Composting Basics

What is compost?

A mixture of decaying organic matter, as from leaves, food and manure, used to improve soil structure and provide nutrients. The ingredients needed to make compost are organic waste, water and oxygen.

Hot composting
Also called "batch" composting.

Uses a ratio of two parts carbon (browns) to one part nitrogen (greens) to build a three-cubic-foot pile that will generate heat and decompose organic waste in the presence of oxygen and water. The process will take about three months in a backyard system. If the pile is actively turned (every three days) and the temperature is monitored (reaching 140°F), then weeds can be composted in this system.

Pile composting
Uses available organic waste to build a pile that will sit passively for one to two years. The pile will generate some heat, but not enough to kill weed seeds.

Vermicomposting
Uses red worms to process plant-based food waste. The worms' manure can then be used as compost. This is a continual process; organic waste is added weekly and manure accumulates constantly.

Compost Troubleshooting

(content from Seattle Public Utilities/Seattle Tilth Association)

Symptom:	Possible Cause:	Solution or Alternative:
Pile is damp and warm in the middle, but nowhere else	Pile may be too small.	Make sure your pile is one cubic yard in size (3 ft. × 3 ft. × 3 ft.)
Pile does not get hot	If pile is moist and sweet smelling, it may not be getting enough nitrogen	Mix in fresh grass clippings, manure, blood meal or other high nitrogen fertilizer.
	If pile is very wet and perhaps smells sour, it may not have enough air inside	Turn the pile and mix in dry sawdust, straw or stalks to improve drainage and air flow.
	Pile may be too small	Make sure your pile is one cubic yard in size (3 ft. × 3 ft. × 3 ft.)
	Pile was built gradually over a few weeks or longer	Let it compost slowly. If materials are still fresh, turn and mix in fresh grass clippings, manure, blood meal or other high nitrogen fertilizer.
Pile is dry throughout	Lack of water	Turn the pile and spray with water.
Pile smells like rotten eggs, vinegar or garbage.	Too wet, not enough oxygen	Turn the pile and mix in coarse dry materials such as leaves, straw or corn stalks. Cover with plastic during rainy weather.
	Food or pet waste in the pile	Remove and dispose of inappropriate materials.
Pile smells like ammonia	Too much nitrogen	Turn the pile and mix in coarse dry materials such as leaves, sawdust, shredded paper, straw or corn stalks.
Pile is attracting dogs, raccoons, rats, flies or other pests	Food or pet waste in the pile	Remove and dispose of inappropriate materials.
Pile contains earwigs, slugs and other insects	No problem	Slugs should be removed and destroyed so their eggs are not spread in the garden.

Compost Pile Ingredients

(content from Seattle Public Utilities/Seattle Tilth Association)

Material	Add to Pile?	C/N/O	Comments
Algae and Seaweed	Yes	N	Good nutrient source.
Ash from charcoal or coal	No		Contains sulfur dioxides, may harm plants in the garden
Ash from wood fireplace or stove	Yes, but very alkaline material	O	Can cause nutrient imbalance. Use no more than a fine sprinkling every 18" or so.
Bird droppings	No		Droppings from pet birds may contain disease organisms.
Cardboard	Yes	C	Use if it cannot be recycled. Best if shredded into small pieces.
Cat feces/Cat litter	No		May contain disease organisms.
Coffee grounds	Yes	N	Excellent source of nitrogen.
Compost activator and starters	Yes, but unnecessary	N	Optional. Millions of people make compost successfully without them.
Cornstalks, cobs	Yes	C	Best if chopped up and mixed with a source of nitrogen.
Dog feces	No		May contain disease organisms. Put in trash or flush. Or bury 5" deep in non-crop soils away from lake, stream or well.
Diseased plants	No		Piles usually don't get hot enough to destroy all diseases.
Dryer lint	Yes	N	May need to be moistened.
Eggshells	Yes	O	Crush shells before adding (they break down slowly).
Fish scraps	No		Attracts rodents and flies.
Hair	Yes	N	Add moisture and mix thoroughly in the pile.
Lime	Yes, but unnecessary	O	It is best to add lime to soil or finished compost. Lime converts ammonium nitrogen into ammonia gas, creating an odor problem. Overliming can also make a pile too alkaline and kill beneficial microorganisms.
Manure (horse, cow, pig, sheep, goat, chicken)	Yes	N	Excellent source of nitrogen. Fresh manure has a high water content; mix with drier materials.
Meat scraps, milk, cheese, grease, etc.	No		May attract rodents and other pests to backyard compost systems.
Newspaper	Yes	C	Use if it cannot be recycled. Best if shredded into small pieces.
Oak leaves	Yes	C	Shred before adding. Very acidic and decompose slowly.
Pine cones, needles (redwood, eucalyptus)	Yes, but use sparingly	C	Shred first and add in small quantities.
Sawdust and wood shavings	Yes, may need to add nitrogen	C	High carbon content. Do NOT use sawdust from pressure treated wood.
Sod	Yes	N	Compost separately, grass side down. Cover with black plastic to inhibit growth.
Weeds	Yes, but not seeds or spreading roots	N	Annual weeds which have not gone to seed can be composted. Plants that spread through roots or runners (morning glory, buttercup, ivy, etc.) should not be put into fresh compost piles. Spread these plants on pavement to dry thoroughly before adding to compost pile. Home compost piles usually don't get hot enough to kill all seeds.

