



Troubleshooting

Too wet

- Try adding more dry bedding.
- Open lid to dry bedding (as bedding dries, mix with garden claw).
- Not enough drainage holes?

Fruit flies

- Be sure to bury wastes deep and keep a thick layer of bedding on top
- Place a whole sheet of damp newspaper on top of all bedding.

Other insects

- Worm bins have many forms of life other than worms! Other insects/organisms in your bins are OK, & are beneficial to the vermicomposting process

Odor

- Make sure you haven't added too much food.
- Reduce moisture (see "Too Wet")

Too dry

- Add moisture (remember....moist as a damp sponge)

Worm migration

- This happens every now and then. (They don't call'em worms for nothing!)

Resources:

Worms Eat My Garbage, Mary Applehoff.
Flower Press, Kalamazoo, Mi. 1982

<http://arts.usask.ca/~dbp068>
<http://www.winternet.com/~rseymour/redworms.htm>

Island County WSU Waste Warriors
679-7391, 321-5111, ext. 391

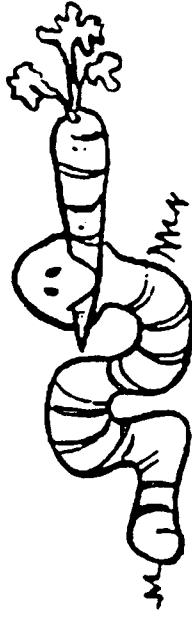
- Red worms often available at no charge
- Free consultation and troubleshooting
- Worm composting presentations

COOPERATIVE EXTENSION

Washington State University

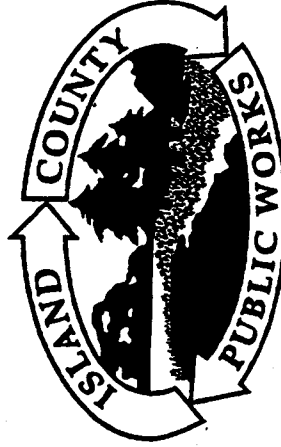
Island County

Worm Composting Basics



WSU

WASTE WARRIORS



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A Quick Excursion into Vermicomposting*

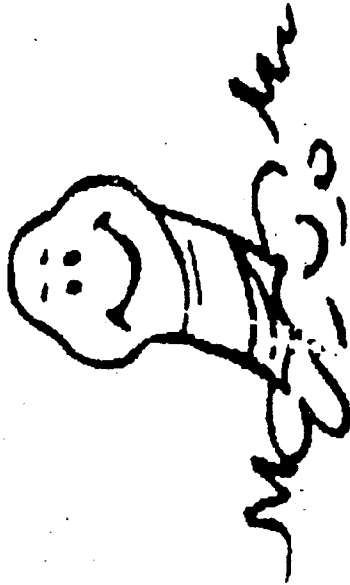
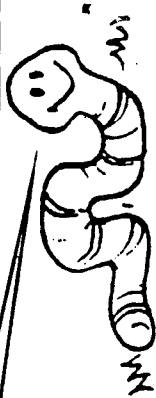
Worms

The Red Worm (*Eisenia fetida*) is the worm of choice for your worm bin. Other garden worms, such as earthworms and nightcrawlers eat dirt, not kitchen scraps and their preferred habitat is deeper in the earth where the temperature is more stable. You will need a large handful or two of worms to get started. You can find red worms under manure piles, fallen leaves, or rotten logs or call WSU Waste Warriors.

The Worm Bin

A wood bin is ideal, but you can use bins made of plastic, metal, or other materials. Plans for building a wooden bin are available from WSU Waste Warriors. Worm bins should be from 12-18 inches deep and have a tight fitting lid. Estimate or weigh the amount of garbage generated by your household in a week. A worm bin should have one square foot of surface area for each pound of garbage per week. For example, 5 to 6 pounds of waste per week will require six square feet of surface area (2' x 3' x 1'). Enough surface area is one of the secrets of an odor-free bin because more oxygen is available due to better aeration and more locations to bury waste. Drill holes in the bottom of your bin for drainage. If the bin is plastic, drill additional holes on the sides for ventilation, since plastic will retain more moisture. Worms do best when environment temperatures are between 55 - 77 degrees F.

