WASHINGTON STATE UNIVERSITY
KITTITAS COUNTY EXTENSION

Master Gardener Program

Common Composting Questions & Answers

What is Composting?

Composting is a simple technique that turns organic materials like yard waste and food scraps into a rich soil conditioner that we can use in our gardens, lawns and soil. This process occurs in nature continually as vegetation falls to the ground and slowly decays. Composting is simply a technique we can use to manage and speed up this natural process of decay. The material that remains from the decay process is similar to soil organic matter. It holds water and nutrients in the soil and makes the soil more porous and easier to dig.

Gardeners have long made and used compost to improve garden soil. Yard wastes and vegetable scraps can make up as much as 20% of our household garbage. Composting effectively recycles that waste.

Why Compost?

- Saves money by lowering garbage bills and replacing store-bought soil conditioners.
- Helps garden and house plants by improving the fertility and health of the soil.
- Saves water by helping the soil hold moisture and reducing water run-off.
- Benefits the environment by recycling valuable organic resources and reducing the amount of materials going to landfills.

How To Make Compost

Slow Composting

Employing slow composting is easy and is a convenient way to turn yard wastes into useful soil amendments. It is the best method for people who do not have the time to tend a hot compost pile. Microorganisms, insects, earthworms, and other decomposers will slowly break down the wastes. A mixture of **Energy Materials** and **Bulking Agents** in the compost pile provides the best food source and environment for decomposition.

1. **Energy Materials –** fresh dairy, chicken or rabbit manure, fruit and vegetable waste, garden trimmings (natural, untreated), coffee grounds.
2. **Bulking Agents –** wood chips, sawdust, grass hay, wheat straw, corn stalks.

Add fresh wastes to the pile by opening the pile, placing fresh wastes into the center and covering them. This helps aerate the pile, and also buries the fresh wastes so they do not attract pests.
Fruit and vegetable wastes are particularly appealing to pests, such as flies, rats and raccoons. To avoid pests, bury these wastes within the pile. If you bury these wastes in the pile, and pests are still a problem, you may need to screen the pile or keep vegetable wastes out.

Fast or Hot Composting

If you create and maintain a balance of air, moisture, and energy for the compost microorganisms, they will produce a hot compost that will break down quickly and kill off many weed seeds and disease organisms. Making hot compost takes extra effort, but it produces a high quality product quickly.

For fast or hot composting, the initial mix must have proper moisture and air content and organic materials that provide a rich food (energy) source for bacteria.

Compost Raw Materials

Bulking Agents:	Wood Chips, Sawdust, Grass Hay, Wheat Stray, Cornstalks
Energy Materials:	Grass Clippings, fresh dairy, chicken or rabbit manure, fruit and vegetable waste, garden trimmings, coffee grounds.
Balanced Raw Materials:	Ground tree shrub trimmings, horse manure & bedding, deciduous leaves, legume hay.

Bulking Agents are dry, porous materials that help aerate the compost pile. They are too low in moisture and nutrients to decay quickly on their own.
Energy Materials provide the nitrogen and high-energy carbon compounds needed for fast microbial growth. If piled without **Bulking Agents**, these materials usually are too wet and dense to allow much air into the compost pile. Hence when you open the pile, it will have a foul, “rotten egg” smell.

Balanced Raw Materials contain a balance of energy and bulking agent properties. These materials will compost readily without being blended with other ingredients. Examples include horse manure mixed with bedding, spoiled alfalfa hay and deciduous leaves.

Building The Compost Pile

Collect enough material to make a pile at least l cubic yard in volume (an open pile 5 feet wide at the base by 3 feet high holds about a cubic yard). You need roughly two parks bulking agent to one part energy material.

Start the pile by adding energy material and bulking agents and mixing with a pitchfork. Squeeze a handful of the mixture to check its moisture level. If you barely squeeze out a drop of water, the moisture level is ideal. If the pile is too dry, add water, and check the moisture again. If it is too wet, mix in some drier material. Continue adding energy material and bulking agent, mixing and checking moisture until the pile is built.

