

Introduction to Vermicomposting

About 8-10 percent of the total waste stream in Cuyahoga County is composed of food scraps. For individual businesses such as restaurants, food scraps can represent as much as 50% of their garbage. Vermicomposting (composting with worms) has been successfully implemented by a variety of businesses and facilities around the country, including hotels, restaurants, grocery wholesalers and retailers, and recreational facilities. Vermicomposting is also efficient way to compost food scraps from your home.

How Do I Compost With Worms?

You will need: a worm bin, bedding for the worms, red worms, and scraps.

The Bin

A worm bin is a sturdy box that can be made from materials like a packing crate, a pallet, or plywood and two-by-fours. Concrete blocks can be used to build a more permanent structure. Sturdy weather resistant lids are needed. Worms need to breathe; therefore, the active composting layers should be no more than one foot deep. Drill 1/4-1/2 inch holes in the bottom of your bin for drainage. If intensively managed, a worm bin can have about one square foot of surface area for each 2-3 pounds of food scraps added per week. The number and size of worm bins needed will depend on the amount of food scraps generated.

The Bedding

Bedding for worm bins provides the worms with a nest to live and work. Bedding also holds moisture and serves as a place to bury the food scraps. Composting food scraps without bedding can produce bad odors and a slimy mess. Common bedding materials include shredded newspaper or corrugated cardboard, peat moss, coarse sawdust, or fallen leaves. Moisten bedding materials by immersing in water for several minutes before adding to the worm bin. When the bedding is thoroughly wet, remove from the water; wring out excess water. Fill the bin to the top with the loose bedding. Pull apart any compacted paper strips before adding to the bin so the worms have room to roam.

The Worms

Red worms, also known as "red wigglers" or "manure worms", are the composting champions! Red worms are not the same as earthworms, or night crawlers, that live in soil. Use about two pounds of worms for every pound of food scraps generated per day. A starter batch of worms can be taken from an existing worm bin or can be purchased through stores that sell fish bait.

Feeding Your Worms

Red wigglers are vegetarians; **do** feed the worms:

vegetable scraps, grains, fruit rinds and peels, breads, coffee grounds, filters, and tea bags

Do not feed worms:

meat, fish, cheese, oils or oily foods, butter

These foods take too long to fully decompose and are most attractive to rats and other scavenging animals.

Feed the worms by burying food scraps in the bedding. Set up a regular collection system for the food scraps and bedding that you will need for the worms. You may need to add shredded paper for bedding or otherwise adjust your ratio of food scraps. Covering food scraps with a few inches of bedding worm castings, or a sheet of plastic, discourages flies and odors.

Building Your Worm Bin

Follow these instructions to build a **Worm Composting Bin**:

Materials:

- 1- 1/2" treated sheet of plywood
- 1- 12 foot 2x4
- 1- 16 foot 2x4
- 2 lbs. 6d galvanized nails
- 1/2 lb. 16d galvanized nails
- 2 galvanized door hinges

Tools:

Tape measure, skill saw or rip hand saw, hammer, saw horses, long straight edge or chalk snap line, screwdriver, drill with 1/2" bit.
Use eye and ear protection.

Measure and cut plywood as indicated in drawing above. Cut the 12 foot 2x4 into five pieces: two 39", two 23", and one 20" long. Nail the 2x4s together on edge with two 16d nails at each joint, as illustrated in the Base Frame diagram. Nail the plywood base piece onto the 2x4 frame.

Cut four 1 foot length out of the 16 foot 2x4. Take each plywood side piece and place a one foot 2x4 under each of its end so that the 2x5 is flush with the top sides of the plywood, and nail the boards into place. Nail the side pieces onto the base frame. To complete the box, nail the ends onto the base and sides. To reinforce the box, make sure there is a nail staggered at least every 3 inches wherever plywood and 2/4 meet. Drill twelve 1/2" holes through the bottom of the box for drainage.

To build the lid, take the remaining 12 foot 2x4 and cut it into two 45" pieces and two 20" pieces and lay them flat, short pieces on the inside, as indicated in diagram above, so that the plywood top is inset from the edges of the 2x4 by 1 1/2" all the way around the perimeter. Nail the plywood onto the 2x4 securely. Place the hinges on the backside of the box at both ends on the 2x4s and on the under side of the 2x4 lid frame, so that the lid will stand upright when opened.

This system is designed for composting vegetable food wastes using red worms. Food wastes and worms are "bedded" in shredded and moistened newspaper, cardboard, peat, or brown leaves. The worms turn both food wastes and bedding into a high-quality compost suitable for use on house plants, seedlings, or general garden use.

To maintain this system, simply rotate burial of food wastes throughout the bin. Every 3-6 months, compost should be moved to one side of the bin and new bedding added to the empty half. At this time, bury waste in the new bedding only. Within one month, worms will populate the new bedding; finished compost may be harvested, and the rest of the bin can be rebedded. During the winter, worm bins should be kept in a cool indoor space, such as a basement or warm garage, to avoid freezing. A properly maintained worm bin is odorless. Bins may be placed in a shady outdoor space the remainder of the year. Flies may be controlled by placing a sheet of plastic over the bedding.

This bin can be built for about \$35.00, with new wood and hardware, or less using recycled materials. Worm bins can also be made from wooden boxes or other containers. Any worm bin must have drainage in the bottom and a tight fitting lid to keep moisture in and pests out. A starter batch of worms can be purchased at a small additional cost, or find some in an old compost pile! Check your nearest fishbait store.

This information sheet presents basic information to get you started. An excellent source of information on vermicomposting is Mary Appelhof's book *Worms Eat My Garbage*. Write for your copy to Flowerfield Enterprises, 10332 Shaver Road, Kalamazoo, MI 49002, or call (616) 327-0108. To purchase red worms, write Willingham Worm Farm, Route #2, Box 241, Butler, GA 31006 or call (912) 862-545. To purchase worms locally, call D.J. Variety & Tackle, 883-0032.

If you wish to establish a commercial vermicomposting operation, please contact your health department for details.