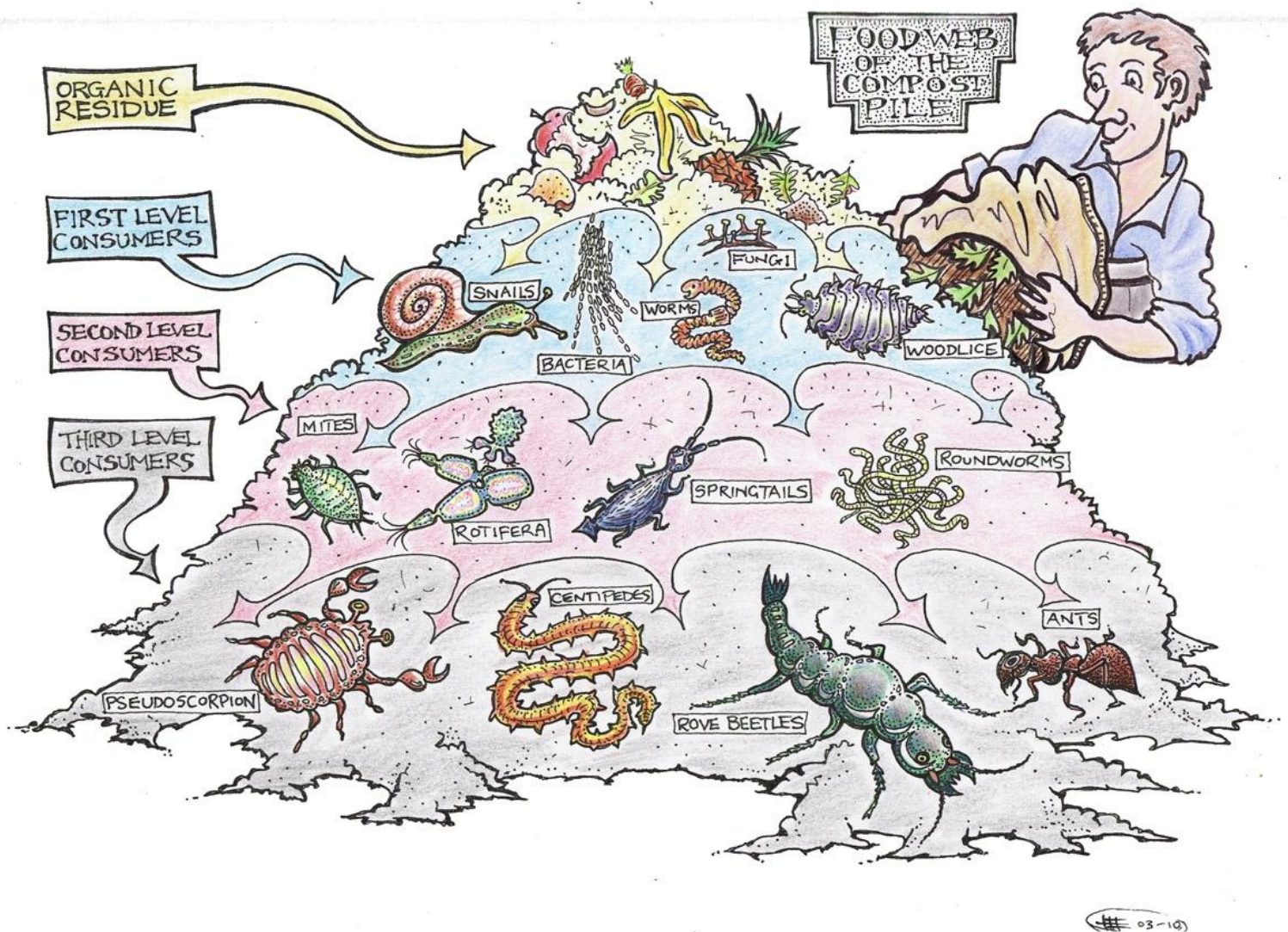


# Backyard Compost Workshop

What's in your compost pile?