You do not need a bin or other container to make compost. Piles work well. Some people prefer containers because they look neater, or because it is easier to shield them from pests. Containers can be simple or fancy. Make them from materials such as old wood pallets, lumber, mesh fencing, or cinder blocks. For hot compost, each bin should be about 3 feet by 3 feet by 3 feet in size. You can even have multiple bins. Sometimes you may have several problems to overcome. If you cannot get the pile to heat, all is not lost because the pile will still break down by the slow method of composting.

Turning the Compost Pile and Curing Phase

Use a pitchfork to turn the pile weekly and add water when needed. Turning gets air into the center of the pile and speeds the biological decay. Turning also mixes material from the outside of the pile into the hot center. Cover the pile during rainy periods so it will not get too wet. After initial turning, a regularly turned pile usually stays hot (120' F to 150' F) for several weeks to a month. The pile will shrink to about half its original volume during the hot phase. The pile then needs to sit another 4-8 weeks to cure. Temperatures during curing are 80' F to 110' F. The compost is ready to use when at least 8 weeks have passed since initial mixing, the pile no longer heats when turned and the material looks dark and crumbly. Curing affects the availability of nitrogen and the microbial activity of the compost. **Uncured compost may harm some plants.** This is most likely when compost is used in potting soil or to start seeds. Curing is less critical when small amounts of compost are worked into soil.

Using Compost in Your Yard and Garden

Compost is mixed with the soil to add organic matter or used as a mulch.

Amending The Soil

Compost makes the soil easier to work and creates a better environment for plant growth. Mix one to three inches of compost into your soil before planting a garden, lawn or flower bed.

As Mulches

Composts applied to the soil surface help control weeds, conserve water and protect the soil from erosion. Apply compost mulches in early summer, after plants are established and the soil has warmed. Later, mulches can be dug or tilled into the soil. When mulching perennial plantings, choose compost made from woody bulking agents because it resists compaction and slows the growth of weeds.

Why should I compost? Why shouldn't organic wastes go to the landfill?

Organic materials are a valuable resource when composted or used as mulches in the garden. Organics improve soil and plant health, prevent erosion, and hold moisture and nutrients in the soil. In a landfill, decaying organic materials create explosive methane gas and acids, which react with other materials and create toxic leathate, which may contaminate groundwater. Backyard composting is less expensive than sending wastes to the landfill, incinerator or centralized composting facilities.

Do I need a bin to make compost?

No. Yard waste compost can be made in open piles; however, bin systems help keep piles neat and are appropriate for many urban situations.

How large an area do you need to compost?

Depends on how large a yard you have, how intensively it is gardened, and how many people are being fed in the household. Generally, one or two 3' X 3' bins are adequate for the yard waste from your yard. A 2' X 3' X 1' deep worm bin is adequate for two or three people's kitchen scraps.

How long does it take to get finished compost?
Yard wastes in a holding unit can take from three months to two years to decompose (longer for large unchipped branches), depending on the composition of the materials, how they are prepared and if the compost is turned. If wastes are carefully combined to balance Nitrogen and Carbon, chopped, moistened and turned compost can be finished in as short as three weeks.

How do I know when compost is "finished"?
Compost is ready when most of the original plant materials are no longer recognizable (some tough woody materials may still be present – these may be sifted out from the compost). Finished compost is dark colored, crumbly and generally soil like in look and feel.

Do I need to add fertilizer to my garden if I use compost?
Compost contains nutrients that your plants need for optimum growth, such as nitrogen, phosphorus, and potassium. It is also an especially good supplier of micronutrients that are need in small quantities and are sometimes overlooked by gardeners, such as boron, cobalt, copper, iodine, iron, manganese, molybdenum, and zinc. The more varied the materials used to make the compost, the greater the variety of nutrients your compost will provide. You may, or may not need to fertilize. Compost also helps to improve soil drainage and moisture retention, holds nutrients from fertilization in the soil for gradual use by plants, and neutralizes acid soils.

How does compost affect the pH (acidity) of soils?
Most yard waste composts are neutral to slightly basic, and have significant buffering capacities to offset acidity.

