THE NATURAL LAWN & GARDEN

Healthy Landscapes for a Healthy Environment

Composting Yard and Food Waste at Home

2010

Composting At Home

Good For Your Garden— And The Environment!

Composting yard waste and kitchen scraps is one of the best and easiest things you can do to reduce waste and grow a healthy, sustainable garden. Using compost in your garden recycles nutrients and organic matter that help grow trouble-free plants with less water, fertilizer or pesticides. Compost also builds healthy soil that absorbs and filters runoff, protecting streams from erosion and pollution.

Composting at home can also save you time and money. You won't have to bag and drag yard waste to the curb for collection, pay to have it trucked to composting facilities or buy finished compost. Composting your food scraps keeps them out of costly landfills and reduces your garbage bills.

The following methods for composting your yard and kitchen scraps are described in this guide:

- Composting yard waste in piles, bins and turning systems.
- Pest-resistant composting of kitchen scraps using worm bins, food digesters and garden burial.

Additional methods of recycling organic wastes at home are described in two other guides:

- *Growing Healthy Soil* describes how to use garden trimmings as mulch to conserve moisture and build soil. It also explains how to use finished compost as mulch or to amend soil.
- *Natural Lawn Care* explains how to leave grass clippings on lawns to fertilize and improve your soil, and build healthy turf.

Read on to learn all about composting! Then call the WSU Master Gardener Hotline at (425) 357-6010 if you have questions or need other guides. Refer to the Resources section for bin building plans.

Climate Change

Building Your Soil With Compost Can Help

- Composting keeps yard and food waste out of landfills (where it would generate methane, a potent greenhouse gas).
- Compost builds the soil, removing carbon dioxide from the atmosphere and storing it as organic matter.
- Compost also reduces the need for chemical fertilizers and pesticides (another source of greenhouse gases), and composting at home reduces fuel burned for transport.

Be Climate Smart – Use Compost!

COMPOST. It's GRRREAT For Your Garden!

Reducing waste is just the beginning of benefits from composting at home. When you use the finished compost in the garden the savings of time, effort and money just keep growing!

- Soil amendment. Mixing compost into the soil before planting improves every type of soil, and makes every plant grow better. Compost helps sandy soil hold water and nutrients. Compost also loosens clay soil so water is absorbed and drains better, roots can spread, weeds are easier to pull, and plants and soil life can breathe. Two to four inches of compost mixed into the top eight inches of soil throughout planting areas will make a difference for years to come.
- Mulch. An inch or two of compost spread on planting beds helps smother weeds, keeps moisture in the soil, and feeds valuable soil life and plants as it breaks down.

For more information on how to use compost in your yard and garden, see the *Growing Healthy Soil* guide.*

Choose The Best Composting System

There are lots of ways to make good compost—the best method is the one that is most convenient for you. Some common methods of composting yard waste are described below. Food scrap composting options are described in a later section.

Composting yard waste

Most garden waste (leaves, grass clippings, stalks and sticks, etc.) can be easily composted in simple bins without pest or odor problems—but only if food scraps are not added. Food scraps can create bad odors, and attract flies, rats and other pests. The following systems are ideal for composting yard waste. Refer to the Resources section for additional information on these methods.

- **Piles** are the simplest composting method, requiring no special tools or bins. However, open piles can easily become too wet if uncovered, can dry out, or can be disturbed by pets or other animals.
- **Holding bins** neatly contain composting materials, ward off animals and keep in moisture for efficient decomposition. Many types are available in stores, online, and in mail-order catalogs. They can also be made from wood pallets, wire fencing or hardware cloth, cement blocks, or other recycled materials.
- **Turning systems** are designed for quick, hot composting to handle large amounts of material. To make compost turning easy, use a series of bins, or a rotating barrel.
- **Mulching and grasscycling** are great ways to reuse yard trimmings in the garden. See the *Growing Healthy Soil* and *Natural Lawn Care* guides* for details on these practices.

*Refer to the Resources section for a listing of all of the Natural Lawn & Garden guides and for information on how to obtain them.

