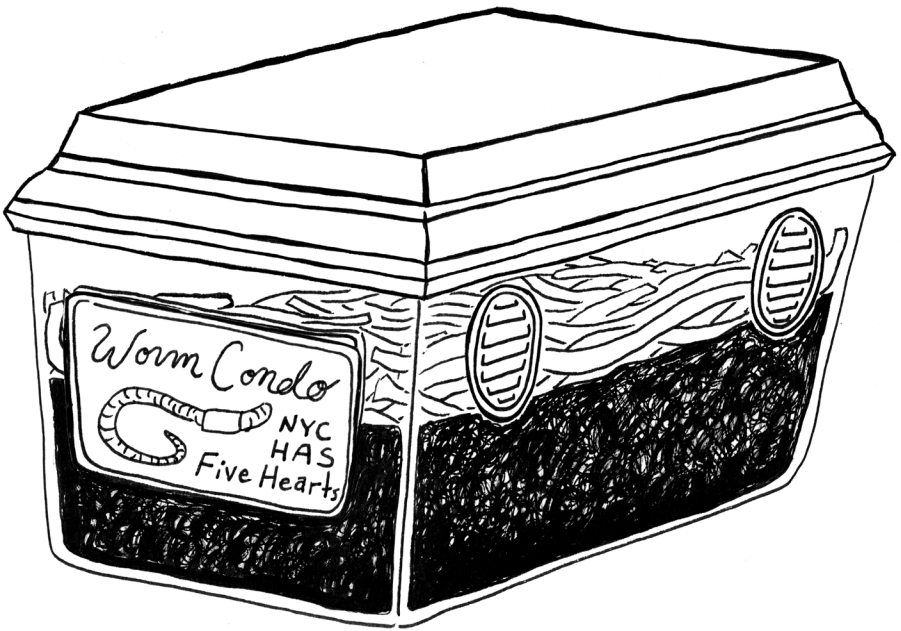


INDOOR COMPOSTING

with a worm bin



Don't have access to outdoor space?
You can compost food scraps indoors
using a worm bin!

1 Make or buy a worm bin.

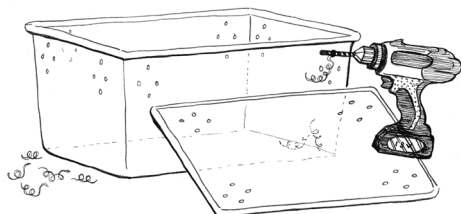
You can buy a ready-made worm bin (visit nyc.gov/compostproject for options) or you can make your own by following these instructions.

Materials:

- **Plastic container with a lid**

Dimensions should be approximately 12 x 12 x 12 inches (one cubic foot) but do not have to be precise.

A standard plastic storage tub from a household goods store is a great option.



- **Drill, 1/4" bit**

- **Fine screen to keep out pests (optional)**

Purchase at a hardware store.

- **Tray (optional)**

Directions:

- Drill at least 10 quarter-inch holes in the lid. These holes will provide oxygen to the worms and other decomposer organisms in the bin.
- Drill at least 10 quarter-inch holes in the sides of the bin. These holes will also provide oxygen in your bin.
- Drill at least 10 quarter-inch holes in the bottom of the bin. These holes are for drainage (optional).
- Use non-toxic glue to attach fine screen over holes (optional). This will help prevent pests like fruit flies from entering your bin.
- If you drilled holes in the bottom on the bin, place a tray under the bin to catch any “leachate” —this is a waste product of the composting process made of excess moisture.

After you make or buy a bin, store it in a good location for both you and the worms. Worms prefer temperatures between 55°F and 80°F (13°C and 27°C). Most indoor locations will meet these temperature needs. Worms can tolerate temperatures a bit beyond this range, but they will be less active.

2 Get worms.

You will need a specific worm species called “red wiggler” or *Eisenia fetida*. Night crawlers and other common garden worms, which are usually brown or gray in color, will not survive in a worm bin.



You can purchase red wigglers from a local retailer or order them online and have them shipped to you.

To find out where to buy worms, visit nyc.gov/compostproject.

We recommend most households start by purchasing one pound of worms. One pound of worms can process about three and a half pounds of food scraps a week. If you want to process more than that, you can start a second worm bin or, if your bin is big enough, add more worms to your bin.

