using a wood box, place a piece of black plastic over the bedding materials to retain moisture.
- Add dry shredded newspaper to the bedding of a plastic container that is collecting water.



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## Feeding the worms

Feed your worms frequently (once or twice a week) by burying the food waste in the bedding. Bury the scraps in a different spot each time and ALWAYS cover it with a few inches of damp bedding. This will discourage flies and odors. The amount of food to add will depend on the size of the bin and the number of worms. To be safe, start out feeding the worms one 16 oz. margarine container of food waste once a week. Increase the amount of food or the frequency that the worms are fed when it becomes obvious that the food is being eaten. Avoid adding too much food or the worms won't be able to keep up.

## When to harvest the bin

How do you know when your classroom worm bin is ready to harvest? After one to two months of feeding the worm bin, the bedding material will start to darken in color. In two to three months, the bedding material will begin to disappear. In its place will be vermicompost or worm castings. Most worm bins are ready to harvest after four to six months. The vermicompost is like vitamins for your plants!

## How to harvest the bin

First, lay a large plastic sheet outside in the sunlight. Dump the contents of your worm bin onto the tarp and divide the material into cone-shaped piles. The worms will go to the bottom of each pile away from the light. Remove the top and sides of the piles and put that into containers. You'll find worms in the bottom center of each pile.

## What to do with the worms

Gather the worms from the piles and put them aside in a bucket or container. In the meantime, prepare another supply of bedding in the empty worm bin. Add the worms to the new bedding and start all over again! Also, the red wigglers make great fishing worms.

## What to do with the castings

Use the castings in the garden. Sprinkle them around plants as mulch or mix with potting soil in planters. Don't worry if there are some worms left in the castings. The worms will find new homes in the garden.

## Tips

- Keep a supply of newspaper and leaves nearby. Each time you feed the worms, add a little bit (1 or 2 handfuls) of damp bedding material.
- What to feed the worms: vegetable scraps, grains, fruit scraps including rinds and peels, breads, coffee grounds and filters, tea bags.
- What not to feed the worms: meat, fish, cheese, oily foods, butter, animal products.
- Bury, bury, bury the food wastes.

## Resources

### Books

- *Worms Eat My Garbage* and
- *Worms Eat Our Garbage* by Mary Appelhof, available at [wormwoman.com](http://wormwoman.com)

### Websites

- [wormdigest.org](http://wormdigest.org)
- [wormwoman.com](http://wormwoman.com)
- [cityfarmer.info/wormcomposting](http://cityfarmer.info/wormcomposting)



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