Gardening Basics

Composting with Worms

Vermicomposting is the process of converting organic waste into nutrient-rich humus called vermicast or worm castings. These materials have been shown to contain reduced levels of contaminants and a higher saturation of nutrients than organic materials before vermicomposting. Worm castings may contain 5 times more nitrogen and 7 times more phosphorus than ordinary garden soil. Potassium can be 11 times higher than your basic soil. These castings are also rich in humic acid and improve the structure of the soil.

Materials Needed

Containers	Worms
Bedding	Food Scraps

Containers

Worm containers can be designed and put together or purchased. They are normally plastic or wood and come in a variety of sizes. An inexpensive plastic storage container would make a good worm bin. Whatever container is used, it should have holes drilled in the top, sides, and bottom for ventilation and drainage. Detailed information on worm bin construction can be found online - see **Resources** section for instructions from the EPA, the North Carolina State Extension, and the University of Maine.

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Bedding

Worms need not only food but a place to live within the container. Bedding materials provide both. The bedding must be able to retain both moisture and air while providing a place for the worms to live. Some suitable sources of bedding are:

- Shredded paper
- Shredded cardboard
- Coconut coir
- Leaves
- Peat moss (Peat moss is considered by some to be an unsustainable resource.)

Worms

The worms most often used in vermicomposting are called red wigglers (*Eisenia foetida or fetida*) and can be ordered online or purchased from local sources. For a small bin, it is not unusual to begin with 500-1000 worms. A pound (about 1,000) of red wigglers can consume half a pound of kitchen waste per day.

Food

The kitchen waste fed to worms can come from a variety of sources, including all vegetable and fruit waste, coffee grounds (with filter), and tea bags. Like chickens, worms have a gizzard, so fine grit should be added to help the worms digest food. Cornmeal, coffee grounds, garden soil, and finely crushed eggshells are commonly used for this purpose.

Initial Set-Up

The first step is to add bedding to the chosen container. The amount of bedding depends on the size of the container. The bin should be 2/3 filled with "fluffed" prepared bedding. To prepare the bedding, place the dry, shredded bedding in a large container and add water until it covers the bedding. Allow the bedding to absorb as much water as possible before putting it in the worm bin. The overall moisture level of the bedding placed in the bin should be like a “wrung-out sponge”. Next, add the worms. The general recommendation is 1 pound per square foot. Add the food waste and cover the worms and food with bedding.

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Harvesting the Compost

After six weeks, the bedding will be noticeably darker with worm castings. After two and a half months, there will still be some of the original bedding visible in the bin, plus brown and earthy-looking worm castings. Although food waste is being added regularly, the bedding volume will gradually decrease and should be replenished. There are several methods used to harvest compost. One of the simpler ones involves moving the finished compost over to one side of the bin, placing new bedding in the space created, and placing food waste in the new bedding. The worms will gradually move over to the side with the fresh bedding and food waste, and the finished compost can be harvested from the other side.

Using the Compost

For potted plants, add a thin layer to the top of the potting soil. The compost can be added directly into your soil mix when repotting. In the garden, simply work it into the ground around the base of each plant. The compost is very mild, so there is no worry about accidental burning or over-fertilizing.

Information Resources and Supplies

Besides the resources listed below, individuals interested in the topic of worm composting (a.k.a. vermiculture or vermicomposting) are encouraged to investigate their own favorites. The Internet and your local public library are two good places to start.

Appelhof, Mary. Worms Eat My Garbage. Flowerfield Enterprises, LLC. Kalamazoo, Michigan, 1997.

Appelhof, Mary, Mary Frances Fenton, & Barbara Loss Harris. Worms Eat Our Garbage: Classroom Activities for a Better Environment. Flower Press, Kalamazoo, Michigan, 1993.

“Composting with Worms Lesson Plan for Preschoolers”, Indiana Department of Environmental Management, 2020, (accessed 10 June 2025), https://www.in.gov/idem/iee/classroom-lesson-plans-and-resources/composting-with-worms-lesson-plan-for-preschoolers/

French, Vivian. Yucky Worms. Candlewick Press, Somerville, Massachusetts, 2009.

Glaser, Linda. Wonderful Worms. Millbrook Press, Minneapolis, 1992.

Himmelman, John. An Earthworm’s Life. Children’s Press, New York, 2000.

“How to Create and Maintain an Indoor Worm Composting Bin”, United States Environmental Protection Agency, 26 December 2024, (accessed 10 June 2025), https://www.epa.gov/recycle/how-create-and-maintain-indoor-worm-composting-bin

Ingham, Elaine R, Andrew R. Moldenke, & Clive A. Edwards. Soil Biology Primer. Soil and Water Conservation Society, Ankeny, Iowa. 2000.

Koontz, Robin. Composting: Nature’s Recyclers. Picture Window Books, Minneapolis, 2007.

Llewellyn, Claire & Barrie Watts. Earthworms. Franklin Watts, New York, 2000.

Loewen, Nancy. Garden Wigglers: Earthworms in Your Backyard. Picture Window Books, Minneapolis, 2006.

Nancarrow, Loren & Janet Hogan Taylor. The Worm Book: The Complete Guide to Worms in Your Garden. Ten Speed Press. Berkeley, 1998.

Piccirillo, Pauly. The Worm Farming Revolution: A Return to the Founding Principles of Successful Gardening. Outskirts Press. Denver, 2016.

Randall, Frank. The Worm Book for Beginners: A Vermiculture Starter or How to Be A Backyard Worm Farmer And Make The Best Natural Compost From Worms. Backyard Farm Books, 2012.

Sherman, Rhonda, "Vermicomposting for Households", NC State Extension, (accessed 10 June 2025), https://composting.ces.ncsu.edu/vermicomposting-2/vermicomposting-for-households/

Silverstein, Alvin & Virginia. Life in a Bucket of Soil. Dover Publications, Mineola, New York, 1972.

"Worm Composting", University of Maine, (accessed 10 June 2025), https://www.youtube.com/watch?v=jJ3QIZMta98

Vincent, Wendy. The Complete Guide to Working with Worms. Atlantic Publishing Group, Inc. Ocala, Florida. 2012.

Wiese, Sandra. The Best Place for Garbage: The Essential Guide to Recycling with Composting Worms. WiR Farm, Bennett, Co. 2011.

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In your inquiry, please mention that you are addressing Pat and Don Edwards.