Will I have too much compost? Can you recycle all your yard waste?
Nature recycles all of its wastes through mulching. Most people can easily use all of the compost generated by plants in your yard and kitchen (most people who compost import soil amendments in addition to their home compost). Generally, garden beds should get two to three inches of compost or mulch per year. Remember, organic material is constantly mineralizing, being transformed into plant tissues, and recycled.

What can I do with all my composted grass clippings if I don't have a large garden?
Grass clippings, composted or not composted, make excellent mulch around shrubs, trees, and potted plants. Several inches of mulch may be added to these plantings each year. Finished compost may also be screened and spread on lawns for healthy growth. If you do not have a use for all of your compost (or don't want to spread it on the lawn) ask friends and neighbors who garden if they would like your finished compost.

What are the storage needs for composting in the average yard?
The amount of compost generated in a yard depends on what is being grown there, how it is being composted and other factors. For small city yards, a holding unit should handle all of the waste generated. Larger properties may require more than one unit, or a three bin turning system. Remember that finished compost occupies about 30% less volume than the raw wastes. Storage is not usually a problem.

Is it OK to garden in pure compost? In compost mixed with fill soil?
It is best to mix compost with mineral soils (clay, sand) for gardening to have ideal texture and provide substance for the plant's roots. Clean fill soil and compost mixed in the right proportions should provide a good growing medium. Use of too much compost in a garden reportedly results in high levels of nitrates in some crops!

What can be done about a smelly pile?
Smelly piles are most often caused by poor aeration. The bacteria, which live in such "anaerobic" piles, produce a rotten egg smell. Wet, compacted areas should be broken up with a pitchfork, and coarse dry materials such as straw or corn stalks may be mixed in to aid drainage, absorb moisture and create air spaces.

Do compost piles attract slugs?
Slugs live happily in compost piles and help to break down organic wastes. Often they are so happy there that they don't bother garden plants. Compost piles can provide a daytime hiding place for slugs that may graze in gardens at night; plan placement of compost piles and barriers accordingly.

How can I stop flies and other insects from becoming pests around the compost piles?
Compost made entirely from yard wastes does not usually attract flies and other flying insect pests in large numbers. When putting food wastes into a yard waste pile such as vegetable cuttings, fruits and grains, cover immediately with several inches of finished compost or soil. This will help keep down flies. Do not put greases, meats or dairy products in your compost pile.

Can yard wastes treated with chemical pesticides and herbicides be put in the compost? What happens to these in the compost pile?
There are no simple, clear answers to these questions. Individual chemicals react in different ways and break down under unique conditions. In general it is probably safe to very thoroughly compost yard wastes that have contacted insecticides registered for home use or slug bait. Several herbicides (weed killers) do not break down and should be avoided. Several fungicides contain heavy metals, which can build up in your soil. You should never purposely dump any chemicals in your compost pile. Refer questions to Washington Toxic Coalition at 206-632-1545, or Washington Department of Ecology at 509-575-2490.

Can vacuum dust be composted?
Yes; however, fibers from synthetic carpeting will not decompose (they will probably not be noticeable in the finished compost).

Should I wear gloves when handling compost?
Gloves are not necessary when handling composted yard wastes or kitchen wastes.

Can yard wastes of unknown origin be safely composted without concern over potential herbicides?
No. Lawn clippings with herbicides may kill garden plants if used as mulch or "young" compost. If herbicide use is suspected, materials should be thoroughly composted and allowed to cure for several months before using in the garden.

Can pet wastes be added to home compost?
Pest wastes (dog, cat, and any carnivores) should be handled similar to food wastes; bury them in an ornamental garden. Compost with pet wastes should not be put on a vegetable garden.

Can inserts and colored pages from newspaper be composted?
Some glossy paper contains toxic metal pigments, so these materials should not be composted. Colored newsprint is safe to compost.