Secrets for Successful Yard Waste Composting

It's not a secret—simply place garden waste in a pile and bacteria, bugs and fungi will turn it into compost—but it may take a year or longer. For quicker composting, provide the decomposer organisms with proper food and conditions:

1. **A balanced diet.**
   Composting bacteria thrive on a mix of succulent "greens," like fresh grass clippings, annual weeds, and flowers, and on woodier "browns," such as autumn leaves and corn stalks. An equal mix of greens and browns works well. Too many greens can produce a smelly, soggy mess. A pile that is mostly browns takes a long time to decompose. The chart below lists common greens and browns.

2. **Bite-sized pieces.**
   Decomposers can break down small pieces quicker than large ones. For rapid composting, chop woody stalks with a shovel or machete, run over them with a lawn mower, or put them through a shredder.

3. **Moisture.**
   Materials should be moist but not dripping wet—like a wrung-out sponge. Spray and mix dry trimmings as they are added to the pile. Keep compost piles in the shade, and cover open piles with plastic.

4. **Fresh air.**
   If materials are too wet or compacted, composting will slow down and may create bad odors. Start with a good mix of materials including some coarse stalks or sticks so air can flow through. Let air into soggy piles by turning them and mixing in coarse stalks or dry straw.

5. **Pile size.**
   A pile that is one cubic yard (3 x 3 x 3 feet) is ideal. Smaller piles dry out quickly, though bins with solid sides and a lid help keep small piles moist. Larger piles may need to be turned to let air into the middle.

6. **Preventing pests and other problems.**
   Use the chart below to avoid materials that may attract pests, create odors or cause other problems.

What Can Be Put In Home Yard Waste Compost Systems?

DO compost in piles or bins	DO NOT compost at home
Greens	
Fresh grass clippings	Clippings recently treated with "Weed & Feed" or other herbicide - put in curbside yard waste collection.
Fresh garden trimmings, flowers and plant leaves	Insect-infested or diseased plants - put in curbside yard waste collection.
Barnyard aged manure (horse, cow, chicken)	Pet feces (dog, cat, rodent, exotic bird) - wrap in plastic bag and put in garbage.
Garden vegetable leaves and stalks, fallen fruit	Meat, fish, poultry, dairy products, cooked vegetables and fruit see page 7.
Weed leaves, stems and flowers	Weed seed heads and roots of spreading weeds like ivy, buttercup, morning glory and quackgrass - put in curbside yard waste collection.
House plants and potting mix	

Browns	
Autumn leaves	Large amounts of evergreen leaves, needles or cones
Twigs and stalks	Branches over 1/2 inch diameter; berry brambles, rose stems, holly
Coarse sawdust or shavings (small amounts)	Sawdust from plywood, treated or painted wood
Shredded paper, cardboard, paper towels, napkins or tissues	Coated photo or copy paper, colored paper, waxed cardboard

Do I Need to Add . . .

Many books and articles recommend adding compost "activators" or "starters," ground limestone, soil or finished compost to piles. None of these ingredients are essential for composting. Compost "activators" or "starters" usually contain nitrogen fertilizer, or dried enzymes or bacteria to "kick-start" decomposition. The nitrogen may be useful in a pile that has too many browns, but an organic nitrogen fertilizer is a less expensive way to get this nutrient. There are plenty of bacteria on yard trimmings ready to start decomposing when conditions are right.

Food Web Of The Compost Pile

Some of the visible creatures in the compost pile feed directly on organic wastes. Others wait until micro-organisms have begun the process.