About Red Wiggler Worms

Did you know there are over seven thousand species of earthworms? One species in particular is well suited for indoor composting: red wigglers (or *Eisenia fetida*).

Red wigglers live in the upper layer of soil where they feed on small organisms and decaying organic matter. Unlike other species of earthworms, red wigglers don’t tunnel deeply or make permanent burrows. They reproduce quickly, thrive in habitats with high organic matter, can tolerate a wide range of temperatures and moisture conditions, and can live close to one another. An indoor worm bin mimics all of these natural conditions, which makes red wigglers ideal for indoor composting.

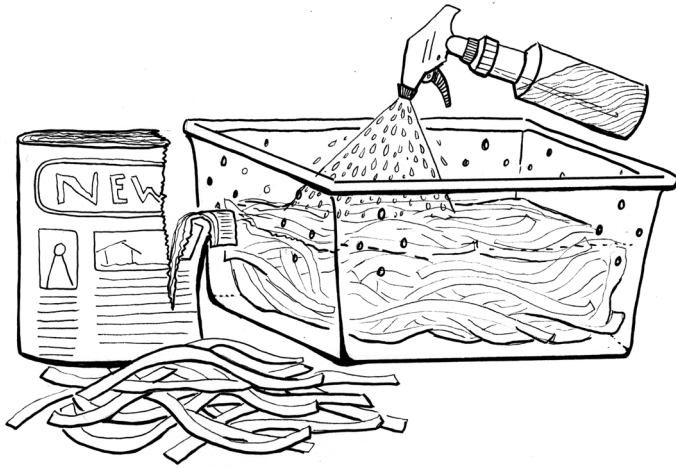
Fun Facts

- Red wigglers can eat half their body weight in food scraps a day.
- Worms have five hearts.
- Worms have both male and female reproductive organs, but still need another worm to reproduce.
- One mature worm can give birth to about 100 worms a year. The space and amount of food in a worm bin will keep their population size in check.
- A worm’s life span is approximately one year.

3 Make bedding and add worms to your bin.

Bedding provides a place for the worms to live, absorbs moisture, and covers your food scraps to prevent odor. Bedding can be made from a variety of materials, but torn or shredded newspaper is the most common.

Before adding worms to your bin, follow these simple steps to make bedding.



Tear newspaper into one-inch wide strips. You can tear by hand or use a paper shredder. *Important: Do not use glossy paper or full color paper as the toxic chemical dyes and heavy metal residues could end up in your finished compost.*

Moisten strips of newspaper. Gently squeeze out excess moisture; newspaper should be the consistency of a wrung-out sponge.

Fill your bin about two-thirds full of bedding. Use your hands to fluff up the bedding.

After making the bedding, gently pour worms on top of it. They will burrow their way down on their own.

4 Feed your worms.

What to feed: Feed worms fruit and vegetable scraps. You can also feed them coffee grounds and paper tea bags (remove staples from bags). Dried flowers or household plants are also okay.

Do not feed worms meat, dairy products, or food scraps that have been cooked with oil. These items will attract pests and produce odors in a small indoor worm bin. Also avoid very spicy or salty foods, large amounts of citrus, or toxic ingredients like alcohol.

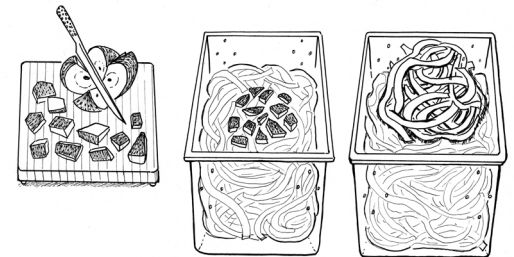
How much to feed: As mentioned in step 2, the amount of food scraps you can feed your worms depends on the amount of worms in your bin. If you have one pound of worms, you can feed them approximately 3.5 pounds of food scraps each week.

When to feed: You can feed your worms small amounts every day or their whole week's food supply at one time. If you feed your worms weekly (which is probably the most convenient way), it's best to store food scraps in your freezer or refrigerator throughout the week to prevent odor and pests.

If you don't have room in your freezer or refrigerator, you can store food scraps anywhere that's convenient. Cover food scraps with torn newspaper to help mask odors.