Can fireplace and barbecue ash be used in the compost?
Wood ash is an excellent source of Potassium, one of the three major nutrients needed for plant growth (along with Nitrogen and Phosphorous). Wood ash may be safely added to compost piles in thin layers. Charcoal (including mesquite) is just a partially burned form of wood, so as long as no other chemicals have been added, barbecue ash should be a safe compost addition. Check labels on packaging to be sure. Avoid using ashes from burning glossy magazine or other treated papers such as photo paper. These papers may contain heavy metals, which leave residues in the ash.

Can any diseased plant be safely composted?
No diseased plant should be added to a home composting system.

Can weeds be composted? How do you stop them from spreading in compost?
Weeds that spread vigorously – through roots or runners, such as buttercup, morning glory, quack grass, blackberries, and invasive ornamentals like ivy, should not be put into the compost pile. Spread these plants on pavement to dry thoroughly (may take months) and then add them to the compost, or throw them away. Do not compost weeds that have gone to seed. Many seeds will survive temperatures up to 130 - 140° F. Even a well-made "hot" compost pile may not reach these temperatures uniformly throughout the pile.

Can limbs from trees with tent caterpillars be composted?
Tent caterpillars lay eggs in patches on tree branches. These eggs will hatch in spring unless they are physically destroyed or burned. Do not compost limbs from trees with obvious tent caterpillar populations.

How do you know when you have the proper 30:1 Carbon to Nitrogen ratio (C-N) for fast composting?
Experimentation is the best way to get a good sense of Carbon and Nitrogen ratios in different materials. Mixing roughly equal volumes of fresh "green" materials (grass clippings, fresh weeds and flowers, etc) and dried or "brown" wastes (straw, corn stalks, dead plants, etc.) should provide a good C-N balance. Books on composting have tables giving some rough figures. Remember that the 30:1 ratio is an ideal, which yields quick, hot compost. Wide variations from this ideal will yield find compost in a longer period of time.

How can wood/bark chips be made to compost faster?
Rechipping to open more surface area and adding Nitrogen will both speed up decomposition of wood chips to some extent.

Can wood chips be used in compost?
Wood chips may be added to compost in limited amounts. They are very rich in Carbon, but their limited surface area prevents bacteria from decomposing them quickly. They will not break down completely for a long time, but will become "biologically stable" and improve drainage and aeration in heavy clay soils.

Can sawdust and wood shavings be used in compost?
Sawdust and wood shavings are rich in Carbon, like wood chips, plus they have more surface area for bacteria to work on than chips. Thus, these materials tend to rob more Nitrogen from the soil initially. Sawdust should be aged/weathered before adding it to the compost piles. To balance the Nitrogen demands on one cubic yard of fresh sawdust, add 3 ½ pounds of actual Nitrogen in the form of 17 pounds Ammonium Sulfate, or 15 lbs. Blood Meal, 11 lbs. Ammonium Nitrate, or 8 lbs. Urea.

Will mulching with wood chips or sawdust rob Nitrogen from plants?
Carbon-rich woody wastes will not compete with plants for Nitrogen if they are placed on the soil surface around plants. However, these wastes should not be mixed into the soil without extra Nitrogen fertilizer when turning it under (see recommendations in previous answer).

How do you gauge the proper moisture content for composting?
Materials should feel like a wrung out sponge, moist but when squeezed in your hand no more than a drop or two of water should come out. Some very dry materials (straw, cardboard and others) may need prolonged soaking to reach adequate moisture levels.

Do I need to water my compost pile?
Provision of adequate water is essential to quick composting, but if you are patient you can leave watering up to nature. Untended/unwatered compost piles may take up to two years to decompose. Occasional watering during dry seasons, along with covering piles with black plastic or old rug scraps will greatly speed up decomposition.

Should compost piles be covered?
A compost pile that has good moisture content (like a damp, wrung out sponge) will benefit from being covered with plastic or carpet scraps. Covering helps to keep piles moist in summer and prevents them from getting too soggy in winter. However, if a pile is too dry or soggy to start with, covering the problem may make it worse.

