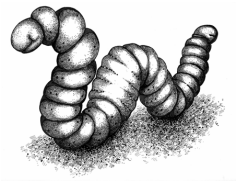
HOW TO VERMI-COMPOST
Let Worms Do The Work



Vermes is the Latin word for worm. Hence, vermi-composting uses worms (and other organisms) to convert food wastes into a nutrient rich soil conditioner that gardens, house plants, and lawns love.

Worm composting is an easy, convenient way to turn your food waste that's headed for the landfill into black gold. Anyone can set up a system to meet their needs, even apartment dwellers. Not only will you watch your food waste be transformed before your very eyes, you will also reduce the amount of innocent food waste being sentenced to years in a landfill. According to a 2007 Missouri Waste Characterization Study, food waste makes up the second largest portion of St. Louisan's trash by weight, at 16.7% (second only to paper at 38.2%).

WHAT WILL I NEED?

It's so easy, you need only a few things to get started:

1. A Worm Bin (make your own or buy one)
2. A Catch-All (to collect compost tea)
3. Red Worms (*Eisenia foetida* or *Lumbricus rubellus*)
4. Bedding (e.g., shredded newspaper, corrugated cardboard)
5. Food Waste

WORM BIN BASICS

Buy or Build a Bin: You can find any number of models for sale online, or at your local garden supply or hardware store. You can also make your own. For example, an opaque storage tub can become a worm bin by drilling small holes along the sides (for ventilation) and in the bottom (for drainage). Or, slap together a few pieces of untreated plywood and 2"x4" planks to make a box. Regardless of which bin you choose, always keep a lid on it to maintain a dark and moist environment. Be sure you place a catch-all tray beneath your worm bin to collect "compost tea" and any worms that wiggle their way out.

Bin Size: The bin should be no deeper than 12 inches. For every pound of food waste produced each week, you will need 1 square foot of surface area. For example, if your household produces 6 pounds of food waste per week, you will need a bin with 6 square feet of surface area. So, your bin dimensions should be 1 foot tall x 2 feet wide x 3 feet long.

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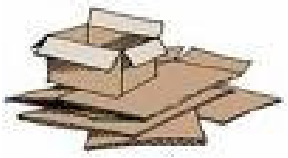
WORM BIN BASICS (continued)

Number of Worms: Worms can eat about half their body weight per day. So, for every pound of food waste you produce each day, you will need 2 pounds of worms. Note: Most worm retailers sell them by the pound; for reference, 1,000 worms weigh about 1 pound.

Type of Worms: A specific type of worm is needed in vermi-composting. Red worms or red wigglers are the common names of worms suited for the job. These worms can survive in a wide range of conditions and thrive on decomposing organic waste. The tan nightcrawlers you see when it rains are not the type of worms that work in a vermi-compost bin. You can order worms on-line, find a local retailer (e.g., bait shops), or ask a friend with a worm bin if you can have some of theirs. Worms reproduce very quickly, so if you acquire worms from a friend, their bin should recuperate quickly.

Note: Before building/buying your bin and worms, weigh your food waste for about 2 weeks to get an average weight of food waste you throw away and determine the size of bin and number of worms you will need.



PREPARING THE BEDDING

Now that you have your bin, you will need to prepare the bedding material before adding your worms. The most common material used for bedding is shredded newspaper. However, shredded cardboard will work as well. To prepare the bedding you will need to accumulate several pounds of dry bedding material. Shred the material by hand or machine into thin strips. Place the shreds into a large container and add water until it covers the bedding. Allow the bedding to absorb as much water as possible. Then, squeeze out any excess water so that it feels like a well-wrung washcloth. Place the wet bedding in the worm bin and fluff. The worm bin should be 2/3 filled with fluffed wet bedding. It is important that the bedding always be moist. If it begins to dry out, mist the bedding with water from a spray bottle.

