

Worms Eat Our Garbage!

And they could eat yours too!



Worm Composting

Worm composting (or vermicomposting) is a fun way to compost in your own home. The system begins by depositing food waste in your worm bin. The worms turn the food waste into a nutrient rich compost. You can use the compost to improve soil quality anywhere in your yard. If you compost your food waste with worms, you help the environment by recycling kitchen food waste, saving energy, and reducing waste disposal costs.

Building a Worm Composting Bin



- ◆ Use almost any 10 to 18 gallon, shallow, opaque container with a secure lid for the bin.
- ◆ Drill 20-25 1/8" holes, evenly spaced in the bottom of container. You will need another container, lid, or sheet of plastic to catch any leachate that may drain through the holes in the bottom of the bin.
- ◆ Drill 4-5 1" holes on the top and 2 1" holes on each side (the long side). Put vents in the holes. The vents should be one inch diameter metal or plastic "ventilating louvers" (found at most hardware stores). These provide aeration and keep the worms in the bin.

Bedding



Initially, you will want to use about 3 pounds of shredded newspaper per cubic foot volume of the worm bin.

Once you have the newspaper shredded, add water; bedding should be damp but not soggy or dripping.

Once bedding is moistened, dump it into the worm bin and distribute it evenly. You will need to add one or two handfuls of soil from your yard (not fertile potting soil) to introduce bacteria and other natural decomposers that will help break down the food waste in your worm bin.

Now you're ready to add **worms!**

Types of Worm Bedding:

- ◆ moistened, shredded newspaper
- ◆ partially decayed leaves
- ◆ wood chips
- ◆ composted animal manures
- ◆ peat moss

How Do I Harvest Worm Compost?



Every 4-6 months, dump the contents of bin on large piece of plastic or newspaper and shape the pile of compost/castings into several cone shapes.

Place a bright light over piles which causes worm to burrow down into castings. Remove the castings on the top of the piles, making sure not to remove worms or lemon-shaped egg capsules.

Repeat until almost all of the castings are removed and the worms are found in a pile.

Add compost to your lawn or garden as a rich, slow-release fertilizer. Fertilize houseplants by mixing about two teaspoons of castings with water and add weekly to your houseplants.



Redworm egg capsules

Much of the information in this hand-out is adapted from Mary Appelhof's *Worms Eat My Garbage* book. For more information go to:

The Worms

Most of the worms that you could dig up from your garden would not be suitable for vermicomposting. The most effective composting worms are redworms (species *Eisenia fetida*), commonly referred to as “red wigglers” or “red worms”.

Start with about a pound of worms (or 1,000 worms). Ideally you will maintain a worm to garbage input ratio of 2:1: use one pound of worms for every half pound of garbage you deposit daily. A family of four will typically start out with two pounds of worms in their worm bin.

Worms can reproduce every 7-10 days. The eggs hatch in about 3 weeks. After several months, you may have twice as many worms as what you originally started with. Over-population will not be a problem as the worms will reproduce in response to the food and space available to them in your worm bin. If you feel you have too many, share some with your friends and neighbors.



Other Worm Bin Inhabitants



Some other beneficial soil organisms help break down food waste and should be left in the worm bin include: enchytraeids (small white worms), springtails, sowbugs and pill bugs, and millipedes.

Detrimental organisms that should be removed include: centipedes, mites (in large numbers) and fruit flies.



The salad green seedlings in the left tray were planted without worm compost, the middle tray with a 11% concentration, and the right tray with a 21% concentration of worm compost. Look at the obvious results!

Feeding the Worms



Worms like food that is easily digestible. Worms have no teeth, so the smaller the pieces, the faster the worms can digest them. Make sure to cover the newly deposited waste with an inch or two of bedding. Do not overload the system. This could result in anaerobic conditions, causing foul odors. If you do overload the worm bin with more food than the worms can eat in a reasonable amount of time, you will want to aerate the bin by turning the material and adding more bedding.

Good Items

- ◆ Most fruit and vegetable scraps
- ◆ Leftover pasta and rice
- ◆ Old bread or cereal
- ◆ Coffee grounds and filters
- ◆ Tea bags
- ◆ Egg shells

Bad Items

- ◆ Meat or fish
- ◆ Bones
- ◆ Dairy products
- ◆ Oil, grease or fats
- ◆ Dressings or sauces
- ◆ Excessive citrus fruit/rinds
- ◆ Pet waste

Common Problems

- ◆ **Incorrect temperature**—Redworms feed most rapidly and convert waste best at temperatures between 50-77° F. While they tolerate wide ranges of temperatures, below freezing temperatures will likely kill them. Similarly, bedding temperatures above 86° F could be harmful to the worms. For this reason, keep your bin in a basement, underneath the kitchen sink, or other location where temperatures remain more or less constant.
- ◆ **Moisture**—Worms “breathe” through their skin, which must be moist for the exchange of air to take place. Too much water can reduce available oxygen and cause worms to drown. To get rid of extra water add dry bedding, draw off with a turkey baster, pour off, drain, or soak up excess water with peat moss.
- ◆ **Acidity**—Slightly acidic conditions are best for redworms. A wide range of pH 5 to pH 9 is suitable for redworms (a pH reading of 7 is considered neutral). A worm bin may become too acidic if you introduce too many citrus fruits or vinegar to the bin. If a worm bin becomes too acidic you will likely start to see worms trying to escape from the bin.
- ◆ **Ventilation**—Worms use oxygen in their bodily processes, producing carbon dioxide, just as we do. It is important that you allow air to circulate around your container as a structural unit. Wrapping it in a plastic bag, for example, might be tidy, but the worms will quickly smother.