Do I need to use a shredder to make good compost?
Shredders are not needed for making compost out of many yard wastes. Shredders are useful for composting woody material such as branches over ½" diameter and large volumes of evergreen shrub prunings. Shredders may also be useful for quick/hot composting of corn stalks and other woody vegetable wastes, though composting of these wastes may also be sped by simply running them over with a lawn mower or chopping them with a spade or machete.

How can compost be "reheated"? Will Nitrogen fertilizer help?
Relatively fresh materials will heat up if turned (with proper moisture and bruising or shredding). Older "brown" materials should have a high nitrogen fertilizer or manure added when they are turned. Adding liquid Nitrogen fertilizer to a pile will help speed decomposition and generate heat also.

What tools can be used to chip woody wastes? How do you know what size to use?
Machete – Green or woody vegetable stalks
Lawn Mower – Leaves and twigs up to ¼" in diameter.
Electric Shredder – Leaves and twigs up to 1" in diameter.
Gas Shredder – Twigs and branches up to 2 ½" in diameter.
Commercial Shredder – (8+ H.P) – Branches over 2" in diameter.

Do compost "tumblers" work?
Compost tumblers work very efficiently if wastes are chopped, moistened and contain adequate Nitrogen. Tumblers with flat sides or internal baffles are recommended-they mix and aerate materials more thoroughly than those with smooth sides.

Should Limestone be added to compost?
Lime is not needed for good compost, and may contribute to loss of available Nitrogen. Most finished compost has a neutral to slightly alkaline pH.

Should compost "starters" or soil be added to compost piles?
Most "starters" are dehydrated bacteria. These bacteria are already present on dead plant material and multiply rapidly, so starters are not essential for composting. Soil is not needed in a compost pile, but it is not detrimental either.

Do you need to add fertilizer to the compost pile?
No. A mix of typical yard wastes contains sufficient Nitrogen for decomposition. Nitrogen fertilizers may be added to speed up decomposition of compost piles made entirely from woody yard wastes such as twigs and dormant (and fall/late summer) prunings, dried out/straw-like grasses or plants, or wood chips.

Should sod be composted separately?
Yes. Sod should be composted in piles completely covered with black plastic to exclude light and stop all growth. Other materials may be included in the pile, including vigorously spreading weeds, which will die without light.

Can grass clippings be composted alone without becoming matted and smelly?
Grass clippings mat and become stinky because they are very high in Nitrogen and also very fine, thus excluding air when piled up. Mixing grass with materials, which are coarser and contain more Carbon, such as brown leaves, will aid in their decomposition. Alternatively, grass clippings may be spread as mulch in the garden, or left to lie on the lawn. Compost piles made of just grass will break down if left undisturbed long enough.

Can pine needles be composted? Rose prunings? Holly leaves? Rhododendron leaves?
Rhododendron leaves, and other waxy evergreens break down slower than many other wastes, but they do not pose any problems in the compost or garden. Shredding these materials may help them break down quicker and be less conspicuous. The resistance to composting (rhododendron leaves) and loose matting (pine needles, rose prunings, holly leaves and rhododendron leaves) makes them excellent for mulching to protect tender plants from frost. Evidence shows that compost made from pine needles is not acid.

Can you compost if you have just kitchen wastes and no yard wastes?
Kitchen wastes can be composted in worm bins along with shredded and soaked newspaper or cardboard.

Why can't dairy products, meat and fish scrap be composted?
Animal products attract flies, rodents and other pests that carry diseases.

Can coffee filters and teabags be composted?
Certainly! Any uncoated paper products may be composted. Worms love coffee grounds and filters, as well as teabags. Don't try to compost coated papers such as glossy magazines or photographs, waxed paper, and certain copy papers.

How can kitchen waste be kept from rotting while storing it for composting?
Alternating 3 to 4 inch layers of sawdust between similar layers of food scraps in a sealed bucket will keep food wastes from rotting too quickly. Do not store food wastes over a few weeks before composting.

Are bugs in my worm box OK?
Many other decomposer organisms may be at work in your worm bin – some bugs, spiders, centipedes, and slugs are all common. They are not a problem. Fruit flies, however, may be a problem. Try covering bedding with plastic, and make sure you have a tight fitting lid on the box to exclude flies.

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