UNIVERSITY OF MARYLAND EXTENSION
Solutions in your community

HOME AND GARDEN INFORMATION CENTER
University of Maryland Extension

HG 40
2010

Indoor Redworm Composting

INTRODUCTION
Vermicomposting (from the Latin word *vermis* meaning worm) is an efficient and enjoyable method for turning kitchen food scraps into a rich compost. Composting with redworms is becoming popular because it is easy and inexpensive to get started, can be done indoors in a small place and is odorless. Perhaps most important, it can be a fascinating and educational project for children. This fact sheet is designed to help you start your own plastic worm bin that is 21" long, x 15" wide x 5 - 8 inches deep (approximately 2.2 sq. ft.).

GETTING STARTED
Your home vermicomposting system will consist of a suitable container, moist bedding, redworms and food scraps. Over a period of months the food scraps and bedding will be digested by the redworms. The end product, vermicompost, contains worm castings (manure), decomposed bedding and lots of worms and tiny organisms both dead and alive. It is dark, crumbly and safe to handle and makes an excellent soil conditioner and rich source of plant nutrients.

RED WORMS: THE RIGHT WORM
Redworms, known also as red wigglers or manure worms, are surface feeders of dead plants and animals, commonly found in moist leaf litter and manure piles. They are well-suited to vermicomposting because they thrive in confinement and will tolerate a wide range of conditions. Common garden worms and night crawlers, on the other hand, will quickly die off in a worm bin. Conversely, redworms do poorly in average garden soil.

The two most commonly used redworm species are *Eisenia foetida* and *Lumbricus rubellus*. You can purchase them for $20 - $30 per pound (see "Sources"). You will need a minimum of one pound of redworms for your small bin (500 - 1,000 worms). The redworms are 2"-4" in length and capable of consuming their own weight each day in raw organic matter. (One pound of worms will consume one pound of raw matter. Measure the average amount of raw matter waste your family generates per day, then estimate the number of worms you will need.) Worms live for about one year and reproduce quickly. Light colored cocoons are produced continuously which yield 2-3 baby worms in three weeks time. Redworms breathe through their skin and must be kept moist at all times.

A BIN FOR ALL THEIR KIN
Plastic storage bins with lids are highly recommended for indoor use. They are inexpensive, durable and lightweight. Your 2.2 sq.ft. bin can handle 2-3 lbs. of kitchen scraps each week. Avoid deep containers (over 15"); they are heavy to move and the bedding becomes compacted making it difficult for the redworms to forage for food.

Drill a series of 1/4 - 1/2 inch holes in the bottom and lid of your container to encourage good air circulation through the bin. (Rigid plastic sometimes cracks when drilled. Use a sharp drill bit and drill slowly). Set your bin on top of bricks or scrap pieces of wood to allow air to enter the bottom of the bin. Place bin on a plastic or metal tray to catch leachate. Add this nutrient-rich leachate to water when watering houseplants.

BEDDING: MAKING THEIR HOUSE A HOME
Bedding provides your redworms with the cool, moist environment they need to thrive. Your redworms will tunnel through and digest the bedding along with the food scraps to produce vermicompost. **They will not crawl out of their bin unless the bin becomes too dry or too wet.** Hand-shredded newspaper (color pages included) or corrugated cardboard, ripped into thin strips, make convenient bedding materials. Soak 4 lbs. of bedding in a bucket with 1 and 1/2 gallons of water for a few minutes; drain off the excess water and place the bedding loosely in your bin.

LOCATION, LOCATION, LOCATION
When choosing a proper location for your worm bin, consider convenience and aesthetics, as well as the environmental needs of your redworms. They are most efficient at consuming organic matter and reproducing when they are kept moist and well ventilated in a temperature range of 55º-75ºF. Redworms are sensitive to light so keep your bin

covered and out of direct sunlight. Basements, cool garages and kitchens are all good locations. Your redworms will die at freezing temperatures.