# Why Compost?

- Most efficient way to reduce food & yard waste
- Sustainably “closes the loop”, returning nutrients to the soil
- Mitigates climate change
  - *Organics in anaerobic environment of landfill → methane production*
- Reduces water pollution
  - *Landfills leak toxic leachate*
- Finished compost = gardeners’ “black gold”
  - *Reduces the need for chemical fertilizers*
  - *Suppresses plant diseases and pests*
  - *Promotes higher yield*
  - *Improves water retention in soil & reduces erosion*

## Essential Habits for a Successful Backyard Compost Bin

*Following these basic rules will go a long way in maintaining an effective compost pile. Most common problems – such as wildlife infestations, unpleasant odors, and slow rates of decomposition – can be avoided or remedied by adhering to these guidelines. For more information, visit [www.BoulderCountyRecycles.org](http://www.BoulderCountyRecycles.org).*

- 1) **Keep a 50/50 ratio of “browns” and “greens” by volume in your pile at all times.** If you add a handful of kitchen scraps (which are “greens”) to your pile, you’ll need to toss in a handful of “browns” (like dried leaves). This means you need to keep a stash of browns handy at all times.
- 2) **All materials going into your bin must be cut down to 1”-2” in size.** This is the ideal size – smaller isn’t better! There are some exceptions to this rule; for instance, coffee grounds are small particles, but are great for your bin in moderation.
- 3) **Feed your pile a balanced diet of greens.** In other words, no single food item should be the bulk of your bin’s “greens”. Usually this isn’t an issue, as the average household produces a variety of food scraps. This mostly applies to greens. While a variety of browns is great (dried leaves, dried grass clippings, twigs/sticks, etc.), dried leaves can be used as all your browns.
- 4) **Don’t “dump and run”.** Dumping your kitchen scraps on the top of your compost pile and walking away is the worst thing you can do, generating odors and attracting wildlife. Instead, when you head outside with your kitchen scraps, do the following:
  - a. Remove the lid of your bin
  - b. Dig a little pit in your compost pile
  - c. Empty your kitchen scraps into the pit
  - d. Add an equal volume of browns
  - e. Cover up the material you’ve just added
  - f. Put the lid back on
- 5) **Keep your pile damp as a wrung-out sponge, and turn often.**
  - a. Turning should be done once a week, or once a month *at the very least*. When you head out to turn your pile, bring the garden hose over, stick it in the pile, and soak it for a minute or so.
  - b. Then mix, mix, mix with a pitchfork.
  - c. Grab a handful of stuff from your bin. Squeeze. When you let go, it should stick to your hand a bit. If water runs down your arm, it’s too damp (but will dry out in no time!). If nothing sticks to your hand, it needs to be watered and mixed again until it is damp as a wrung-out sponge.



## What are Browns and Greens?

*Food for your compost pile!!!*

**50/50 mix by volume**

**1-2" sized pieces**

### **Browns (Carbon) -Mostly Yardwaste**

#### ***Dry, Woody, Crunchy***

- Dried fallen leaves (*ok to have all browns from this*)
- Dried grass clippings
- Brown garden waste
- Twigs and sticks
- Small woodchips and pieces like mulch (not chemically treated or colored)
- Straw
- Dried out animal bedding
- Paper napkins, facial tissues, paper towels
- Natural fibers like cotton, linen & wool (cut into small pieces)
- Dryer lint
- Shredded cardboard containers
- Newspaper (1" strips, no glossy ads)
- Dried pine needles (only small amounts)
- Sawdust (only small amounts)

### **Greens (Nitrogen) -Mostly Food Waste**

#### ***Moist, Fresh, More recently alive***

- Green tree or plant leaves
- Fresh green grass clippings
- Green garden waste plant trimmings
- Fruit & veggie scraps from kitchen
- Coffee grounds & filters
- Tea bags-*nylon bags will not compost*
- Egg shells-*will take longest to compost*
- Breads/pastas (no fats/oils/sauce on it)
- Hay (has seed head)
- Manure of plant eaters-*be careful using*
- Hair (human or animal)
- Vacuum wastes-*hair, dead skin cells*
- Dead insects-*yellow jacket trap*
- Weeds-*don't put in any gone to seed*

**What you put in your compost  
is what you get out!!**

### **Do Not Backyard Compost**

Plastic-coated paper	Particle board or plywood
Treated wood or sawdust	Heavily colored paper
Used kitty litter	Shredded office paper
Human waste	Chemically treated lawn clippings
Waste of meat eater	Compostable tableware
Coal or charcoal ash	Compostable bags

Grease, fat, oil

Meat & bones

Dairy or dairy-like products

Weeds gone to seed

Ground bones or bone meal

***Items in green can be commercially composted instead.***

# Where to Get Extra Composting Materials

Need more greens for your browns? Need to start or revive your bin? Check with local vendors - many businesses give away great compostable material!