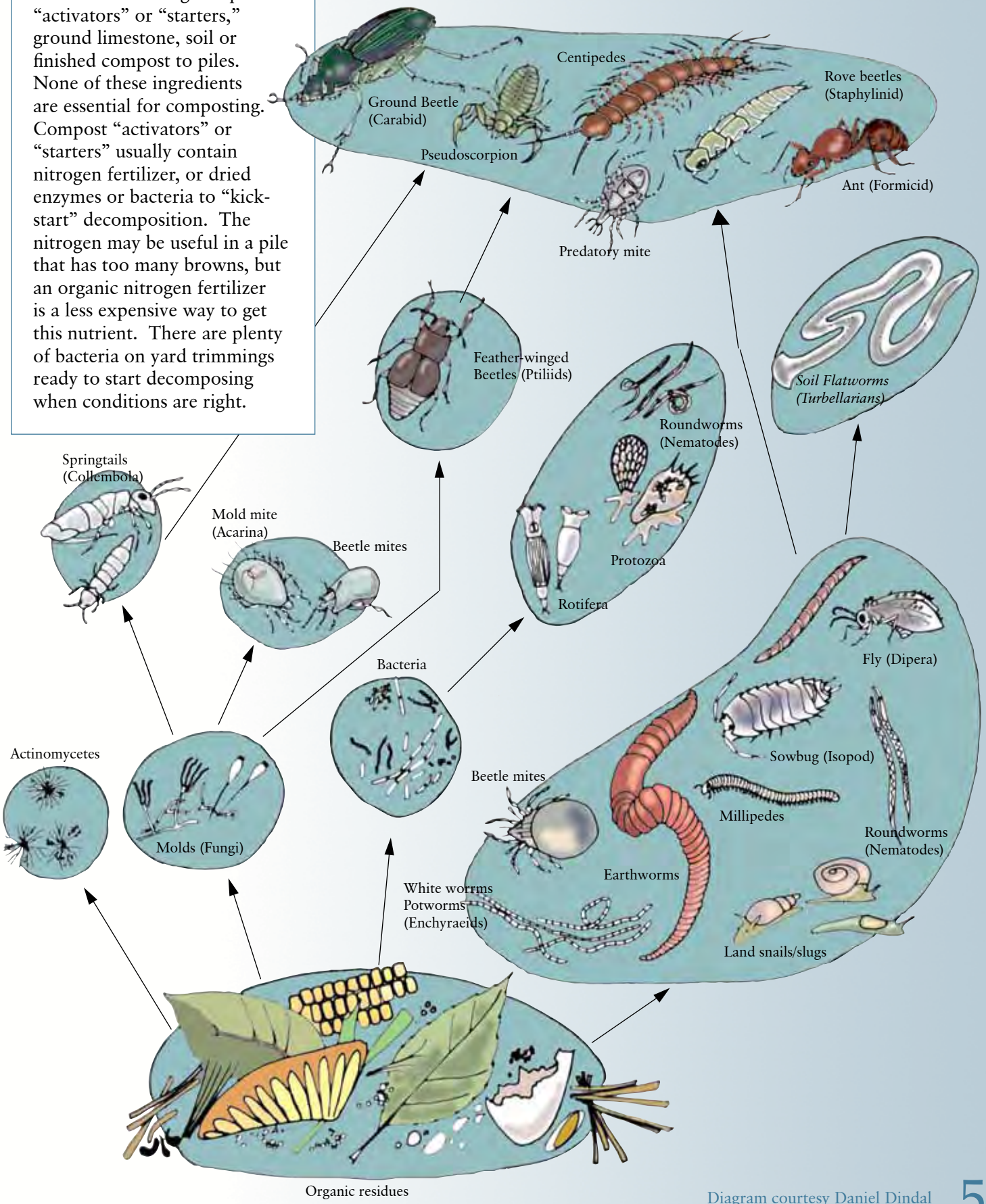


Diagram courtesy Daniel Dindal

Yard Waste Compost Recipes

There are many ways to make good compost. Here are two basic recipes to help you get started. Choose the recipe that suits the amount of time and effort you want to spend.

Quick and Hot Compost

Made in batches that are ready to use in 2 to 3 months.

