Using Worms

Add a whole new subculture to composting by enlisting worms — usually red wigglers — to do your dirty work.

Vermicomposting, or worm composting, turns kitchen scraps and other green waste into a rich, dark soil that smells like earth and feels like magic. Made of almost pure worm castings, it’s a sort of super compost. Not only is it rich in nutrients but it’s also loaded with the microorganisms that create and maintain healthy soil. Clemson University Extension lists the following benefits of vermicompost in [their article](https://hgic.clemson.edu/factsheet/worm-composting/) on worm composting:

* provides nutrients to the soil
* increases the soil’s ability to hold nutrients in a plant-available form
* improves the soil structure’
* improves the aeration and internal drainage of heavy clay soils
* increases the water holding ability of sandy soils
* provides numerous beneficial bacteria

Because it’s usually made in modest quantities, vermicompost is often used as top or side dressing for one’s most demanding and deserving plants. Mixed with regular compost it adds a boost to garden soil. Blended with potting soil, it invigorates plants growing in containers, outside or in (properly made vermicompost has a slight, natural smell and is perfectly suitable for indoor use).

***With the right***[***worm bins and supplies***](https://www.planetnatural.com/product-category/organic-gardening/composting/worm-composting/)***turning table scraps into valuable vermicompost is a cinch! Planet Natural has everything you need to get started: worms, a container and “bedding.” Plus books that tell you just how to do it. Now let’s rot!***

In general, having a worm bin requires very little attention. Worms are surprisingly low-maintenance housemates. They don’t need to be fed every day, they make no noise, and their bins only need to be cleaned every three to six months. They can make for a fascinating learning experience for kids that not only includes biology with one of their favorite creatures, but also wider environmental lessons. Composting with worms isn’t just good for plants. It’s also good for the planet. It keeps food waste and other organic material out of our trash and [reduces use of landfills](https://www.epa.gov/recycle/reducing-wasted-food-home). No wonder it’s encouraged by state, county, and city municipalities who deal with waste disposal and its costs, both in dollars and environmental damage. Spokane, Washington offers it citizens [information on worm composting](https://static.spokanecity.org/documents/solidwaste/recycling/2011-worm-composting.pdf) (PDF) to encourage its residents to give it a try. The City of Vancouver, British Columbia, Canada posts a page on its [*City Farmer News*](http://cityfarmer.info/wormcomposting/) that not only contains a video how-to but also offers worm bins to residents. It even has a call-in hotline for composting information. Not to be out done, the state of California has an animated, interactive game that teaches the basics of vermicomposting and its benefits. It’s called The Adventures of Vermi the Worm (link no longer available).

**What You’ll Need**

In addition to your readily available kitchen scraps, you’ll need worms, a container, and bedding. **Planet Natural** offers all the worms, composting bins, and supplies you need to get started.

The size of your worm bin (or how many bins you can put to use) and the amount of worms you’ll need will depend on how much usable kitchen waste your family generates. Keeping a record for a week or two of how many pounds of suitable waste you produce (also consider volume) can help determine how large your vermicomposting operation should be.

**The Right Worm For the Job**

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“A worm is a worm is a worm” may sum up your thoughts on the subject, but all worms aren’t created equal. Don’t try using your garden-variety night crawlers. They need to worm their way through dirt to eat and survive and don’t dine on organic waste. Most of the smaller worms found in your landscape are also not suitable. Most of them are likely to be *Lumbricus terrestris*. The essential difference, besides adaptability, is that *L. terrestris* is a deep-soil dweller (as its name suggests), while worms for vermicomposting are litter-dwellers that neither need nor want several feet of earth in which to delve.

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[Red wigglers (](https://www.planetnatural.com/product/red-wiggler-worms/)*[Eisenia foetida](https://www.planetnatural.com/product/red-wiggler-worms/)*[) convert food waste into nutrient-rich castings.](https://www.planetnatural.com/product/red-wiggler-worms/)

The worms needed for composting are *Eisenia foetida*, also known as **red wigglers**, brandling or manure worms. *E. foetida* will eat its weight in garbage every day, reproduce prolifically, and survive a variety of feeding conditions. *Lumbricus rubellus* (manure worms) will also do well in composting bins. Ordering worms from a [dependable supplier](https://www.planetnatural.com/product/red-wiggler-worms/) will ensure that the worms in your bin will survive and perform the task you provide them.