## Greens (Nitrogen)

- *Barbers*-if concerned, try to make sure hair was not color-treated or permed
- *Grocery Stores*-usually stores will set aside bad produce and trimmings of sellable produce
- *Pet Groomers*-if concerned, find out if pet was sprayed with any flea-killing spray
- *Juice Bars*-Great place for pureed fruit, peels, and rinds
- *Coffee shops*-Call in morning, ask them to save a day's coffee grounds for you
- *Local farmers with chickens, rabbits, goats, cow*-manure from herbivores is great to compost. Remember, you don't want to use manure from any meat eater, including cats and dogs.
- *Neighbors, Friends*-Ask your neighbors and friends to save their produce scraps for you
- *Breweries*: Spent hops
- If not composting over the winter, save your food scraps in the freezer

## Browns (Carbon)

- *Neighbors, friends*: Ask them to save their leaves for you in the fall.
- *Corners of Yard, Against Fence*-Leaves often blow into these corners and accumulate. Check your yard or your friend's and neighbor's yards.
- *Leaf-Drop-off locations*-Many cities have a leaf drop-off every fall, and composters frequently grab people as they enter these sites to get their bags of great, compostable leaves
- *Yard waste collection sites*-All year round, most cities have a yard waste drop-off center in their communities. Check their city websites for dates, times, locations. You may be able to catch people with yard waste before they drop it off, similar to the leaf drop-offs, especially on weekends.
- *Check online*-You may find someone on FB marketplace happy to have you come take their leaves away.





**Soil Saver =  
#1 Recommended!!!**

### Features to Get

1. Solid Wall Construction
2. Locking Lid
3. Few vent holes
4. Thick plastic
5. Pieces held together by bolts, not plastic tabs, if can
6. No bottom
7. Prefer square shape-durable!

### Features to Avoid

1. Stacking pieces
2. Loose or no lid
3. Tumbling, turning bin
4. Large holes or vents
5. Anything not in direct contact with ground
6. Any bin that narrows at top
7. Base plates (not required here)

No longer manufactured by Algreen.  
If you can find one, get it!!!

Available for around \$100 at Home Depot,  
Amazon, or Wayfair while supplies last.  
Must order online.

**Compost Tumblers** are not the answer either! Dry out quickly, closed system, and must be turned daily to work well. Melanie is not a fan!



**Earth Machine or  
Compost Machine=**

Next best recommended because  
cheap but will replace frequently



It is a marketing ploy that you need to have a door on the side of a bin to let the compost out. **Don't be fooled, that is not how it works!**

# Tools

Must at least have a **garden fork pitchfork.**  
Not a hayfork!

No other tool takes its place.

Ideal is a 30 inch with a D handle on top, 4 flat tines.



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## Compost Aerators

*Not necessary! But good tool 2nd option after have a garden pitchfork*



Avoid any with a a curved L-shaped top. They must have a T-shaped top like pictured.

Favorite for most is Yard Butler (metal compost aerator). More durable, slightly taller than bin.

Melanie's favorite is Exaco Plastic Composting Tool. Looks similar but shorter, plastic. Very hard to find anymore.

# Building a Backyard Compost Pile in Colorado

## Step 1 -Materials

- Collect enough green and brown material to create a 1-cubic-yard (3'x3') pile. If you don't have enough materials for that, start with whatever materials you do have.
- Chop or shred the material to be 1-2" in size to increase surface area.

## Step 2 -Location

- Pick the location of your pile that is close to you and the hose. Don't make it too difficult to reach or you'll never go. Ideal is a level space, in shade, but a sunny spot also works. Choose a site close to where material will be used.
- Pile must be in direct contact with the ground (on dirt or grass), not over weedcloth or on any gravel, stone, patio, etc.

## Step 3-Building a Compost Layer

- Start the pile with a 3-inch layer of greens (nitrogen) material such as food waste or fresh grass clippings.
- Add onto the green layer a 3-inch layer of browns (carbon-based) material such as dried leaves.
- Mix the layers together with a garden pitchfork. Use the garden hose to make this compost layer damp as a wrung-out sponge (do squeeze test to make sure it's the correct dampness).