Ingredients: enough to make a 3 x 3 x 3 foot pile, or fill a bin.
– 3 to 4 heaping wheelbarrows of fresh "greens."
Do not use "Weed & Feed" treated grass clippings.
– 3 to 4 heaping wheelbarrows of "browns"
– Water (from a watering can or hose with spray head)

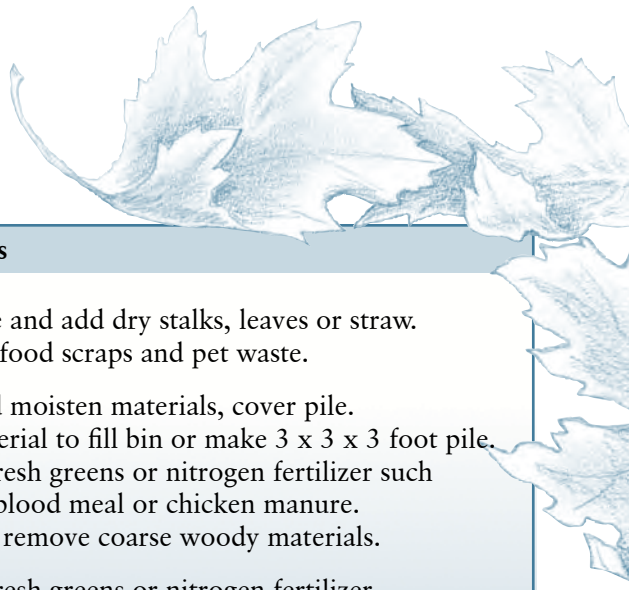
Steps:
1. Chop or shred coarse materials with a pruner, machete, shovel, lawn mower or shredder.
2. Put roughly equal mix of "greens" and "browns" on a tarp or on the ground.
3. Mix and spray materials with water until they glisten. Or just mix and moisten materials as you fill the bin.
4. Load mix into bin or stack in pile. Repeat until bin is full.
5. Check heat in **middle of pile** by using a compost thermometer or by touch. When pile has heated and starts to cool (5 to 10 days), pull it apart and restack, putting materials from the outside edges into the middle and hot stuff from the middle on the top and sides. Ideally, the middle of the pile should heat up to 110 to 140F—too hot to touch! Moisten as needed to keep everything as moist as a wrung-out sponge. If pile does not heat up, check the Yard Waste Compost Troubleshooting chart.
6. Monitor pile and turn again when it cools. Cover and let cure for 8 weeks or more before using. It's ready when most material is dark, crumbly and sweet-smelling like soil.

Cool and Easy Compost

Built continuously as materials are available. Ready in 6 to 18 months.

Ingredients:
– "Green" and "brown" yard trimmings, as available. **Do not use "Weed & Feed" treated grass clippings.**
– Water (from a watering can or hose with spray head)

Steps:
1. Put yard trimmings in bin as picked up from yard. Mix and moisten dry materials as they are added. Chop tough stalks using a machete or spade.
2. Cover with plastic or bin lid after each addition.
3. Dig into pile occasionally. If materials in the middle of the pile are not decomposing, check the Yard Waste Compost Troubleshooting chart.
4. In 6 to 18 months pull aside fresh materials to harvest dark, crumbly, sweet-smelling finished compost at bottom of pile. Return undecomposed materials to bin.



Yard Waste Compost Troubleshooting

Symptoms	Cause	Solutions
Smells like rotten eggs or garbage	Pile is too wet	Turn pile and add dry stalks, leaves or straw.
	Food or pet waste in pile	Remove food scraps and pet waste.
Pile is dry inside	Not enough water	Turn and moisten materials, cover pile.
	Pile is too small	Add material to fill bin or make 3 x 3 x 3 foot pile.
	Too much woody material	Mix in fresh greens or nitrogen fertilizer such as urea, blood meal or chicken manure. Chop or remove coarse woody materials.
Pile is damp inside, but not composting	Lack of greens	Mix in fresh greens or nitrogen fertilizer. Chop or remove excess woody material.
Pile has shrunken, but looks undecomposed	Outside of pile is dry, inside probably composted	Check in pile for finished compost. Use undecomposed material in new batch.
Clumps of slimy grass, ammonia smell	Too much fresh grass	Leave clippings on lawn, or mix in brown leaves or straw.