FEEDING: THESE ARE A FEW OF OUR FAVORITE THINGS

Redworms require a steady supply of food scraps to grow and multiply. Use a plastic container in your kitchen to collect food scraps. Feed your worms 2-3 times each week by burying appropriate food scraps directly under the bedding in different locations. The smaller the food scraps, the quicker they will be digested by your redworms. Use the chart below in deciding what to put into your bin.

ADD THESE:	**BUT NOT THESE:**
Coffee filters/grounds	Meat/fat/bones
Tea bags/leaves	Grease/oils
Fruits and vegetables[1]	Dairy products
Egg shells (crushed)	Pet waste/litter
Cereal/bread	Plastic wrap/tin foil
	Chemicals, glass, metal

[1] Do not add large amounts of raw onion, garlic, or citrus peels.

TROUBLE SHOOTING

- Fruit flies – bury food scraps beneath the bedding to avoid fruit fly problems. Try flypaper on the lid underside or a sticky yellow card placed next to the bin to attract fruit flies.
- Odors may arise if too many food scraps are added at one time. Discard rotting food; avoid adding scraps for a week.
- Too wet – bedding becomes compacted and smelly; air is unable to flow through bin. Check drainage holes, stir contents to increase airflow and add fresh, dry bedding.

HARVESTING AND USING WORM COMPOST

It will take your worms 6-8 weeks to produce a noticeable amount of vermicompost. The castings appear as small, dark, clumps that easily break apart. There are several methods for removing the finished compost:

1. Every 3-4 months, stop feeding for a few weeks and rake the compost to one side of the bin. Add fresh bedding to the other side; only add food scraps to the new bedding. Within a few months your worms will move into the new bedding allowing you to harvest the finished compost. Refill the empty end of the bin with fresh bedding and bury more food scraps.
2. Every 3-4 months dump your entire bin contents into several piles on a sheet of plastic in a brightly lit room. The worms will dive to the pile bottom. Remove finished compost from the tops and sides of the piles.
3. Every 3-4 months remove 2/3 of the bin contents for use in the garden. Add new bedding and slowly build up your worm population.
4. Stop feeding after 4-6 months and allow the worms to completely digest all of the bedding and food scraps. The result is a fine, homogeneous compost (pure worm castings) with very few redworms.

You can add vermicompost to seedbeds or planting holes or use it as a top dressing during the growing season for your favorite plants. Or try adding the vermicompost to your potting mix for houseplants or outdoor container plants (1/4 by volume). Pure worm castings may have a high soluble salt content; use them sparingly and avoid direct contact with the roots of seedlings.

References:

NRAES-43. Composting to Reduce the Waste Stream, Northeast Regional Agricultural Extension Service, 152 Riley-Robb Hall, Cooperative Extension, Ithaca, NY 14853. 44 pp.

Appelhof, M. 1997. Worms Eat My Garbage. Flower Press, Kalamazoo, MI. 162 pp. (www.wormwoman.com)

Kalman, B. and J. Schaub. 1992. Squirmy Wormy Composters. Crabtree Pub.Co. 32 pp.

Edible City Resource Center. Worm Digest (quarterly). P.O. Box 544, Eugene, OR 97440-0998

Sources for Redworms:

Flowerfield Enterprisees – 10332 Shaver Road, Kalamazoo, MI 49002. (269) 327-0108. (www.wormwoman.com)

Gardeners Supply Co. – 128 Intervale Road, Burlington, VT 05401. (888) 833-1412. (www.gardeners.com)

Vermico, Peter Bogdanov, 4425 Galice Road, Merlin, OR 97532. (541) 476-9626 (www.vermico.com)

Willingham Worm Farm – Route 1, Box 241, Butler, GA 31006. (912) 862-5545, e-mail: wworm@gnat.net
Checks only, no credit cards

Worm World – www.wormwrld.com

Authors: Jon Traunfeld, University of Maryland Extension Specialist, Home and Garden Information Center, and Rondalyn Reeser, University of Maryland Central Maryland Research and Education Center

This publication is a series of publications of the University of Maryland Extension and The Home and Garden Information Center. For more information on related publications and programs, http://extension.umd.edu/hgic. Please visit http://extension.umd.edu/ to find out more about Extension programs in Maryland.