## Step 4-Repeat Step 3

- Repeat by building another mixed layer (Step 3) on top of the first layer, and then repeat again, and again, until you either run out of either greens or browns, or the bin/pile is full.

## Step 5-Cover

- Put a locking, tight fitting lid over the pile on top of your bin.
- If not using a bin, use a tarp or an old piece of carpet to cover the pile to reduce evaporation, especially critical in dry Colorado. Strap it down so it doesn't blow off or away.

## Caution: DO NOT Add Soil

- Despite what the internet says, **DO NOT add a layer of soil** or other compost or manure to the mix as a nitrogen starter.
- Only add a small handful of soil to your compost mix if you are using a tumbler/turning bin (one that is NOT in direct contact with the ground) or if you have extremely poor soil conditions (such as after new construction).



## COMPOST TROUBLESHOOTING GUIDE

PROBLEM	CAUSE	SOLUTION
Bad odor (rotten smell)	Too much moisture	Turn the compost or add dry, porous material like leaves, straw, shredded cardboard or newspaper
Bad odor (ammonia smell)	Too much nitrogen compared to carbon Compacted leaves Inadequate air	Add high-carbon materials like straw, sawdust, wood chips Turn the compost or make the pile smaller Turn the compost
Low compost temperature	Pile is too small Too little moisture Too much moisture Too little air Lack of nitrogen Cold weather Particle size too large	Increase size, insulate sides Add water and turn the compost Turn the compost and mix in dry, brown materials Turn the compost Mix in nitrogen source (greens): grass clippings, or manure Increase pile size or insulate pile with a layer of straw or plastic Chip or grind materials
Pile is dry throughout	Not enough water; too much wood material	Turn pile and moisten material; add fresh green materials; cover pile
Compost pile is damp and warm only in middle	Pile is too small	Collect more material and mix the old ingredients into a new pile
Pest infestation: dogs, rodents, insects	Improper food scraps added Food scraps not covered	Don't add meat, fats, bones or other animal products Place fruit and vegetable scraps in the center of pile, cover with soil or compost
Neighbor complains	Compost pile is ugly	Construct covered bin system to keep it neat

This publication is provided as a community service in support of the University of California Division of Agriculture and Natural Resources (ANR) Strategic Vision by **University of California Cooperative Extension Master Gardeners of Orange County** 1045 Arlington Drive, Costa Mesa, CA 92626 (714) 708-1606 [www.uccemg.com](http://www.uccemg.com) [hotline@uccemg.com](mailto:hotline@uccemg.com)

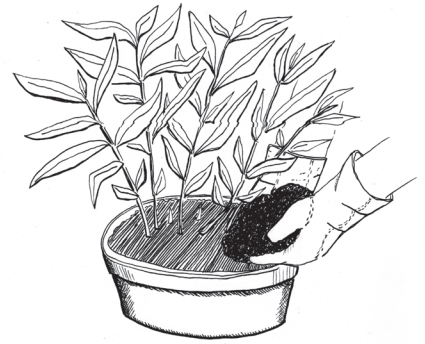
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# HOW TO USE COMPOST

## FINISHED COMPOST

Finished compost should look like dark, crumbly topsoil and not like the original materials. Compost should have a pleasant, earthy smell to it. Using “unfinished” or immature material that contains food scraps can attract pests and can cause harm to young plants, so make sure your compost has fully decomposed before adding it to your garden beds.



## HOW TO TELL IF YOUR COMPOST IS FINISHED

The simplest way to tell if your compost is mature and ready to use is by doing the “bag test.” Put a handful of moist compost into a zip-lock bag and press out the air before sealing. Leave it for three days, then open the bag. If you detect an ammonia or sour odor, the microorganisms are still at work and you need to let your compost finish curing. Test another sample of compost again in a week.

## USING FINISHED COMPOST

There are various ways to use your finished compost. You can sprinkle compost on top or mix it into your flower and vegetable beds, gently rake compost into tree beds, blend it with potting soil to revitalize indoor plants, or spread it on top of the soil on your lawn as a soil amendment.