Steps To Successful Food Scrap Composting

Food scraps can be a great source of nutrients for the garden. However, they are also attractive to disease-carrying pests like rats, and must be composted with care. Food scraps should only be composted in systems that keep out rodents and other pests. Meat, fish, poultry, dairy products and pet wastes should not be composted in any system at home—they break down slowly, create bad odors and attract pests. There are three simple and reliable ways to compost food scraps without pests:

- Burying food scraps in the garden is a simple method requiring no special tools.
- Food "digesters" provide a convenient and pest resistant way to compost food scraps.
- Worm bins are a fun and interesting method for composting food scraps to produce rich compost and worms for fishing.

What Can Be Put In Home Yard Waste Compost Systems?

Bury in garden, compost in worm bins or food digesters

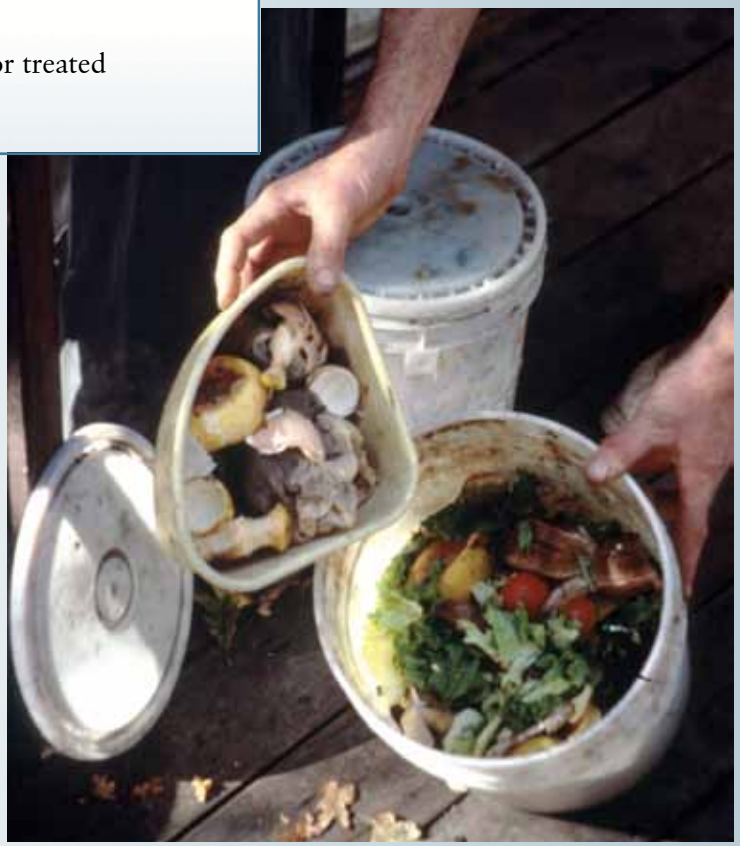
- **Greens:** fruit and vegetable trimmings, bread and grains, coffee grounds and filters, tea bags, fruit from yard.
- **Browns** (bedding): newspaper, cardboard, fall leaves, clean sawdust or shavings.

Do not compost or bury

- Meat, fish, poultry or dairy products—put in disposal or trash.
- Pet wastes—bag in plastic and put in trash.
- Evergreen leaves, sawdust or shavings from painted or treated wood, coated paper.

How Do I Store Food Scraps In The Kitchen?

A plastic container with a lid is great for storing scraps in the kitchen until you are ready to take them outside. Empty the container into your worm bin, hole in garden or digester every two days so food scraps don't start to smell. A 5-gallon bucket with tight lid can be used outside to store food scraps for longer periods if it is inconvenient to add them to the compost, but odors and flies may become a problem— especially in summer. Sprinkling an inch or two of sawdust, shredded newsprint, or coconut coir on top of layers helps prevent flies and odors. Food scraps can also be stored in a plastic container in the freezer to control these problems. Do what works best for you.



Burying Food Scraps in the Garden

Burying food wastes at least 8 inches deep in the garden is a safe and easy way to compost. Garden soil provides a natural barrier that keeps out flies and other pests, and holds in moisture and odors. Just follow these simple steps:

Step 1. Select a spot.
Food scraps can be buried in empty areas of vegetable and flower gardens, or in holes outside the drip line (below the ends of branches) of trees and shrubs.

Step 2. Dig a hole.
Use a shovel or post hole digger to dig a hole or trench about 1 foot deep.

