

VERMICULTURE, aka WORM COMPOSTING INSTRUCTIONS

WHAT is “Vermiculture?” The process of creating garden compost using worms. Over time, all organic matter goes through a process of decomposition. The compost created by the worms (who eat the organic matter and poop it out) is an excellent soil conditioner and fertilizer. This “black gold” is called **vermicompost**.

WHO should try vermiculture, or vermicomposting, and WHY?

Anyone who'd like to reduce their carbon footprint and help the environment! This is because...

- By funneling your food waste into a worm composting system, you cut down on waste that goes to the landfill. **GOOD FOR THE PLANET!**
- You save energy driving to the landfill and pay less in waste removal costs. **SAVES MONEY!**
- Your worms create useful fertilizer for use in house plants and gardens. **GOOD FOR GARDEN!**
- It's relatively low cost to start up, and low maintenance to sustain. **CHEAP & EASY!**
- It's also something the whole family can do! **FUN!**

WHERE to place a worm composting system, aka: worm bin (WB)?

A WB is best placed where it won't be in the way, but also convenient enough for you to use it. Suggestions are porches near the kitchen, garages, basements. Best to place away from heat or cold sources. **Outside is ok too—BUT out of direct sun and rain is the ideal; and be mindful of critters who could be attracted to the food waste in the bin.** You don't want scary bears and raccoons raiding your bin or getting comfy with visiting your house. And you don't want cooked or drowned worms. This leads to the next issue, **temperature...**

Temperature and the WB:

The ideal temperature range for a worm bin is between 55 and 77 degrees.

If it is too cold, the worms may not eat all your scraps, and they have difficulty reproducing.

If your bin gets below freezing, your worms could die.

Temps over 84 degrees can kill worms.

WHAT are the INGREDIENTS of a good worm composting bin?

There are many options online and in garden centers for buying a prefab vermiculture system. They tend to be expensive and not necessarily better than the homemade version we will see today. YouTube abounds with all sorts of homemade versions too, so look up options before deciding what to make. Regardless of design, a bin needs these basic things:

1. Some kind of container with a lid
2. Air holes & drainage holes
3. Tray to catch draining liquid
4. Support to elevate bin over tray
5. Bedding for the worms
6. Food Scraps
7. And of course you will need WORMS!!

SOME DETAILS ABOUT THE WB INGREDIENTS:

The container and how to prep it...

I favor an 18-gallon plastic storage bin with lid. It's cheap and the area to place food scraps for our household (2 adults, tend more toward vegetarian diet) supports scraps we produce. **Holes between 1/8" and 1/4" should be drilled** into the **lid** and around the **sides** of the bin, as well as in the **bottom**. A piece of nylon screen can be placed at the bottom of bin to contain to prevent solids and worms from escaping. *[I have never used screen and our bin works fine for me.]*

The tray to catch liquids...

A plastic boot tray or the lid to another bin work well. There needs to be a lip around the tray so liquids

don't run onto floor. To elevate the bin above the tray I place 3 1x1" pieces of scrap wood on tray, then place bin atop them.

The bedding...

Bedding is the environment where the worms live, so it's worth putting some effort in to make it ideal. Bedding should be a non-toxic, cellulose based, somewhat fluffy material. Ultimately the worms consume their bedding along with your scraps, so bedding requires replenishment based on your worms' appetite. Bedding's purpose is to retain proper moisture and air flow so the worms can happily eat, poop, and make baby worms. The bedding also covers food put in the bin, so it masks odors and helps prevent fruit flies.

How to make bedding...

The cheapest bedding source is shredded newspaper, ripped into 1" strips. *[I shy away from paper that has a lot of color ink. Federal regulations now prohibit heavy metals in printing inks, so it's probably fine; I just try avoid excessive amounts of color.]* Hand shred the newsprint, crumple it, moisten it, then squeeze out excess water to consistency of a wet sponge.