## COMPOST IN THE HOME GARDEN

Adding compost to your garden helps improve the structure and overall health of your soil. Compost will help the soil retain moisture and will increase your overall earthworm and microbial population, which serve as biological controls against unwanted pests. In addition, compost will provide a slow release of macronutrients, which means that your plantings will get a steady supply of nutrients as needed.

### USAGE

### WHAT TO DO

#### Amending Soil

Work 1–2 inches of compost into the top 3–5 inches of soil.

#### Growing Vegetables



Give your vegetable garden plenty of compost in the fall. Spread several inches of compost on top of the existing bed, then till it into the soil in the springtime.

Put a handful of compost in each hole when you’re planting.

Once plants begin to grow quickly, you can add a half-inch layer of compost around the base of the plants. Provide “heavy feeder” plants such as tomatoes, corn, and squash with 1/2 inch of compost monthly—this will result in great produce!

#### Growing Flowers

In the spring, loosen the top few inches of annual and perennial beds and mix in a 1-inch layer of compost. Or in the fall, apply a 1-inch layer of compost as a mulch to protect plant roots from freezing and conserve moisture.

#### Replenishing Soil In Potted Plants & Window Boxes

Even the best potting soil gets depleted of its nutrients as plants grow. To replenish nutrients, add an inch of compost to potted plants and window boxes twice a year.

Or, make your own potting soil using two parts screened compost to one part sand or perlite.

The NYC Compost Project, created by the NYC Department of Sanitation in 1993, 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](http://nyc.gov/compostproject).**

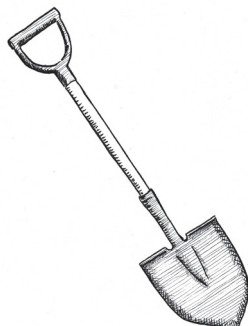
**[nyc.gov/compostproject](http://nyc.gov/compostproject)  
Follow us @NYCzerowaste**

# USING FINISHED COMPOST

## USING COMPOST FOR GARDENING PROJECTS

### USAGE

#### Rejuvenating Lawn or Turf



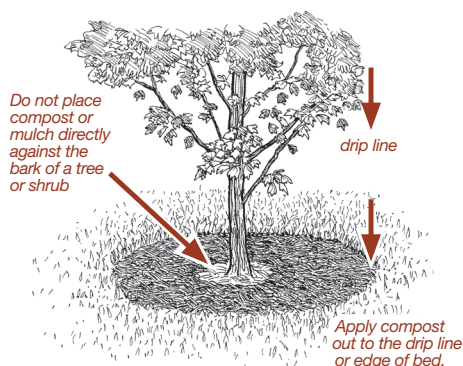
### WHAT TO DO

When establishing new turf, incorporate up to 3 inches of compost into the existing soil base. If possible, till to a depth of 5–8 inches before seeding. Otherwise, seed directly over the compost.

On existing turf, you can treat bald spots by incorporating an inch of compost into the soil and then reseeding. This will fight compaction and help suppress soil-borne diseases.

You can also topdress existing turf with as much as 1/2 inch finely screened compost. This is easiest with a spreader, but you can use a shovel for small areas where you want to add compost. Rake the compost evenly throughout the grass area to enable the compost to readily sift down to the soil. The compost will settle down into the soil, improving its structure and providing nutrients. Over time, this will mean less compaction, fewer bald spots, and a reduced need for synthetic fertilizers.

#### Tree and Shrub Planting and Maintenance (Including NYC Street Trees)



When planting a new tree, it's best to work 1/2– 1 inch of compost into the top 2 inches of soil from the trunk of the tree out to the dripline—the outermost parameter of the tree's canopy.

Compost used in this way serves as a substitute for the layer of organic matter that naturally exists on the forest floor: it provides organic nutrients, reduces moisture loss, and keeps the soil cool.

Don't add compost to a freshly dug hole when planting a new tree, as applying compost in this way will discourage tree roots from growing beyond the hole.

Apply compost as mulch to trees and shrubs to prevent weeds and to make plants more drought resistant. Spread up to 2 inches of compost under the tree or shrub out to the drip line (the outermost leaves on a tree) or edge of the bed. This will help reduce moisture loss and stabilize soil temperature.