How many red wigglers will you need? Some vermiculture experts recommend a one-to-one ratio: one pound of worms, approximately 1,000 worms, to one pound of garbage added daily. Mary Appelhof, also the author of [*Worms Eat My Garbage*](https://www.planetnatural.com/product/worms-eat-my-garbage/), recommends two pounds of worms for every pound of garbage.

The other thing to keep in mind is that worms multiply like rabbits. (Or maybe it’s more like rabbits multiply like worms!) If you give them adequate food and a good home they can double their populations every 90 days. You may want to start out slow and with fewer worms than you think you’ll need and the resulting worm population explosion will take care of the rest.

**Bins**

A good worm composting bin is easy-to-use and efficient. There are a number of fine commercial bins available or the handy among us can build their own.

**Commercial Bins**

A wide variety of [commercial worm bins](https://www.planetnatural.com/product-category/organic-gardening/composting/worm-composting/) are available for composting, from simple, ventilated boxes to various “stacked” versions. Most are suitable for basements, entry ways, and other out-of-the-way corners in the home. They can also be used outdoors, at least seasonally, if protected from extremes of heat and cold. Bins with layered trays make harvesting finished compost very easy; this is the primary advantage they offer over most home-made bins and one-room bins.

In a **stacked worm bin**, the trays are used in succession, each one coming on line after the one below fills up with compost. When it’s time to move the worms, food and bedding gets placed on the next tray up; the trays are designed so that worms can indeed migrate to the next level. When they’ve left the old one behind, it can be removed and emptied — and then replaced at the top of the stack. As long as it’s left empty, it has nothing to attract the worms. Only when food waste is present will worms move in.

**Homemade Bins**

Simple bins made of wood or plastic can be quite simple to make. It’s important that the material be opaque as worms do not like light. A tight-fitting lid isn’t necessary; worms don’t generally try to flee their quarters. Tight fitting lids cut-off ventilation. But some sort of cover is important, both to shut out light and to keep moisture in.

Bin size depends on the number of worms you’re planning to house and the amount of garbage you want them to recycle. A couple of structural rules pertain to all. First, worms generally need floor space rather than head room. (Commercial bins that look tall usually consist of several shallow trays stacked on top of each other.) A one-room bin need be no more than 12-18 inches (30-45cm) deep. Ventilation and drainage are a must. Here are [plans](http://www.tilthalliance.org/learn/resources-1/compost/WormBinPlans.pdf/) (PDF) for a very functional wooden bin from the fine folks at Seattle Tilth. More general bin suggestions, including using a plastic storage crate as a bin, can be found at this [University of Nebraska Extension](https://lancaster.unl.edu/pest/resources/vermicompost107.shtml) page.



**Choosing A Location**

Since worms are quite sensitive to both light and noise, a corner of the basement often works best for their home. They thrive at temperatures between about 55°-77°F (13°-25°C) which means that most basements should fit the bill. During summer months it’s possible to keep worm bins outside (at least in some places) as long as they’re in the shade. People have found ways to keep a worm bin in the kitchen, and even in the living room. In colder locations, bins can be brought inside for the winter months.

**Bedding**

To give your worms a good home, you need the proper bedding that will take up anywhere from one-third to one-half of your bin. Keep in mind they like water and their bedding should be about 75 percent water. Make bedding out of strips of newspaper or shredded grocery bags, cardboard, or egg cartons, (no glossy paper), composted manure, old leaves, coconut coir, or a mixture of any of these substances. Just be sure that the material is clean and non-toxic as the worms will eat the bedding as well as the table scraps you feed them. If you’re working with cardboard or paper, soak the chosen material in water until it is easy to work with. Then rip it up into fairly small pieces and wring them out thoroughly. The bedding should be damp but not wet.

Half-fill the box, but loosely, with bedding and add a handful or two of dirt as well as some crushed eggshells. The dirt provides roughage — you can also use a smaller amount of sand or cornstarch — the eggshells calcium. Fluff the bedding up as you put it into the bed. The worms need a place to burrow and you need a place to bury their food. This will keep odors and insects at bay.