Step 3. Add food scraps.
Add 2 to 3 inches of food scraps to the hole. Chop and mix scraps into soil.

Step 4. Cover with soil.
Cover food scraps with at least 8 inches of soil to keep pests out.

Step 5. Watch for pests.
Check for signs of digging by rodents, dogs or other pests. If you see signs of digging, it may be better to switch to a digester or worm bin that excludes pests.

Step 6. Plant.
Food scraps may take from 1 to 6 months to decompose depending on the season, moisture, soil and what is buried. Seeds and small seedlings may be planted on top of buried food scraps immediately. Large transplants should not be planted until food has decomposed.

Food Digesters

Food digesters are partially buried metal garbage cans or other containers with tight- fitting lids, and holes or mesh screens in the bottom providing access to the soil. Digesters provide more protection from pests than garden burial, and require less work than digging holes for burial or maintaining a worm bin. Follow these steps to start a digester:

Step 1. Get a digester (or two).
Digesters can be purchased through many garden supply catalogs, and building plans are available online for homemade food digesters. Refer to the Resources section for more information. Using two digesters makes management easy. One digester can be fed for active composting, while compost in the second finishes decomposing before harvest.

Step 2. Select a spot.
Find a convenient spot in the garden that has at least 18" of well drained soil. If your soil drains poorly, consider building a mound of soil to set the digester in.

Step 3. Dig a hole (or two), and install digesters.
Use a shovel to dig a hole large enough to bury the base of the digester 17 inches deep, or according to the manufacturer's instructions.

Step 4. Add food scraps and cover material.
Add layers of food scraps as they are generated. Covering each addition of food with a thin layer of shredded paper, sawdust, or coco-coir helps to speed composting and reduce flies, though it is not essential.

Step 5. Harvest.
Digesters can be fed for 6 to 12 months before they are full of food scraps. If you have two digesters, when the first is full, stop using it, and use your second digester for the next 6 to 12 months. When the second digester is full, shovel the finished compost out of the first unit for use in the garden, and begin using that unit again. If you only have one digester, shovel the compost and decomposing food scraps out of the digester when it gets full, and bury in the garden.

Worm Bin Composting

Worm bins are a fascinating way to turn food scraps into high-quality compost. Follow these easy steps to start your own worm bin. Check out Mary Appelhof's book *Worms Eat My Garbage* for more detailed information on composting with worms.

Step 1. Get a bin.

Use a sturdy wood or plastic box with a tight-fitting lid to keep pests out and moisture in. Holes drilled in the bottom are essential for drainage. Drill holes near the top of all sides for added ventilation; cover large holes with mesh to keep flies out. A box about 18 inches deep is best, since worms must live near the surface to breathe. Worm bins can be made from old cupboards or crates, or built with plywood. Bins made from recycled plastic are available online or through mail-order catalogs. Refer to the Resources section for additional information.

Worm bins should have one square foot of surface for each pound of food added per week. A 2 foot by 4 foot by 1 foot deep worm box can process about 8 pounds of food scraps a week—usually enough for two people. Weigh your food scraps for a few weeks before buying or building a bin. Worm bins can be kept in a basement or enclosed garage. Cold winter weather and hot summer temperatures can dramatically slow worm composting. If bin is kept outside, find a spot that is shady in summer but gets some winter sun. Outdoor bins can be insulated with rigid foam insulation tacked to the lid and sides.

Step 2. Fill the bin with bedding.

Carbon-rich bedding supplies worms with a balanced diet, and helps prevent flies and odors. Good beddings include moist autumn leaves, shredded cardboard or newspaper, or straw—a mix of these works best. Immerse dry bedding in a garbage can full of water for several minutes before adding to worm bin, or mix and spray with hose until everything is moist like a wrung-out sponge. Fill the bin to the top with loose bedding, to keep the worms from freezing in winter or getting too hot in summer. (Tip: save up a few bags of leaves each fall to rebed your bin later.)

Step 3. Add worms.