You can also incorporate compost into the soil once or twice a year to provide organic nutrients. Before adding compost to compacted soils, gently cultivate the soil with a hand tool; this will prevent damage to shallow feeder roots while making nutrients more readily accessible to the trees or shrubs.

Do not place compost or mulch directly against the bark of the tree or shrub or on exposed woody roots as this could cause rot and invite pests and disease.

#### Maintaining Perennial & Annual Beds



Spread 1–2 inches of compost on top of perennial and annual beds in the early spring or fall to prevent weeds from establishing and to make plants more drought-resistant.

# nyc compost project tip sheet

## get all the dirt at [nyc.gov/wasteless/compostproject](https://nyc.gov/wasteless/compostproject)

Funded and managed by NYC Department of Sanitation's Bureau of Waste Prevention, Reuse & Recycling.

The NYC Compost Project provides compost education and outreach through host sites in all five boroughs. Educational programs include: compost-related workshops and classes, on-site composting demonstrations, compost helpline, and composting technical assistance.



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## ***Eisenia fetida*: Red Wiggler Worm**

There are over seven thousand species of earthworms; however, one species in particular is well suited for indoor composting: *Eisenia fetida*. *Eisenia fetida* (also called red wiggler worm, tiger worm, manure worm, brandling worm, and a range of other names) are an important macroorganism decomposer in both indoor and outdoor composting systems.

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## red wiggler worm basics

Red wiggler worms live in the upper layer of soil where they feed on microorganisms and decaying organic matter. However, unlike other species of earthworms, *Eisenia fetida* 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 *Eisenia fetida* ideal for indoor composting.

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## fun worm facts

- Worms do not have eyes; they have cells in the front part of their bodies that can detect light.
- Worms do not have teeth; they grind up food by using the grit in their gizzard.
- Worms living in an indoor worm bin (*Eisenia fetida*) can eat half their body weight in food scraps every day!
- Worms have both male and female reproductive organs but still need another worm to reproduce.
- *Eisenia fetida* have 5 “heart-like” organs called *aortic arches*.
- *Eisenia fetida* start reproducing when they are about 2 months old.
- One mature worm can produce about 100 worms in a year.
- Worms live up to one year.
- Worms “breathe” through their skin, so it is very important to keep them and their environment moist, but not sopping wet as they can drown if it's too wet.
- If you hold a worm long enough, you will likely see a yellow secretion on your hand, called coelomic fluid.
- Coelomic fluid is thought to be a defense mechanism against predators as the liquid can smell bad. This bad smell is thought to be the basis of their name *fetida* or *foetida* which is the Latin scientific term used for many foul-smelling species.
- Coelomic fluid is also a way for worms to remoisten their bodies when conditions are dry.