**Introducing the Worms**

When the bin and bedding are in place, dig a shallow depression in the bedding, and place the worms in it. Then leave them, with the lid off or askew and a low light on overhead. The light will encourage them to burrow into the bedding. Leave the worms to acclimate for a week or so before feeding them. Food left out too soon will just rot and smell — not a good beginning for the new venture. Be sure to bury the food in the bedding rather than just scattering it on top. Again, leave them for a week, then check on whether the worms are eating and adjust quantities accordingly.

**What To Feed**

It’s easy to avoid problems if you supply your worms the right wastes. Fruit scraps, vegetable peels, tea bags, and coffee grounds are all good (unbleached coffee filters can also go in). Avoid meat or meat by-products as well as dairy products and oil foods. All those trimmings will do is attract pests like flies and rodents while harming your worms. What about pasta? Experts are divided on whether to feed worms pasta and other grains, so let your worms tell you what the best diet is for them. Of course, don’t feed your worms inorganic waste such as aluminum foil or glass. Also avoid colored-ink newspaper as these dyes can be harmful. Basically use common sense and you’ll end up with happy worms and plenty of compost.

After initially feeding your worms, it’s best to feed them only once a week in small amounts. The idea is to give them only enough that they can eat, otherwise the leftovers (what they don’t process) will end up making your compost bin stinky.

If your worms seem to be eating too slowly, you can either add more worms or you can try chopping up what you feed them. Much like turning the compost in a traditional compost heap (sans worms), chopping scraps up will speed the process along.

**Moisture/ Drainage**

For worms, moisture is essential to the most basic function of life, breathing. Lacking lungs, worms “breathe” through their skins, something that is only possible in a moist environment. Their bedding should therefore be damp. But if moisture starts collecting in the bottom of the bin, it can be a problem. The classic solution is to set a couple of low blocks (1-2″ high) in a large tray and put the bin on the blocks so that liquid can drain from the holes in the bottom of the bin. This is fine as long as you empty the tray frequently enough. Check from time to time to be sure that bedding has not blocked these holes.

A turkey baster may be the best way to drain the tray without lifting off the bin. Mary Appelhof suggests several other ways to deal with excess water. If your bin has no drainage holes, the baster can again be pressed into service. But if you simply stick it down into the bin and try to suction up the liquid, it will almost certainly clog. Instead, scoop away the bedding from one area and lower a small strainer into the bin — you until you can see moisture rising in it – and then bring the baster into play.

Another ingenious way to deal with excess moisture is the coir sock. Fill an old sock or stocking with dry [coconut coir](https://www.planetnatural.com/product/procoir-coconut-coir-fiber/) and lay it in the bottom of the bin. Check it from time to time. If it becomes waterlogged, remove it and squeeze it out saving the liquid, of course, for plants.

**Harvesting Castings**

Once the contents of your bin have turned to [worm castings](https://www.planetnatural.com/product/worm-castings/) — brown, earth-looking stuff — it’s time to harvest the castings and give your worms new bedding. Worm castings can be harvested any time from every two-and-a-half months to every six months, depending on how many worms you have and how much food you’ve been giving them.

When to collect the compost depends largely on whether you want to continue the operation year-round or shut it down for the summer. If you’re planning to **vermicompost** only through the winter, then you can set your bin up in the fall, feed your worms for three to four months, and then leave the bin untouched for another month or two while the worms eat through what remains of their bedding and any leftover food in it. Most will eventually die off and decay and what will be left will be almost pure *vermicast*, with very few worms left in it.

If you plan to keep vermicomposting even through the summer, you will need to move the worms to a new clean home after the third or fourth month. The *vermicompost* you harvest will contain bedding and bits of old food as well as a high proportion of worm castings. Though not as pure as the *vermicast* left after most of the worms die, it nevertheless has high nutrient value, perhaps higher than the *vermicast*, which has passed so many times through worm guts.

There’s more than one way of harvesting worm castings, but one popular method is to move everything to one side of the bin. Then push the partially composted food to the middle and add additional food scraps. Replace the lid. The worms will head for the new food. Once they’ve relocated to the food pile — it should take about two weeks — simply put on a pair of gloves and remove the worm castings without taking out any worms. Once they’ve been harvested, replace the bedding. (Tray-style [commercial bins](https://www.planetnatural.com/product/worm-farm-4-tray-system/) make this job a snap.)

**Note:** As a worm eats its way through organic matter, it leaves behind castings, digested organic matter rich in nutrients and beneficial microbes. These microbes (as many as 10,000 kinds) not only control harmful bacteria, they aid plant growth, help fight off disease and nourish your plants with readily absorbed nutrients that keep them healthy and productive.