Place the moist, shredded newspaper in the bin, and add the following ingredients, and mix it with:

- ✓ **A generous handful of sand or soil; bagged or from garden is fine.**
- ✓ **A few handfuls of dried leaves or leaf mold, straw is good too.**
- ✓ **Several handfuls of peat moss or coconut coir, if you have some.**

What to use for food scraps...

While many publications recommend throwing any kind of food scraps into the WB, I have a few restrictions to the food I feed our worms. I recommend adding food scraps that have first been cut into smallish pieces. Below is a list of do's and don'ts I follow:

GOOD FOR WORM BIN

- ✓ Veggie & Fruit scraps from food preparation
 - best results if scraps are cut small prior to adding
 - even if moldy, it is ok to add them to bin
- ✓ Baked goods that are *not too processed* or have a lot of *frosting or butter*
- ✓ Crushed eggs shells (*these are actually beneficial to your worms*)
- ✓ Cooked pasta without meat or oily sauces
- ✓ Ripped paper towels (*not really gross, used ones*)
- ✓ More bedding material
- ✓ Peat moss, coconut coir
- ✓ Coffee grounds & filters, teabags
- ✓ Grass & plant cuttings

"BAD" FOR WORM BIN

- Citrus peels, and similar (*too acidic*)
- Meat & bones whether raw or cooked (*these can smell & attract pets, rodents & wildlife*)
- Highly processed foods, candy, sweets
- Alcohol
- Oils
- Dairy
- Pits from stone fruits, avocados, etc. (*they won't break down*)
- Trash: plastic, foil, rubber, glass, cat litter, etc.
- *I generally stay away from anything that's been cooked, but that is my personal preference.*

And about those worms...

The worms best suited for composting are red worms, commonly known as "Red Wigglers;" scientifically known a ***Eisenia Fetida*** [pronounced *eye-SEN-ee-uh FE-ti-duh*].

Red Wigglers are sensitive to light, when you open your bin, they will burrow down into the bedding. Worms require both moisture and ventilation, which the bedding and drainage holes both provide.

Red worms can be bought on the internet, at garden centers & bait shops. Worms can also be gotten from a bin whose population is thriving.

Worms can eat about 3 times their own weight per week.

If you begin with about 1 pound of worms, so feed them about 3 pounds of food per week.

Redworms reproduce very efficiently. *Can your worm population get out of control?* No, worms are very good about making more babies when conditions are favorable: food is available, sufficient space exists, and their environment won't become overly fouled.

PUTTING ALL THE WORM BIN INGREDIENTS TOGETHER:

- ✓ Make your bin.
- ✓ Fill it with moistened bedding.
- ✓ Place your worms on top of the bedding.
- ✓ Cover the worms with more bedding. Leave overnight so the worms can acclimate.
- ✓ Start feeding your worms after 24 hours, covering scraps with more shredded newspaper.
- ✓ Wait for the magic to happen! 4-6 weeks may go by before you see a lot of changes.

HOW TO HARVEST YOUR WORMS' POOP:

After several months you will see the bottom of the bin transform into rich dark castings. There are a number of ways you can harvest the worm castings. I've tried several, and I'd suggest you try what method makes the most sense for your lifestyle.

Method 1, Worm Migration: Slide the contents of your bin to one side, worms, scraps, castings. Place new bedding and food scraps into the vacant side of the bin. Continue placing food and bedding only into this new side. The worms will begin to populate the new side because that's where the food is. This can take 2-4 months. After that time remove the castings from the "old" side and use on your garden. This method is the least labor intensive, but takes a while.

Method 2, Divide & Dump: Remove about 2/3 of the contents of your worm bin, worms, bedding, castings. Reserve about 1/3 to remain in the bin, filling the empty portion of the bin with new bedding and food scraps. Add the vermicompost taken from the bin to your garden, worms and all. The theory is there will be enough worms and cocoons remaining in the bin to repopulate. The worms that you dump into your garden should do no harm to the soil, but they may not be hardy to survive North Country winters because they are surface dwelling critters, not tunnelers.

