

## Composting with Worms

A worm bin is an easy way to turn most of your food waste into fertilizer and amendments for your garden soil. Redworms are voracious recyclers that transform apple peels, zucchini stems, and other kitchen wastes in just a few months. Supply them with a home, furnished with bedding and food, and they will go to work.

### Type & number of worms

There are thousands of species of earthworms in the world, all of which feed on some form of organic matter. Redworms, *Eisenia foetida*, are well suited for your worm bin because they prefer fruit and vegetable scraps, are voracious feeders, and reproduce well in captivity. They are smaller than earthworms. You can buy these worms by the pound through garden catalogs or places that sell beneficial insects.

Worms can eat their own weight in food in 24 hours. Estimate the weight of food waste from your household, per day, then determine the weight of worms you need. Two pounds of worms are needed for each pound of kitchen waste added per day. One pound of worms equals 1,000 – 2,000 worms.

### Worm bin basics

- Worm bins can be homemade or purchased. You may begin with a plastic bin, punch aeration holes in the sides and top, or buy one of a suitable size.
- The size depends on how much waste you generate per week. A box measuring 1'x 2'x 3' can handle 6 pounds of kitchen waste per week (average for a family of four to six).
- Put bedding into the container. Bedding material is loose organic matter, such as wood shavings (not cedar), shredded newspaper and coconut fiber. Worms also like a little grit; either sand or plain garden dirt will do. Fill the bin about 80% full with the bedding material.
- Add water to the bedding until it is dripping wet. Check the moisture content by squeezing some bedding in your palm. If a few drops of water come out, it is sufficiently moist. In order to survive, worms require 75 – 90% moisture content in both their bodies and their bedding.
- Air circulation is a must in and around the worm box. Worms need a constant supply of oxygen so there should be air holes somewhere on the container – either on the lid or sides. If you use a plastic bin, be sure to add both drainage and aeration holes.
- Scatter your worms on the prepared bedding. Leave the lid open until the worms work their way down. Worms avoid light, so the container should be dark inside and have a good lid.
- Keep them in a place where the temperature remains 50 – 85° F.
- Choose a location that is convenient for maintaining the bin.
- Never use a container that has been used for storing toxic chemicals.

### Worm food

Although worms can break down just about any organic waste, it's best to treat them as vegetarians.

- Do feed: Vegetable scraps, coffee grounds & filters, tea bags, stale bread (no butter or mayonnaise), fruit peels or pulps, crushed eggshells, animal hair, shredded paper.
- Don't feed: Meat, fish, dairy products, greasy or oily foods, onion, citrus peels, garden debris (leaves, stalks, grass clipping), pet waste.

When adding food waste to the bin, pull aside some of the bedding and bury the food. Bury successive loads in different locations in the bin. Do not fill the bin with a lot of food waste at the beginning. Before adding new food, check to see if old items were used. As uneaten foods accumulate, they may give off an offensive

smell. If that happens, stop feeding the worms and stir the wastes with a trowel or garden fork. Add fresh bedding. Observe carefully and add new food in a few days. During colder temperatures in the winter, the activity of the worms may slow down a bit. Monitor how much the worms are eating so that you do not give them too much food.

Although worms multiply fast, they will regulate their population to the confines of the available space and the amount of food you give them. So there is no worry about an overpopulation of worms.

### **Harvest & use of the compost**

After several months, much of the fresh bedding will turn into dark, crumbly worm castings on the bottom of the bin. This is the time to remove some of the finished compost and add new bedding materials. Collected liquid fertilizer from the compost bins may be used as a liquid fertilizer.

You may add worm castings to your garden soil or potting mix. Spread a layer about ½" thick of worm castings around your favorite plants; mulch and water in. For seedling mix, use 3 parts of aged compost to 1 part castings. Worm castings are generally neutral in pH and contain phosphorous, nitrogen and other minerals and nutrients.

These worms require moist conditions all year round because they don't tunnel deep like earthworms to find moisture. If you wish to release them into your garden, give them a thick surface layer of mulch to maintain moisture and insulate them from heat and cold. If that's not possible, don't release them.

### **Potential problems and solutions**

- Odor: You can control odors by not overloading the box with food waste, keeping out items listed under 'don't feed' in the 'worm food' section, and providing adequate fresh bedding.
- Pests: Sometimes the very small vinegar fly (often mistaken for the fruit fly) gets in, but these do no harm. However, very large numbers of the vinegar fly may indicate that you are feeding the worms too much. To eradicate the vinegar flies, slow your rate of feeding to what the worms will eat on a daily basis and ensure that freshly added wastes are covered by a moist burlap bag or newspaper.  
Ants will enter your outdoor worm bin if you have a lot of them in your backyard and particularly if you have let the bedding become too dry or acidic. Add water to raise the moisture level and add a liberal quantity of garden lime to where the ants are gathering. This should discourage them. If they persist, remove them physically and smear some Vaseline around the entry points.  
Rodents can be a problem outdoors. The easiest way to keep animals from entering a worm bin is to keep the lid shut and meat wastes out. If there are signs of animals around the worm bin, place a sheet of wire mesh over the bottom of the bin or raise the bin 12 to 18 inches off the ground. Keep the worm bin lid latched or well secured if possums or raccoons are a problem.

### **OSU Extension Service resources & other books**

Visit your OSU Extension Service office at 200 Warner-Milne Road, Oregon City, for these publications, or get them online at <http://extension.oregonstate.edu/catalog/html/ec>

*Sustainable Gardening* – The Oregon-Washington Master Gardener Handbook.

*Worms Eat My Garbage*, Mary Appelhof, Second Edition

*Welcome to the Can-O-Worms*, N. Natrass.

### **For Master Gardener™ advice**

- Call Home Horticulture Helpline: 503-655-8631 (Clackamas Co), 503-725-2300 (Washington Co), 503-445-4608 (Multnomah County)
- Visit Clackamas Chapter Master Gardeners website [www.clackamascountymastergardeners.org](http://www.clackamascountymastergardeners.org) for 10-Minute University™ handouts and schedule