How to feed:

- **Chop large food scraps into one- or two-inch pieces.** If you are freezing food scraps, chop them up first. It's best to defrost food scraps before feeding them to your worms.



- **Move some bedding to the side and add food scraps.** Each time you feed your worms, place the food scraps in a different area of the bin. This will evenly distribute the food scraps. It will also give you a sense of how long it takes for the food scraps to break down and how much you can add to the bin each time.
- **Cover the food scraps by adding more torn up newspaper strips.** This prevents pests and odors. Never leave food scraps exposed on top of the bin.

5 Observe the conditions in your bin.

Monitor your worm bin regularly to make sure you are providing healthy living conditions for your worms and to avoid problems with pests or odors.

If your worm bin is healthy, it will smell earthy like soil, you will see food scraps and bedding disappear over time, and it will feel damp but not soggy (worms will have glistening skin if moisture is sufficient).

Also, a healthy bin should have small quantities of other decomposer organisms, such as mites or little white worms. It's actually a good thing to have controlled populations of these and other insects—they help with the decomposition process. Compost critters want to stay where the food is so you don't need to worry about them leaving your bin.

Every time you feed your worms or at least once a week, review the troubleshooting guide below to evaluate the conditions in your bin and fix as needed.



Troubleshooting

Are the bin contents too wet? Worms can drown or your bin can produce putrid odors if your bin is too wet. Bedding should feel about as moist as a wrung-out sponge. If your bin is too wet, add dry bedding to soak up pooling water. Also, reduce the amount of food you feed your worms—food scraps add moisture to your bin.

Are the bin contents too dry? Because worms breathe through their skin, bedding should be consistently moist (like a wrung-out sponge) in order to create a comfortable habitat for your worms. Food scraps will naturally add water to your bin and should keep the bedding moist. However, if your bedding seems dry, add more water with a spray bottle or watering can. Or add more food scraps.

Does the bin smell? Make sure all food scraps are covered with bedding to prevent odor. Some foods are naturally odorous when decomposing (such as onions, broccoli, or cabbage). Remove foods that produce unpleasant odors if it bothers you. Don't add meat, bones, dairy, or oil products.

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Are food scraps taking too long to decompose? Break food into smaller pieces, especially hard, woody items like stems. You can also freeze and thaw food scraps to break down cell walls. If decomposition is still slow after chopping food scraps, feed worms less.

Are there fruit flies near your bin? If fruit flies are a problem, you can try using flypaper traps or make your own fruit fly trap. (House flies should not be attracted to your worm bin if you cover the food scraps with bedding material.)

Freeze fruit before feeding to worms or microwave fruit for 60 seconds. These actions help to kill fruit fly eggs. You can also simply avoid adding fruit.

Here are two kinds of easy fruit fly traps you can make yourself:



- **Funnel fly trap.** Pour some apple cider vinegar or beer into a glass jar and add a drop of detergent. Cut the corner off a plastic sandwich bag and place it into the jar; secure the plastic bag “funnel” with a rubber band around the rim of the jar.



- **Bottle fly trap.** Cut a small plastic water or soda bottle in half. Fill the bottom half with some apple cider vinegar or beer and a drop of detergent. Turn the top half upside down and place it into the bottom half so that the neck forms a funnel. Secure the two halves with tape.

Are there a lot of mites in your bin? A small mite population is good, but if you notice large collections of mites you should try to remove them. Remove any food that has a congregation of mites. Then, bring bin outside and leave it open in the sun for one to two hours to dry it out a little. Repeat as necessary until mite population is reduced.

To trap mites, place a slice of fresh bread in the bin, wait until mites congregate on it, and then remove the bread.

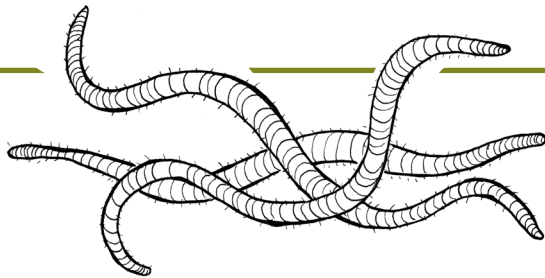
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Is there any other kind of pest infestation? Remember, it's healthy to see controlled populations of insects in your bin. But if your bin is swarming with insects, there is a problem in your bin. The best solution may be to harvest the worms (see step six) and start a new bin from scratch, using what you've learned from your experience to create a better bin.