Red worms, also known as "red wrigglers" or "manure worms," are used for composting. "Earthworms" or "night crawlers" are not suitable for composting. Start with about a pound of worms (about one pint of pure worms) to keep up with food scraps. Get red worms from a friend's bin or refer to the Resources section for additional information.

Step 4. Bury food scraps.

Pull aside bedding to make holes or trenches large enough to lay food scraps 1 to 2 inches thick, and deep enough to cover scraps with a few inches of bedding. Bury in a different spot each week to give the worms a balanced diet of food scraps and bedding. Place a sheet of plastic or moist newspaper on top of the bedding to keep moisture in and flies out.

Step 5. Harvest compost and worms.

After 6 to 12 months, most of the bedding should look like dark, rich soil. To harvest compost and rebed the bin, push the compost to one side of the bin (it shrinks as it composts) and fill the empty side with fresh bedding. Then bury food scraps only in the new bedding until any food scraps in the old bedding finish decomposing, and most worms have migrated to the fresh food. Harvest finished compost and replace with fresh bedding.

It is simple to pick out a few worms for fishing. To harvest more worms to start new bins, shovel a few gallons of compost into a pile in bright daylight. After 15 minutes, scrape away the outer layer of compost until many worms are visible. Repeat until worms are concentrated at the bottom of the pile.

Stackable Worm Bins

A number of worm bins are for sale that use stacking trays to take advantage of the worms' tendency to feed on the surface and migrate out of finished compost. The top tray is fed fresh food scraps. When material in the bottom level is decomposed and worms move up into fresh materials, the tray is removed, harvested and then rebedded and replaced on top. For more information on these bins and where to get them, refer to the Resources section.

Worm Bin Troubleshooting

Symptoms	Cause	Solution
Smells like rotten eggs or garbage	Too wet	Mix in dry leaves, shredded newsprint or sawdust.
	Meat, fish, dairy or pet waste in bin	Keep food scraps and pet waste out.
	Food scraps not covered	Cover food with bedding when added.
Bedding is dry, few worms	Not enough water	Mix and moisten bedding, cover with plastic or moistened cardboard. Move bin out of sun.
Food scraps building up	Too much food	Limit food scraps. Add more worms. Build another bin.
	Bin too cold or too hot	Move bin to cool basement or garage. Keep bin filled with bedding.
Maggots in bin	Meat, dairy or other animal products	Keep animal products out of the bin. Cover bedding with cardboard or plastic.
Fruit flies swarm out when bin opened	Exposed food scraps	Always cover food scraps with bedding. If you still have fruit flies, add an inch of sawdust or moistened shredded newsprint to top of the bedding, or cover bedding with cardboard or plastic.
Worms crawling up sides of bin	Too much food, bedding too wet or fully decomposed	Limit food scraps or build another bin. Add dry bedding.

Still having trouble? Call the WSU Master Gardener Hotline at (425) 357-6010—they're the experts!—or e-mail them at mg.help@wsu.edu.

Resources

For more information on composting, contact the WSU Master Gardener Hotline at (425) 357-6010 or send an e-mail to mg.help@wsu.edu.

Web Resources:

- Snohomish County Solid Waste, visit www.snoco.org and search for "Yard Debris"
  - — Food Waste Composting (English and Spanish language versions)
  - — Grasscycling (English and Spanish language versions)

- WSU Snohomish County Extension, visit www.snohomish.wsu.edu/garfact.htm
  - — Fact Sheet #12 – Composting
  - — Fact Sheet #23 – Composting with Worms

- Natural Resource Conservation Service, visit www.nrcs.usda.gov/feature/backyard
  - — Backyard Composting

- Seattle Tilth, www.seattletilth.org/learn/resources-1/compost/methodsandbins
  - — Plans for building your own composting system
  - — Red worm sources
  - — Worm composting
  - — Yard and Food Waste Composting methods and bins