Method 3, Dump & Pile & Sort: On a sunny, but not very hot day, spread a tarp on the ground. Tarp should be at minimum 8x6 feet. Dump the entire contents of your bin onto the tarp. Manipulate the castings into piles roughly the size of a softball. The worms naturally burrow to the center of these piles to escape the light. After 1-3 hours, begin harvesting the top portion of the casting piles to use in your garden. Most of the worms will be clustered together in the remaining portions of the piles. Return them to the bin which should have fresh bedding waiting for them. For obvious reasons, in the North Country, this method is not suitable in the colder months.

Method 4, Two Bins Are Better Than One: *[This is the method that I currently use and it suits me because it is easy].* When I think my bin is getting pretty full, I make another identical bin and fill it with fresh bedding. I then grab a healthy portion of worms and scraps from the full bin and transfer them into the new one. This may take a several handfuls. After I like the look of the population in the new bin, I place that bin on top of the old one. In time any worms left in that bin will wriggle up to the new bin because that's where the new bedding and food is from now on. After a few months, I remove the bottom bin, sift its contents, and top dress my plants.

TROUBLE SHOOTING YOUR WORM COMPOSTING SYSTEM:

Too Many Fruit Flies: Sometimes fruit flies will start hatching out if the food scraps are not properly covered. They are attracted to the smell. Always be sure to cover new food scraps with bedding. If you find fruit flies have hatched, simply make a few traps and the problem should go away. Use several small disposable condiment cups that have covers. Poke 5-10 holes in the covers with a toothpick or similarly sized drill bit. Fill cup with apple cider vinegar and cover. Shake to get a bit of vinegar in the openings. Place traps on top of bin. After a few days there will be a bunch of fruit flies dead inside the traps. Toss the bodies, replace with more vinegar, and repeat as necessary.

Overloading the System: During the holidays or canning seasons, if you have way more food waste than usual and place it in the WB, things could get stinky. An anaerobic (non-oxygen) condition like this can usually self-correct if you make sure the food is covered with newspaper strips, and stop adding food for a while.

If you want to continue to use scraps, set up another bin by choosing another container to put food in and inoculate it by removing a good dose of the vermicompost and worms from the original WB. Ignore the new bin until the food scraps are gone.

Food scraps can be chopped and put in plastic bags, then placed in freezer until your WB is ready to handle more food. *This is also a good strategy if you are going on a long vacation and want someone to tend your bin for you.* Try to thaw your scraps before putting in the bin.

Bedding Too Dry: A spritz with a spray bottle solves that easily. More of an issue in winter when heat is higher in the house.

Harvested Compost too Soggy: If the castings seem too wet and soggy, mix some peat moss into them and let dry them a bit overnight. Repeat if necessary.

RESOURCES:

Tons of how-to videos are available on YouTube. Some directly contradict my methods, but that's ok. Different strokes for different folks. My way isn't the only way. GreenShortz DIY is a fellow who's done a number of videos related to vermicomposting which I enjoy.

Books:

"Worms Eat My Garbage: How to Set Up and Maintain a Worm Composting System" *By Mary Appelhof, Joanne Olszewski, and Amy Stewart. \$16*

"How to Start a Worm Bin: Your Guide to Getting Started with Worm Composting" *by Henry Owen. \$10*

"The Earth Moved: On the Remarkable Achievements of Earthworms" *by Amy Stewart.*

"The Formation of Vegetable Mould" *by Charles Darwin*

Where to Buy Worms:

<https://unclejimswormfarm.com> Live customer service 10am – 6pm EST 1-800-373-0555 This site has great FAQ's, books, bins, etc. And worms.

Parting Thoughts...

There's many ways to vermicompost, so don't be afraid to experiment and research.

Remember worms can eat about 3x their weight per week. If you have 1 pound of worms to feed, limit the amount of food per week to about 3 pounds.