**Troubleshooting**

Vermicomposting is so easy as to be almost fool-proof. But problems can develop. Here are solutions for the most common worm bin problems.

**Odors**

Sometimes a vermicompost bin will develop a rotten smell. It’s important to realize that this is not the smell of the compost or of the worms; it is the smell of rotten food. Most often, this happens if the worms are being fed more than they can eat. But it may be simply that the food is not buried deeply enough. Either way, make sure the food is buried and stop feeding the worms until they catch up, or remove the rotten food, wait a few days, and start again on a smaller scale.

If the odor doesn’t go away, check that the holes around the bottom of the bin are clear. If the bin has drainage holes, make sure it is up on its blocks, so that the underside is ventilated.

**Worms on the Loose!**

Worms trying to flee the bin is a clear sign that something has gone wrong. It’s usually one of two things: either the castings have built up too deeply or the bedding is too acidic. Obviously, if the problem is castings, the response is to harvest. If you don’t have time to do a complete bin change, tear up some extra newspaper or other bedding material and toss it into the bin. This may hold the worms until you have time to harvest the castings and set up new bedding.

**Acidity**

If that doesn’t seem to be the problem, try adding crushed eggshell to the bedding to reduce acidity. Too high a proportion of peat moss or coconut coir (especially peat moss) can make bedding acidic, as can too much citrus fruit or peels in the diet. Mix more shredded newspaper or cardboard with the bedding and cut out all citrus fruits.

**Fruit Flies and Gnats**

The first trick is to figure out whether you’ve got fruit flies or gnats. Or both. They’re both small, flying insects but the fruit flies tend to be rounder and paler. Gnats are fairly slender and quite dark. Often the tell-tale difference is behavioral: gnats resist flying, frequently trying to scramble away rather than taking to the air.

**Fruit flies:** Completely buried food should not attract flies. A fly population indicates that food is exposed or rotten, which may mean that there is too much of it. Citrus fruit, especially, will attract [fruit flies](https://www.planetnatural.com/pest-problem-solver/household-pests/fruit-fly-control/). Clean out some of what is there and wait for several days or a week before feeding the worms again. When you do, give them less and bury it deep. This should bring the fruit fly population under control.

Eliminate gnats from your kitchen with the **BioCare® Fruit Fly Trap**. A natural attractant entices these [troublesome pests](https://www.planetnatural.com/pest-problem-solver/household-pests/fruit-fly-control/) into the decorative container where they become trapped and drown. Safe and effective.

One suggestion for trapping fruit flies comes from the [Massachusetts Department of Environmental Protection](https://www.mass.gov/lists/home-composting-green-landscaping): put a banana peel inside a plastic bag and make numerous holes in the bag with a toothpick or small knitting needle. Put the bag near the bin and wait several days. Because fruit flies are particularly drawn to bananas, they will find their way to the banana peel but the vast majority will not be able to find their way out again. Don’t feed your worms any bananas while you’ve got this trap set; you don’t want the flies to be distracted from the one source of banana.

**Gnats:** These can be remarkably pesky for unlike fruit flies, which hang around the fruit, [fungus gnats](https://www.planetnatural.com/pest-problem-solver/houseplant-pests/fungus-gnat-control/) like light (your computer screen) and damp places (your nose). Furthermore, unlike fruit flies, they can damage plants. So even if you don’t worry about the few in your bin, it’s important to eradicate them from finished compost before using it. This involves inoculating the batch with beneficial nematodes.

[Beneficial nematodes](https://www.planetnatural.com/product/beneficial-nematodes/) (*Steinernema feltiae*) can also be used in the bin itself, though eventually the worms will eat them along with just about everything else in reach. With luck, they’ll get the gnat larvae before the worms get them.

Coffee grounds seem to discourage gnats as well. Fruit flies, however, love them — which is one reason why it helps to know which one you’re dealing with. [Sticky traps](https://www.planetnatural.com/product/yellow-sticky-traps/), fly paper, and traps baited with apple cider vinegar or red wine can all help control a problem with either gnats or flies.

**Mold**

Mold in the bedding, curiously, indicates not that the bedding is too wet, but once again that it is too acidic. Change the bedding and cut out citrus fruit completely until the problem is solved; reintroduce it slowly and carefully.