Are there few or no worms in your bin? Dead worms decompose rather quickly—you can have a bin with no worms before you realize it. If your bin is too wet or too dry, worms can die. They can also die from lack of air, so make sure your bin has enough ventilation.

Also, make sure your bin is located in a place where the temperature is between 55°F and 80°F (13°C and 27°C). If contents of your bin seem very compacted, add paper tubes or other bulky paper products such as torn up paper egg cartons to increase air flow. Worms can also die if they have not been fed for a long time, though they can usually live many weeks before lack of food becomes an issue.



6 Harvest finished compost.

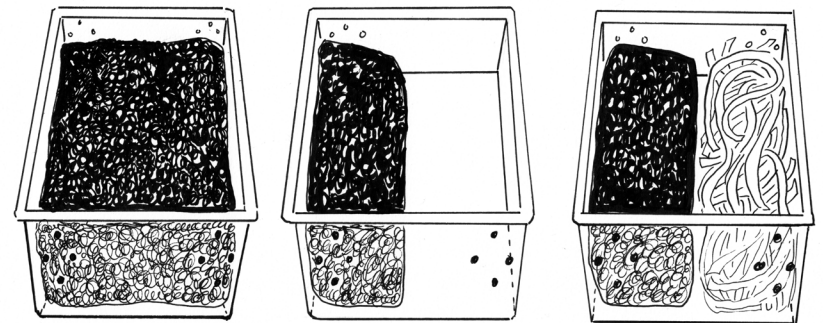
It usually takes about three to six months to accumulate finished compost, which resembles dark, crumbly soil. When your bin is nearly full, it's time to harvest your vermicompost (another word for compost from worms). *Harvesting* is when you remove the vermicompost from the bin and separate it from the bits of bedding, food scraps, or worms that are in it. (Vermicompost becomes toxic to worms if left in the bin for too long without adding new food scraps.)

Here are two ways to harvest finished compost:

The Easy Way

This method is very easy but it takes about a month to complete.

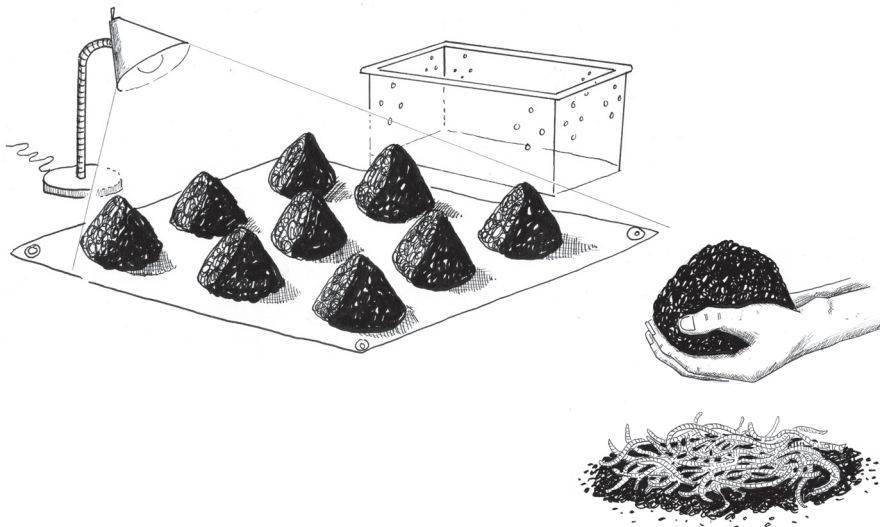
1. Move all the contents over to one side of the bin.
2. Add new moistened bedding (strips of newspaper) to the empty side, then start placing food scraps on that side.
3. Over about a one-month period, most of the worms should move over to the new bedding, allowing you to scoop out the relatively worm-free vermicompost.



The Fast Way

This method is fast but it is more involved.