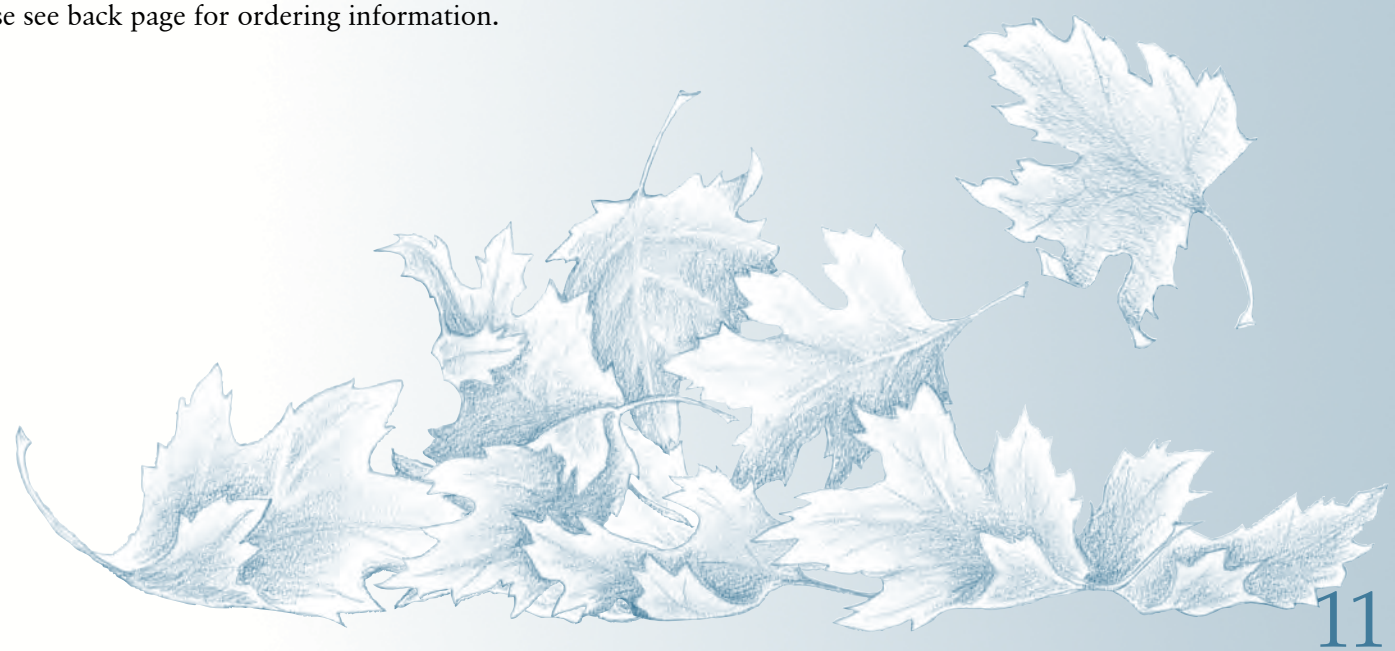
Books:

These books are available at local libraries, bookstores and some nurseries:

Worms Eat My Garbage: How to Set Up & Maintain a Worm Composting System by Mary Appelhof; Flower Press, 1997
Let It Rot by Stu Campbell; Storey Books, 1998
Mulch It! by Stu Campbell; Storey Books, 2001
The Rodale Book of Composting: Easy Methods for Every Gardener edited by Grace Gershuny and Deborah Martin; Rodale Press, 1992

Natural Lawn & Garden Guides:

Please see back page for ordering information.



For a worm bin, use an 18-inch deep wooden or plastic box with a tight fitting lid.

To Request A Natural Lawn & Garden Guide, Contact:

- **Snohomish Conservation District**
  (425) 335-5634, ext. 4, www.snohomishcd.org
- **Snohomish County Public Works, Surface Water Management Division**
  (425) 388-3464, www.naturalyard.surfacewater.info
- **WSU Snohomish County Extension Master Gardeners**
  (425) 357-6010, www.snohomish.wsu.edu

The Natural Lawn & Garden Series

- Growing Healthy Soil
- Choosing the Right Plants
- The Plant List
- Smart Watering
- Composting at Home
- Natural Pest, Weed & Disease Control
- Natural Lawn Care
- Natural Yard Care (summary)

For Additional Information Visit:

www.naturalyardcare.info

Snohomish Conservation District

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