Composting with worms

It's simple. The worms are kept in a bin with shredded paper or other biodegradable bedding. You feed them food waste. They digest the waste and bedding then excrete nutrient-rich castings. After a few months, the castings combined with the well-decomposed bedding, become vermicompost -- one of the richest soil improvements around. It will do wonders for plants, flowers, fruit trees and garden vegetables. And, anglers will appreciate having a steady supply of worms on hand. If this bin sounds like too much work, click here and try building a worm castle in a jar. You can also learn more about how a worm digests this food waste.

To start vermicomposting, you'll need four things:

1. a bin for your worms
2. a supply of biodegradable bedding
3. a supply of food waste
4. and worms, of course.

Select the components that are easiest for you to find and maintain.

The bin

Wooden boxes, metal tubs and plastic basins work well as worm containers, provided they allow for good air circulation -- the secret to an odor-free bin. Consider the following information when choosing or making a bin:

- **Not Too Deep:** The worm container should be shallow, no more than 18 inches deep. Redworms feed near the surface, so there's no need for anything deeper. Bedding will mat down in a deeper bin, developing a smell if it starts to decompose anaerobically (without oxygen).

- **Size it Up:** To determine the size of bin you need, you'll need to calculate how much food waste your classroom or family creates in an average week. There are two ways to do this:

- **a. Calculate:** Weigh your kitchen scraps for a couple of weeks. Don't add scraps if there are special occasions with more food than usual. To size your worm bin, allow one square foot for each pound of scraps per week. Example: If your household creates an average of four pounds of food waste each week, a 2'x2' bin should be adequate.

  or

- **b. Estimate:** Size your bin by allowing two square feet of surface for each person in your classroom or household. For a family of three to six people, try a bin that's 2'x3'. Adjust the dimensions based on how often people eat out, can or freeze produce, or discard leftovers.

- **Room To Breathe:** Choose a bin that has the greatest surface area. Air will circulate better and you'll have more places to bury your waste.

- **Keep it Clean:** Scrub plastic and metal containers first with detergent and rinse with hot water before use. New wooden boxes should not be made of wood treated with preservatives. Do not use any container than once stored chemicals or pesticides.

- **Let it Drain:** Drill 1/4" drainage holes through the bottom of your bin. For plastic, drill 14-20 holes, 9-12 holes for a wooden container. For good air circulation, raise the bin up on bricks or wooden blocks, and place a tray or a sheet of plastic underneath to catch any liquid. If you put perforated pipes through the bin for better air circulation, you may not need drainage holes. Click here to get directions for building a wooden box.

- **Keep it Close & Not Too Hot:** Put your bin somewhere that's easy to get to, and where worms won't be subjected to temperature extremes. Worms like temperatures ranging from 55-77° F. Basements, heated garages or breezeways are usually good sites.

The bedding

Besides giving worms a place to work and rest, bedding helps hold moisture in your box and keeps your scraps under wraps. Use light, fluffy

biodegradable materials free from pesticides or chemicals. Try the following beddings in your bin.

- **Machine-shredded newsprint or computer paper:** Recycling centers and pet shops may carry this material, or ask at offices. Do not use glossy or colored paper.
- **Hand-shredded newsprint or computer paper:** Tear newspaper (without the color comics and glossy advertisements) into strips, the thinner the better. Thick strips mat down, dry out too fast and make it difficult to bury scraps.
- **Shredded cardboard:** A good bedding material that holds moisture well. Check your recycling center for sources.
- **Leaves:** Although leaves are a worm's natural habitat, they're not the best bedding for worm bins. Leaves can mat down, may have insects, or contain road salts and chemicals. If you do use leaves, gather them from a low-traffic area.
- Enhance your bedding with the following additives and your worms will work double-time:
    - **Peat moss** absorbs excess moisture and breaks up heavy bedding. Try one-third to one-half peat moss in your bin.
    - **Sterilized soil** or **sand** contribute nutrients and grit to help worms digest food waste. Toss in a handful or two when preparing fresh bedding.
    - **Crushed eggshells** or **ground limestone** add grit and calcium; periodically sprinkle small amounts in the bin.

The worms

Now comes the fun part -- choosing your worms. No garden-variety worms for you. In fact, you'll want to avoid nightcrawlers and other garden worms, they don't survive well in a worm bin.

There are approximately 3,000 species of earth worms named and known to science.

The best worms for vermicomposting are redworms. The redworm (*Eisenia foetida* or *Lumbricus rubellus*) also known as: red wiggler, manure worm, red hybrid, striped worm, fish worm. Whatever it's called, the redworm is the

worm capable of reproducing quickly in captivity, while chomping copious quantities of food waste.

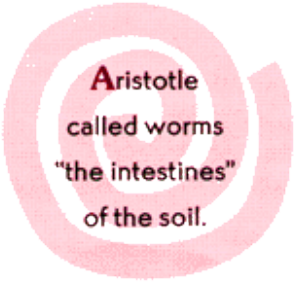
How many worms should you start with? Use the calculation you did for the average amount of food scraps your classroom or household produces per day. Use roughly 2 pounds of worms to 1 pound of daily scraps. You can buy worms by the pound (includes about 1,000 worms). If your classroom/household produces a half-pound of scraps daily, a one-pound package of worms should be enough. Or, guesstimate: use one pound of worms for a 2'x2' bin; two pounds of worms for a 2'x3' bin.

If you want to start small, reduce the amount of food waste in the bin until the population increases. You won't have to wait long: Breeding worms can lay two or three cocoons per week that will hatch in 21 days, with each cocoon hatching two or three worms that will mature in 60 to 90 days. A worm population eventually stabilizes at levels that can be supported by the food scraps added, and by the availability of room to move and breed.

You can buy worms from growers, bait shops, some garden centers, or through the mail. Contact the UW Extension for a listing of worm growers. Prices will vary but expect to pay about $12 to $18 per pound (1998 prices).

The Menu Special Today is Food Waste

Worms are not picky eaters, they will munch on just about anything, in quantities that would shame a sumo wrestler. That being said, there are still a few things you should know about what to feed these consumers.:



- **Peels and other vegetable waste:** Worms will devour most any fruit or vegetable, with gusto. Rinse off banana peels because they readily attract fruit flies. (Some vermicomposters report that their worms do have preferences.)
- **Coffee grounds and tea leaves:** You can even toss in coffee filters and tea bags -- the worms will chew up the porous paper in no time, but take off the tea bag tag first and the little metal.
- **Plate scraps:** Mashed rutabaga, succotash, and the spaghetti, or gravies -- all of it can go in the bin.

- **Egg shells:** Crush with a rolling pin before adding to the bin for smoother compost later.

- **Spoiled food:** Go crazy, worms eat anything that's put in front of them, but stay away from dairy products. So include leftovers leftover a little too long, and other "aged" foods. If you want to add something that's really rotten, bury small portions deep in the bedding and cover well to discourage fruit flies.

- **Meat and bones:** It is best to stay away from these two because meat scraps are the first to smell rotten. Bones may attract neighborhood dogs that can dig in your garden.

- **NOT on the menu, ever:** Dog or cat feces, used kitty litter, or non-biodegradable items such as rubber bands, aluminum foil, bottle caps or glass.

Remember, you're in charge of the menu and the portion size. Be mindful of what your worms eat or ignore, and you'll soon know what you can put in the bin and what you should avoid.

Once you have these four items, you're ready become a "vermiculturist".