1. Spread out a newspaper or tarp on the ground or on a table.
2. Move bedding over to one side of the worm bin.
3. Remove dark crumbly material from the worm bin.
4. Make small piles of vermicompost on the newspaper. (The worms will gather in the center of the piles to avoid bright light.)
5. While you are waiting for worms to gather into the center of the vermicompost piles, make new bedding.
6. Brush the castings off of the top and sides of each small pile. Put this finished material in a bag or container.
7. Add new bedding to the empty side of the worm bin.
8. Add fresh food scraps to the empty side of the worm bin.
9. Gently harvest the castings from the outside of each pile and put the castings in a bag or container.
10. Carefully remove the worms that have clustered in the center of each pile. Put them back into the worm bin.
11. Scoop up any remaining vermicompost and return to the bin.
12. It's okay if there are a few worms still in the vermicompost if you are going to use it in a garden. However, if you are using it in potted plants, it's best to remove all worms.



7 Use your compost!

Vermicompost is an excellent source of nutrients for plants. When you transplant, throw a handful into the hole before you plant. You can also mix vermicompost into the top layer of soil for your potted plants.

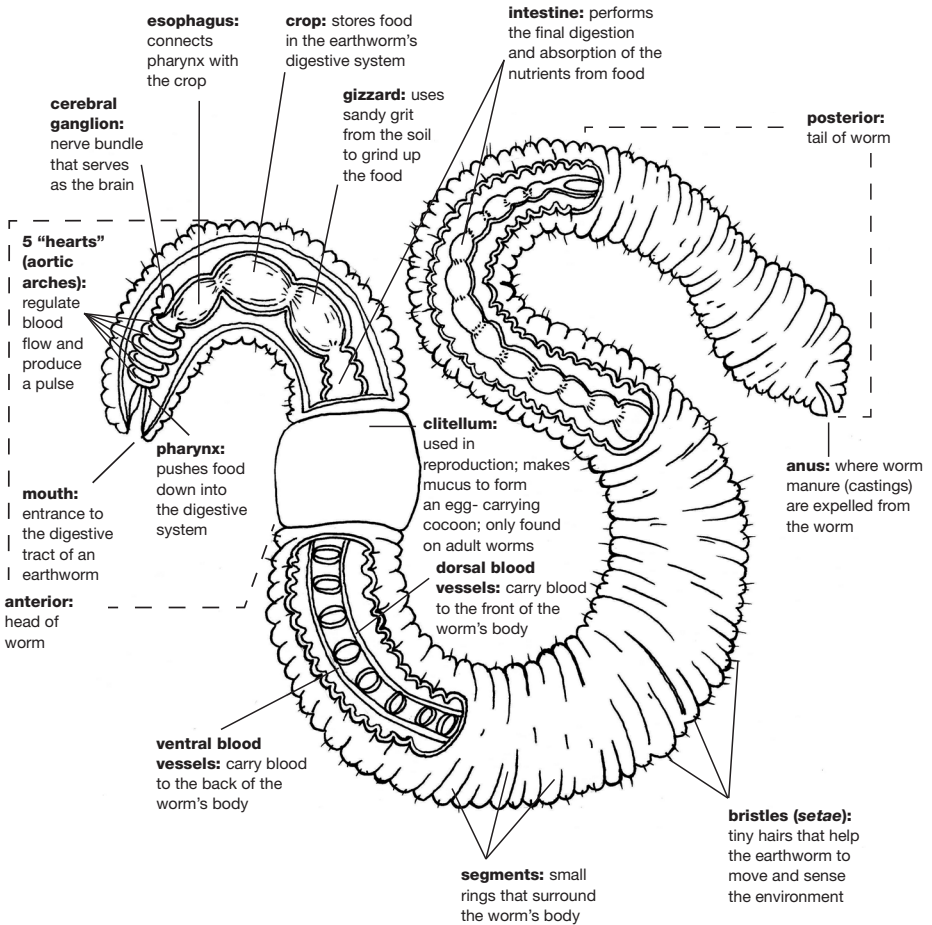


If you don't have a garden or own any houseplants, add vermicompost to the soil around street trees on your block or consider donating it to a local community garden.

To learn more about how to use compost, and for technical support in starting or maintaining a worm bin, contact the NYC Compost Project. Visit nyc.gov/compostproject for more information.



Worm Anatomy



NYC Compost Project

Funded by **NYC**sanitation

The NYC Compost Project works to rebuild NYC's soils by providing New Yorkers with the knowledge, skills, and opportunities they need to produce and use compost locally.

Learn more at nyc.gov/compostproject.



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