***10-Minute University*™**
The Clackamas County Master Gardener Association in collaboration with and in support of the OSU Extension Master Gardener™ Program

Gardening with Compost

Compost is an excellent mulch when placed on top of soil. It is a source of fertilizer and a soil conditioner when it is worked into the soil. Following the steps in this handout, a home gardener can turn grass clippings, leaves, and other yard debris into compost for home use.

Recipe for Success

Your compost pile is a teeming community of microorganisms (bacteria, fungi, protozoa) and others (centipedes, millipedes, beetles and worms) that "process" yard debris. To provide essential nutrients for the microorganisms, mix two parts carbon-rich ("brown") materials to one part nitrogen-rich ("green") materials as you build your pile. A pile with these proportions of carbon to nitrogen will promote large populations of microorganisms and produce compost quickly. Other proportions of brown to green will create good compost but will decompose more slowly.

Green (one part)	Brown (two parts)
• Fresh grass clippings • Green leaves • Plant stalks • Hedge trimmings • Annual weeds without seed heads • Vegetable and fruit scraps • Coffee filters and tea bags	• Old potting soil • Twigs • Dried grass and leaves • Shredded newspaper • Straw • Wood chips

Do not compost diseased plants; weeds with seed heads; invasive weeds such as quack grass and morning glory; the roots of perennial weeds; pet wastes; dead animals; bread and grains; meat or fish parts; dairy products; grease, cooking oil or oily foods. Grease, meat and dairy will smell bad and attract pests. Pet waste can spread disease. Weeds may spread to other gardens. Consider using a worm compost bin for your kitchen scraps.

To avoid herbicide problems: Use few or no herbicides. The warm temperatures in a compost pile accelerate herbicide breakdown to nontoxic compounds. Binding with organic matter in the compost also inactivates herbicides. Let your compost sit for a year or more before using it to allow nearly complete breakdown of herbicides.

Building a Compost Pile

- *Chop it Small:* If the microorganisms have more surface area to feed on, the materials will break down faster. Chop your garden debris with a machete, or use a chipper/shredder or lawnmower to shred materials.
- *Size Matters:* Compost piles trap heat generated by the activity of millions of microorganisms. A 3-foot by 3-foot by 3-foot compost pile is considered a minimum size for hot, fast composting. Piles wider or taller than 5 feet don't allow enough air to reach the microorganisms at the center.
- *Air and Water:* Most life on earth needs a certain amount of water and air to survive. Microorganisms in the compost pile work best when the pile is as damp as a wrung-out sponge and has many air passages. Extremes of sun or rain can adversely affect the balance of air and moisture in your pile. The air in the pile is used up faster than the water, so the pile must be "turned" or mixed up regularly to add air that will promote high temperatures and control odors.

- *Time and Temperature:* Decomposing bacteria thrive in temperatures between 110˚F - 160˚F. The hotter the pile, the faster they work. If you achieve a good balance of carbon and nitrogen, provide lots of surface area within a large volume of material, and maintain adequate moisture and aeration, the temperature will rise over several days.

Uses for Compost

- *To amend soil*: Mix two to five inches of compost into vegetable and flower gardens each year before planting.
- *To make potting mix*: Add one part compost to two parts commercial potting soil, or make your own with equal parts of compost and sand or perlite.
- *To top-dress a lawn*: Top-dressing turf areas with compost is recommended to provide a slow release of nitrogen. Mix finely sifted compost with sand and sprinkle evenly over the lawn. Using compost also will improve the condition of your soil and increase water retention, thus saving water.

Potential Problems and Solutions

- *Compost pile does not heat up.*

Possible causes	Potential solutions
Too wet: compost materials are soggy.	Turn the pile, adding dry, absorbent material such as sawdust, straw or wood chips.
Too dry	Water with hose; moisten pile without saturating it.
Not enough nitrogen: compost pile is too small; the heap is damp; it's warm only in the center.	Turn the pile, adding nitrogen-rich material (manure, grass clippings). Mix in to form a new pile; moisten.
Material may be finished composting.	Finished compost is dark and crumbly with an earthy smell.

- *Compost pile smells like rotten eggs.*

Too wet/not enough oxygen: compost pile is putrefying, not decomposing.	Turn the pile to aerate, adding dry, absorbent material such as sawdust, straw, wood chips.

- *Compost pile has ammonia odor.*

Too much nitrogen: excess nitrogen is released to the atmosphere in the form of ammonia gas.	Turn the pile, adding sawdust or other carbon source. Goal is to keep nitrogen in the pile.
Too alkaline: the loss of nitrogen in the form of ammonia increases when the pile is very alkaline (high pH). Adding too much limestone to the heap will make it alkaline.	Turn the pile, adding acid material such as sawdust, oak leaves, vegetable scraps.
Too wet/not enough oxygen	Turn the pile, adding dry, absorbent material such as sawdust, straw, wood chips.

- *Pests (rats, raccoons, insects)*

Presence of meat or fatty food scraps	Remove meat/fatty goods from the pile. Turn it to increase temperature and to balance carbon-to-nitrogen ratio; use animal-proof compost bin.

OSU Extension Service Resources https://catalog.extension.oregonstate.edu

Gardening with Composts, Mulches and Row Covers, EC 1247

Master Gardener™ Advice

- Call Home Horticulture Helpline: 503-655-8631 (Clackamas County), 503-821-1150 (Washington County), 503-445-4608 (Multnomah County).
- For 10-Minute University™ handouts and class schedule, visit www.cmastergardeners.org