PLACING THE BIN

Before you add your worms to the bin, be sure that you place the bin in an area where it will not be in direct sunlight, heavy rain, or below freezing temperatures. Choose your site wisely because once the bin is full of wet bedding, worms, and food waste, it will be very heavy. Most worm bins are kept in basements, garages, sheds, shaded balconies, kitchens, etc. Worms can survive in temperatures ranging from 40-80 degrees Fahrenheit, so it's a good idea to keep them someplace that

can accommodate those temperatures throughout the year. In the winter, you may need an insulated box to store the bin in, particularly if kept outside.

FEEDING TIME

Once you have a bin with bedding in a comfortable place for the vermi, you can add the worms and start feeding them. There is little rhyme or reason that accompanies feeding. Some people will feed their worms everyday. Others keep a small collection bin in their kitchen and empty it into the worm bin every few days. However often you choose to feed them is up to you.

1st Feeding	2nd Feeding	3rd Feeding	4th Feeding	5th Feeding
10th Feeding	9th Feeding	8th Feeding	7th Feeding	6th Feeding
11th Feeding	12th Feeding	13th Feeding	14th Feeding	15th Feeding

When you do decide to feed them, divide the bin into several imaginary sections, like the grid illustrated here. Each time you feed them, pull aside bedding to form a small hole, add the food waste, and cover it with bedding. At each feeding, bury waste in a new section of the grid, rotating around the bin. Keeping a chart of burial sites can be helpful.

WHAT CAN I COMPOST?

Worm Food	Worm Foe
Fruit Scraps	Meat
Vegetable Scraps	Dairy
Crushed Egg Shells	Oily Foods
Coffee Grounds	Woody Stems (e.g., apple and grape stems)
Tea Bags	Grass
Breads and Pastas	Pesticide Treated Foods

HARVESTING

After about 6 weeks, the bedding will be noticeably darker with worm castings. After about 2½ months, there will be some original bedding plus brown and earthy-looking worm castings. If you wait to harvest your

compost until all of the bedding has been converted to castings, you will most certainly kill a large portion of your worms.

HARVESTING (continued)

As the worms turn their food and bedding into compost they create a toxic environment for themselves (and they'll starve without food). So, it's a good idea to harvest your compost while there is still some bedding left. There are several techniques to harvest your compost, depending on your preferred method and bin type.

Vertical Migration – This type of harvesting requires two or more levels of bedding with a permeable layer between them (e.g., screen). When the compost on the lower level is ready for harvesting, prepare new bedding in the upper level and begin burying food waste in the upper level. The worms will leave the lower level in search of food in the upper level, leaving worm free compost behind.

Horizontal Migration – Similar to vertical migration, this method requires only one bin. Move finished compost over to one side of the bin, place new bedding in the space created, and bury food waste in the new bedding. The worms will gradually move over to the fresh bedding, leaving the finished compost to be harvested. After harvesting, fill the empty space with new damp bedding and continue to feed.

Cone Piles – If you like to get dirty, this is the method for you. Dump the bin's entire contents onto a large plastic sheet and make multiple small piles of compost. Since worms don't like bright light, they'll move to the bottom of the piles. Carefully remove the tops of each pile until all you have left is the worms.

TROUBLE SHOOTING

While a properly kept worm bin should smell only of earthy soil, an unbalanced worm bin can develop unpleasant odors and attract pests. However, with a little TLC you can nurture your worm bin back to health.

PROBLEM	CAUSE	SOLUTION
Unpleasant Odors	Too much food waste	Stop adding food until remaining food is broken down.
Unpleasant Odors	Inadequate drainage	Unblock any drainage holes or drill more if needed.
Unpleasant Odors	Acidic bedding	Reduce amount of citrus peels and other acidic foods.
Fruit Flies	Exposed food waste	Bury food and cover with bedding.

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Fruit Flies	Too much food waste	Stop adding food until remaining food is broken down.
Fruit Flies	Woody stems	Avoid putting apple and grape stems in the bin.