*VERMICULTURE IS A PROCESS THAT USES ME TO BREAKDOWN GARBAGE. COMPOSTING USES MICROBES AND HEAT TO BREAKDOWN GARDEN WASTE (GRASS, LEAVES, ETC.) INTO COMPOST.



A very basic procedure for getting started on your red worm composting

Bedding

Bedding provides a healthy habitat for your worms. The bedding is also a food source and an odor barrier. Brown leaves, straw, or coffee chafe are ideal. Shredded newspaper, cardboard, or computer paper will also work and are readily available. A mixture of two or three of the above ingredients works well. Fill your bin 1/3 to 1/2 full (more is better than less) of moist, but not dripping, bedding. Moisten bedding by submerging or soaking in water, then draining out excess moisture. Worms breathe through their skin which must be moist for the exchange of gases to take place. Worm bedding should be no wetter than a rung out sponge. Too much moisture will drown your worms, or worse, a malodorous aura will encompass your bin (Phew!). Add a little soil or dry corn meal to provide grit for the worms, aiding in food digestion, and you're ready to go! Replenish bedding when necessary.

Worm cuisine

Worms like fruits and vegetables. Squash, pumpkins, and watermelon rinds are favorites. Salad, pasta, coffee grounds, along with paper filters, egg shells, and bread products are also eaten by worms. If pieces are small, worms can break down the food faster. Bury food scraps completely under the bedding in a different spot each time. Avoid meat and fish, spiced foods, or milk products which attract rodents and cause odor.

Harvesting

After three to six months, it's time to harvest the compost. There are two ways to accomplish this.

1. Move all composted bedding to one side of the bin, then add fresh bedding to the other side. Place food for worms only in the new bedding. The worms will eventually migrate to the new bedding. Remove composted bedding. This method is slow (how fast can a worm move?), and somewhat inefficient as some worms won't migrate to the new bedding.
2. Remove or open top from the worm bin or dump contents of bin onto a tarp to expose composted bedding to light. As the worms dive towards darkness, scrape off the layer that the worms vacate. When you start getting worms as removing a layer of bedding, stop and let the worms retreat to the dark (about an hour or so), then take off the next layer....and so on until you have a very concentrated lump of worms. At this point you can add new bedding and food and off you go. You could also divide them and give some away to your friends. As you remove composted food or remove any large uncomposted food or bedding and save to add to the new bedding.

WORM FACTS AND FIGURES

- Worms are most active at temperatures between 55 and 77 degrees.
- Temperatures above 85 degrees and below freezing are harmful to worms.
- A worm's body has a moisture content of about 75%.
- Worms breathe oxygen through their skin.
- Worms can live as long as four or five years.
- Worm castings are toxic to worms.
- Worms need fresh bedding every four to six months.
- Worm castings/vermicompost can be harvested after about four months.
- It will take worms about one month to migrate into fresh bedding.
- The species name of composting worms is *Eisenia Foetida*.
- Nightcrawlers cannot live in a worm bin. They need dirt and cool temperatures.
- Worms can reproduce when they are from four to six weeks old.
- One worm can produce two or three cocoons a week.
- Each cocoon produces from two to five baby worms.
- Worm populations are controlled by food, space and toxicity of the environment (castings).
- One adult worm eats about one half its weight in garbage every day.
- Recommended worm:garbage ratio is 2:1 (Two pounds of worms for one pound of garbage.)
- There are about 2,000 adult worms in a pound.
- Worm bins should have about one square foot of surface area for every pound of garbage produced in a week (Seven pounds a week requires a surface area of about seven square feet.)
- Worm castings are five times richer in nitrogen, seven times richer in phosphate and eleven times richer in potash than regular soil.

