

Worm Composting Basics

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What is worm composting?

Worms eat food scraps, which become compost as they pass through the worm's body. Compost exits the worm through its tail end. This compost can then be used to grow plants. To understand why vermicompost is good for plants, remember that the worms are eating nutrient-rich fruit and vegetable scraps, and turning them into nutrient-rich compost.

Setting up a worm bin

Setting up a worm bin is easy. All you need is a ventilated container, moist newspaper strips, soil, food waste, and worms. To figure out how to set up a worm bin, first consider what worms need to live. If your bin provides what worms need, then it will be successful. Worms need moisture, air, food, darkness, and warm (not hot) temperatures.

You should use red worms or red wigglers in the worm bin. The scientific names for the two commonly used red worms are *Eisenia foetida* and *Lumbricus rubellus*.

Containers

When choosing a container, keep in mind the amount of food scraps you wish to compost, and where the bin will be located. One square foot of surface area is required for every pound of food waste to be composted per week. A good size is a 5- to 10- gallon plastic bin - approximately 24" X 18" X 12". The bin should be shallow rather than deep, as red wigglers are surface-dwellers and prefer to live in the top 6" of the soil. Cover the bin with a loose fitting lid. This lid should allow air into the bin.

Bedding

Bedding materials can include shredded newspaper or cardboard, dry leaves, straw, peat moss and wood shavings. Mixing more than one type of bedding helps to create spaces for air and easy movement by the worms. Fill the bin three-quarters full with bedding that has been moistened so it is as wet as a wrung out sponge. Add a handful of dirt or rock dust to provide grit to aid the worms' digestion and an initial stock of micro-organisms. After the worms have eaten some of the bedding, add more to maintain the bin at three-quarters full. Covering the bedding with a plastic garbage bag conserves moisture.

A menu for the worms

Though worms can eat any organic material, certain foods are better for the worm bin. You can compost food scraps such as fruit and vegetable peels, pulverized eggshells, tea bags and coffee grounds. Materials will be decomposed faster if you chop food wastes first.

It is advisable not to compost meats, dairy products, and oily foods because of problems with smells, flies, and rodents. Limit coffee, tea and citrus. No salt or items with pesticides. No glass, plastic or tin foil, please.

To avoid fly and odor problems, always bury the food waste by pulling aside some of the bedding, dumping the waste, and then covering it up with the bedding again. Bury successive loads in different locations in the bin.

Harvesting

After several months, worms need to be separated from their castings. At high concentrations, castings create an unhealthy environment for worms.

To prepare for harvesting, do not add new food to the bin for two to 4 weeks. Then try one of two methods for harvesting:

1. If you are patient, you can get the worms to do the work. Push all of the worm bin contents to one half of the bin, removing any large pieces of un-decomposed food or newspaper. Put fresh bedding and food scraps in the empty side of the bin. Continue burying food scraps only in freshly bedded half. Over the next 2-3 weeks, the worms will move over to the new side (where the food is), conveniently leaving their compost behind in one section. When this has happened, remove the compost and replace it with fresh bedding. To facilitate worm migration, cover only the new side of the bin, causing the old side to dry out and encouraging the worms to leave the old side.
2. For hands-on-harvesting, dump the entire contents of the worm bin onto a sheet of plastic or paper. Make several individual cone-shaped piles. Each pile will contain worms, compost and un-decomposed food and bedding. As the piles are exposed to light, the worms will migrate towards the bottom of the pile. Remove the top layer of compost from each pile, separating out pieces of un-decomposed food and newspaper. After removing the top layer, let the pile sit under light for 2-3 minutes as the worms migrate down. Then remove the next layer of compost. Repeat this process until all of the worms are left at the bottom of the pile. Collect the worms and put them back in their bin with fresh bedding.

Regardless of which method you choose, the compost you harvest will most likely contain a worm or two, along with old food scraps and bedding. If you are using the

compost outdoors, there is no need to worry, the worms will find a happy home and the food scraps and bedding will eventually decompose. If you are using the compost indoors, you may want to remove old bedding and food scraps for aesthetic purposes and ensure that there are no worms in the compost. Though the worms will not harm your plants, the worms will not like living in a small pot.

For both methods, you may continue to compost your food scraps after harvesting. Just add fresh bedding and more food scraps. If, for some reason, you do not want to continue composting, please offer the setup to a teacher or to someone who will take care of the worm bin. Anyone with a garden will find the worm compost extremely valuable. As a last resort, if you cannot find anyone who wants good worm compost, you may add the worms to a compost pile or garden bed.

Using worm compost

You can use your compost immediately, or you can store it and use it during the gardening season as needed. The compost can be directly mixed with your potting soil or garden soil as a soil amendment, which helps make nutrients available to plants. A good recipe for potting soil uses $\frac{1}{4}$ worm castings for nutrients, $\frac{1}{4}$ peat moss for holding moisture, $\frac{1}{4}$ perlite for aeration, and $\frac{1}{4}$ sand or garden soil for body. The compost can also be used as a top dressing for your indoor or outdoor plants.

You can also make "compost tea" with your compost. Simply add 1-2" of compost to your water can or rain barrel. Allow compost and water to "steep" for a day, mixing occasionally. Then water plants as you normally would. The resulting "tea" helps make nutrients already in the soil available to plants.

Health Concerns

Health concerns relating to compost are dependent on the individual and on the material being composted. Dog and cat manures can contain harmful pathogens and should be avoided. Few human pathogenic organisms are found in vegetative wastes or farm animal manures. Normal sanitary measures (i.e., washing hands before touching food, eyes, etc.) are important.

References:

Appelhof, Mary. *Worms Eat My Garbage*, Kalamazoo, MI: Flower Press, 1997. 161 p
Nancarrow, Loren and J.H. Taylor. *The Worm Book*, Berkeley, CA: Ten Speed Press, 1998. 150p

Websites:

<http://www.wormwoman.com/acatalog/index.html>

<http://www.cityfarmer.org/wormcomp61.html>

My favorite place to order worms

<http://www.thewormdude.com/>

www.vermitechnology.com another good place to order worms