C=Carbon N=Nitrogen O=Other/Optional

Vermicomposting

Setting up your worm bin

1. Soak cardboard bedding in sink or bucket for ten minutes.

2. Wring out excess water (should be as damp as a wrung out sponge).

3. Cover the bottom of the bin with a thin layer of bedding.

4. Place worms in one corner of the bin and add rest of bedding on top.

5. Add "aged" food in corner near the worms and *under* the bedding.

Maintaining your worm bin

Monitor moisture

Check bedding for moisture content regularly for the first couple weeks. You will learn how long and what makes the bin dry out or get too moist. Keep a spray bottle on hand to moisten the bin as necessary.

Don't overfeed

In the first few weeks go slow. Don't overfeed the worms, they are still acclimating to their new home. If they came from the worm farm, they are not used to eating food scraps yet. It will take them a little while to switch from horse/cow manure.

Add only fruits, vegetables and cereals such as oatmeal, rice, etc.

NO MEAT, FISH or DAIRY products. Bury food under bedding to keep down the smell, to keep it moist and in the dark (a worm's two favorite environmental requirements).

Add food scraps as needed

Once you can no longer tell what the previous food was in the bin, it's time to add more. Place food around different corners of the bin each time to spread it out.

Add bedding as needed

Bedding will eventually dissolve and be eaten by the worms in a of couple months. The bedding is important for worm reproduction and proper composting aeration. To help your bin's ecosystem, you can add decaying leaves from your yard, this will help with the diversity of micro-organisms doing the decomposing along side the worms.

Remember, this is a starter bin. It will not usually hold all the scraps a small family will make. Once you have mastered the care and maintenance of this bin, you could move on to either more bins or a bigger bin.

Worm Worries: Troubleshooting

(content from Shedd Aquarium)

When you have:	What may be happening:	What you can do:
Odor	Exposed food	Cover food scraps with bedding
	Too much moisture	Add dry bedding; reduce the amount of food added to the bin; avoid adding food with a high percentage of water (like melon)
	Not enough oxygen	Add dry bedding; mix bin contents daily; be sure bin has adequate ventilation
	Food in bin is naturally odorous (like onion or broccoli)	Avoid foods that smell unpleasant when they decompose; don't add meat, bones, dairy or oil products to the bin (these become rancid when decomposing)
Disappearing Worms Dead worms decompose quickly. If you don't monitor the conditions, you could end up with a bin with no worms in it.	Bin is too wet (worms are drowning)	Don't panic! Add dry bedding; avoid adding foods with high water content
	Bin is too dry (worms are drying out)	Lightly moisten bedding; add moist foods
	Not enough air (worms are suffocating)	Mix bin contents to aerate; be sure bin has adequate ventilation
	Not enough food	Add food
	Bin is too hot or too cold	Keep bin in a location where the temperature will be between 50°F and 80°F
	Overabundance of mites	Remove any food with a congregation of mites
Fruit Flies If fruit flies become a problem, make a fruit fly trap or use flypaper.	Exposed food	Bury food under bedding; cover the contents with a dry sheet of newspaper
	Too much moisture	Avoid overfeeding; add dry bedding
	Fruit fly eggs in food scraps	Wash all fruits and peels—even those you remove before eating (like bananas and citrus)

Fruit Fly Trap

Fruit flies are common but easy to manage. You can purchase fruit fly traps at hardware stores or make your own.

Put two tablespoons of apple cider vinegar in a glass, jar or bottle and add a few drops of dish soap to break the surface tension of the vinegar (the flies fall into the liquid and can't get back out).

Uses for Finished Compost

Soil amendment: Mix 1–3 inches with top 4–6 inches of soil

Potting mix: No more than ¼–½ of potting mix

Surface mulch: Add 1–2 inches to garden beds

Lawn topdressing: Gently rake 1–2 inches into lawn