# nyc compost project tip sheet

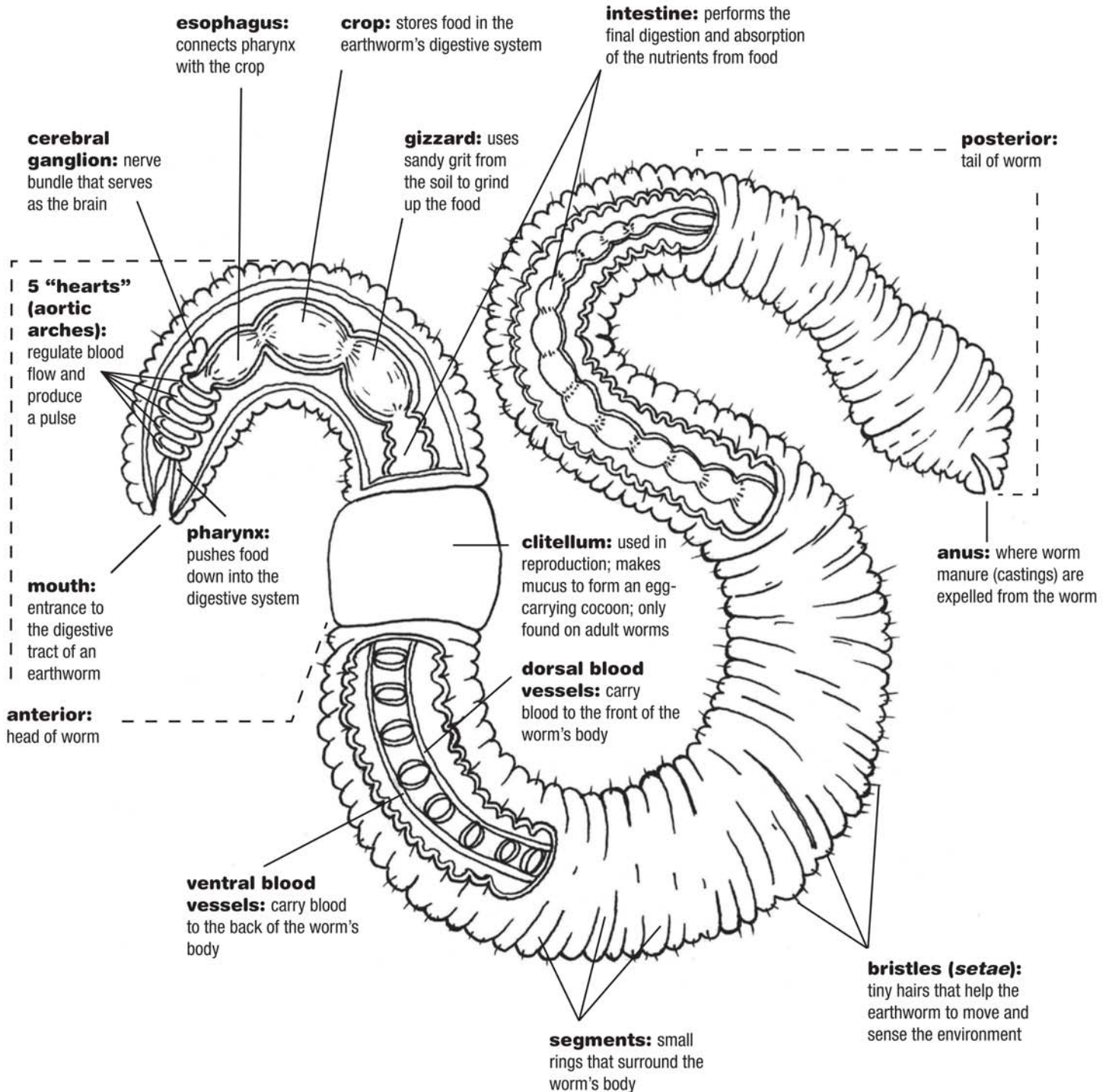
get all the dirt at [nyc.gov/wasteless/compostproject](http://nyc.gov/wasteless/compostproject)

Funded and managed by NYC Department of Sanitation's Bureau of Waste Prevention, Reuse & Recycling.



## color a wiggly worm!

Color in the *Eisenia fetida* (red worm) image below to help you to identify the various parts of the worm.



# Composting Websites

## **Overall Composting**

[www.bouldercountyrecycles.org](http://www.bouldercountyrecycles.org)

Boulder County's website for waste reduction. Has links to all kinds of info about composting, upcoming workshops, plus how to reduce other forms of waste.

[www.ecocycle.org](http://www.ecocycle.org)

Has a step by step on how to get started composting. Boulder-based zero waste nonprofit organization.

[www.ext.colostate.edu/](http://www.ext.colostate.edu/)

CSU Extension office website for Boulder County. Has all types of resources, including fact sheets, on soil, gardening, composting, etc. Great place to get your soil tested, too.

[www.compostguide.com](http://www.compostguide.com)

A complete guide to composting

<https://www.epa.gov/recycle/composting-home>

EPA's website on composting

[www.planetnatural.com/organic-gardening-guru/](http://www.planetnatural.com/organic-gardening-guru/)

A guide for the home organic gardener

[www.biocycle.net](http://www.biocycle.net)

Biocycle is the Journal of Composting & Organics Recycling...an industry standard

[www.gardeners.com](http://www.gardeners.com)

Great site to see all the different kinds of composting systems out there. Search for compost bins. Does not have the Soil Saver and I'm not super excited about any they have on there.

## **Worm Composting**

[www.wormwoman.com](http://www.wormwoman.com)

Website of Mary Appelhof, who wrote "Worms Eat My Garbage"

[www.redwormcomposting.com/getting-started/](http://www.redwormcomposting.com/getting-started/)

Good overall about worm composting

<http://compost.css.cornell.edu/worms/basics.html>

How to set up a worm bin for a school group