



Farm Day 2013

Marin Master Gardener

Teacher Packet

VERMICOMPOSTING: WORMS AT WORK

Teaching Objective:

To understand what vermicomposting is, how worms do their work, why worms are important in our gardens, and to learn about building a worm bin.

Master Gardener Farm Day Project

Students will explore vermicompost and watch worms at work. Examples of worm bins will be available as well as demonstrations on how to build one.



What is Vermicomposting?

Vermicomposting is the use of worms as a composting method to produce vermicompost. Vermiculture is worm farming for the production of worms. Vermicompost, or castings, is worm manure (POOP)! Worm castings are considered by many in horticulture to be the very best soil amendment available. Worm castings provide nutrients in a form readily available to plants. The biology of the worm's gut facilitates the growth of fungus and bacteria that are beneficial to plant growth.

Wormly Workers

Red wigglers or *Lumbricus rubellus* are the type of worms generally used for vermicompost . They can eat more than their own weight each day - **a pound of worms can eat 30 pounds of food in one month!** They live just under the surface and ingest soil along with organic matter, like kitchen scraps, and leave tunnels that carry oxygen to plant roots and improve drainage. This activity breaks up heavy dirt clods, and the resulting castings keep the soil loose. Worms can survive a wide variety of temperatures, but they thrive between 55 and 77 degrees Fahrenheit (13-25 degrees Celsius).

Worship the Worm!

Worms provide castings that nourish our gardens and help eliminate the use of synthetic fertilizers which often end up as runoff in our water supplies. Vermicomposting is an easy way to dispose of kitchen scraps which can help diminish what is sent to landfills.

*Just one household adds **200 pounds** of compostable waste to landfills each year!*

Building a Worm Bin

Bins

Worm bins should be opaque 8 to 16 inches deep with a tight-fitting lid to keep out flies, rodents and raccoons. Drill quarter inch or smaller holes in the top and sides for ventilation and drainage. Screen the top of your bin to exclude flies since the larvae feed on worm eggs.

Making Their Bed

For bedding material, use newspaper torn lengthwise into 1-inch strips. Moisten the bedding so it is as damp as a wrung-out sponge. Line the bin with 4-6 inches of bedding and add a few handfuls of garden soil.

Worms

Add your red wigglers. Since they can eat more than their own weight in food every day, one pound is all you'll need. They are sensitive to light so cover them with another layer of bedding.

Feeding Your Worms

Those wigglers eat many things we eat. . .except dairy or meat. Feed them fruit, vegetable scraps, coffee grounds, tea bags, eggshells, leaves, grass clippings, and yard waste. Go easy on the citrus, bread and greasy foods. If you want them to work faster at giving you their precious product, then chop their food up into smaller pieces. Feed them a little at a time. Worms don't have teeth but use a gizzard to grind up their food.



Where Will They Live?

There are many choices. Worms like moderate temperatures so place your bin in a shady location where it will not freeze or overheat. Some locations include: a kitchen corner, garage, basement, patio, outside the back door (under the overhang) or the laundry room.

Check on your new friends once a week to make sure the bedding is still damp. Don't feed them more food until they finish everything on their plate. They will eventually eat the bedding so add more as needed.

Casting Call

In about three months you will have rich, crumbly soil-like material called "worm castings". To harvest, spread a sheet of plastic out under a bright light or in the sun. Dump the contents of the worm bin into a few piles on the sheet. The worms do not like light and will crawl away from the light into the center of the pile so you can gather the worm compost from the outside of the pile. Return the worms to the bin and add fresh bedding. Mix the castings into the soil around plants and water well. There will be worm eggs and a few young worms in the castings, but they will survive and enrich the soil under an inch or two of mulch.

Compost Tea

Compost tea is a liquid plant food that you can make from compost or worm castings. It's loaded with beneficial microorganisms that help feed your plants with readily available nutrients.

1. Get a 5-gallon paint bucket or a large trash barrel.
2. Add 1 pound of finished vermicompost and add water to the top.
3. Let sit covered for 2 to 5 days. Stir gently a few times.
4. Use to water and nourish your plants.

Troubleshooting

"Oh no! My worms are dying!!" If this happens there could be several causes:

1. Not enough food - bury more food into the bedding.
2. Too dry - moisten bedding until it is slightly damp.
3. Too wet - add bedding.
4. Too hot - move into shade.
5. Bedding is eaten and it's time to add fresh bedding.

If your bin smells rotten and/or attracts flies there may not be enough air circulation - add dry bedding under and over the worms and do not feed them for two weeks. Also make sure there are no non-compostable items such as meat, greasy foods or pet feces in your bin.

RESOURCES

<http://www.calrecycle.ca.gov/organics/worm/wormfact.htm>

http://www.earth911.com/news/2009/11/02/i_got_worms_composting_and_you/

<http://zerowastemarin.org/zero-waste-101/>

California Master Gardener Handbook University of California, Agriculture and Natural Resources, Publication 3382

Talking Dirt by Annie Spiegelman

Worms Eat My Garbage by Mary Appelhof

"Putting Worms to Work and Keeping Them Happy" pamphlet by UC Cooperative Extension Master Gardener Program

photo:

<http://howstuffworks.com/>

This information has been prepared by Marin Master Gardeners in conjunction with
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