



# ***Composting is easy!***

## What is compost?

- It's naturally decomposed organic/plant material, soil conditioner, nutrients, and living microbes. It's healthy "black gold" for growing healthy plants.

## Why is Compost called "Black Gold"? Because Compost:

- Increases soil life, which increases soil AND plant health.
- Puts nutrients back into the soil. (Adds major and minor nutrients.)
- Helps provide a healthy home for worms and soil microbes-bacteria and fungi-they make humus and improve the soil structure.
- Makes soil slowly release nutrients to plants and helps balance pH levels.
- Has living microbes that can strengthen plants resistance to disease and pests.
- Reduces stormwater runoff and helps soil hold rain water and melting snow, and it prevents erosion.
- Reduces waste, yard trimmings and kitchen food waste, which are 28% of the U.S. solid waste stream (food waste is 14.6%).
- Reduces greenhouse gases by reducing landfill material. Landfills are the largest emitter of methane, a gas that is 25 times more potent than the greenhouse gas, carbon dioxide. Food waste produces more methane per wet ton than most other waste material.
- Holds carbon in the soil (sequesters carbon), to help reduce climate change and global warming.
- Saves money; by making and using compost you don't need to buy fertilizers, you don't need to water as often, your plants are healthier and vegetable gardeners get higher yields!

## What do you need to compost?

- Brown/Carbon and Green/Nitrogen plant material, these are food for the microbes-bacteria and fungi, and worms and insects.
- Microbes use Brown/carbon material (leaves) for energy and Green/nitrogen material (grass, weeds without seeds, kitchen waste) for growth. (The best ratio is 3:1 by volume, or 3 buckets of brown material to 1 bucket green material.)
- When bacteria and fungi eat and reproduce, they produce heat, which speeds up the composting. Several cycles of microbes are needed to decompose plant material (when microbes die, the carbon and nitrogen in their bodies is used by other microbes). Worms, snails and insects also help decompose, by eating plant material and creating air and moisture channels.
- Supply the right amount of food, water and air to keep microbes happy and they'll do the work to make the compost that will make your soil and plants healthy.

## Why is WATER important?

- Microbes need water to live and eat the plant material. 45-60% moisture content helps speed up composting, it should feel like a damp sponge (compost material should stick together when grabbed and squeezed). Too much water can stop air flow and create odor, add leaves or turn pile to help dry the compost.

## Why is AIR important and Why TURN the compost?

- Microbes, worms and insects need air to live, reproduce and eat plant material. Air increases microbial activity and heat, which increases decomposition, (55-65% airspace is ideal).
- Most microbes live in the center of the compost, turning compost mixes outside material into the center so microbes can eat and decompose the material.
- To help the microbes decompose plant material, try to turn it at least once a week, for at least 3 weeks.

## What are the different ways to compost?

### **SLOW "COLD" Simple Composting - No Turning:**

- Takes long - up to 1 year to make compost, might not kill weed seeds and plant pathogens (diseases), but may be an easier method.
- Put sticks as the first layer to let air in at the bottom.
- Layer "brown" and "green" plant material (3:1) in a pile that is 3 feet by 3 feet wide and 3 feet high, mix it and leave it until it becomes compost.

### **FAST "HOT" Composting - Turning method:**

- You can make a pile, build or purchase bins, use garbage cans, tumble barrels or other systems. (Montgomery County Division of Solid Waste Services provides "free" compost containers, go to: <http://www.montgomerycountymd.gov/SWS/composting/bins.html> or call 311 for more information.)
- Put sticks as the first layer to let air in at the bottom.
- Layer, mix and water "brown" and "green" plant material (3:1) in a pile that is 3 feet by 3 feet wide and 3 feet high - this size helps keep heat and moisture in the pile (the pile should be no larger than 5 feet size so you can turn it).
- Turn compost after the pile heats up and turn the outside material to the inside center so microbes have more food to decompose and air to live. During the first 2 to 3 weeks, turn the pile every 3 to 4 days, or once per week at a minimum. Add water after turning (or as necessary), the pile will heat up after turning, speeding up the composting.
- After the last turning, let it "cure" for 4 to 8 weeks or until completely decomposed. Compost can be ready in a total of 6 weeks to 4 months, depending upon the materials used and how often you turn and monitor the decomposition of your compost.

### Why is it important for the compost to get hot?

- Hot compost, produces more microbes that decompose the material faster.
- Hot compost, 145 degrees, can kill weed and other seeds and reduce plant diseases.
- Ideally compost should heat up to 131-153 degrees for 3 to 5 days. (You can either monitor it with a compost thermometer or feel the center of pile a day or two after building it or turning it to judge when to turn it.)
- If compost is not heating up, mix in more greens, turn and water if needed.

### When is it ready to use?

- When compost is dark brown like soil, smells “earthy,” it’s the same temperature as outside, and the pile has shrunk to about half its’ volume, it’s ready!
- It’s easy to make sure your compost is ready to use by using these tests. 1) seal 1 cup of compost in a plastic bag for a week and then open the bag, if it smells sour or like ammonia it’s not done, let it compost for another week. And/Or, 2) put some compost in a pot and plant 5 radish seeds and if they grow within a week, then it’s ready, if they don’t grow, then let it compost for another week.

### How can compost be used?

- Mix 2-3 inches of compost into the top 6-8 inches of soil (lower rates for sandy, higher rates for clay soils.) Testing your soil can help you determine usage rates and the need for any additional nutrients and/or pH adjustments.
- Mix into container plantings or use for potting seedlings and plants: 1/3 compost, 1/3 potting soil, 1/3 sand.
- Make and use compost extract. “Dechlorinate” water by letting it sit overnight - and then mix 1 gal. of compost with 4 gals. of water, let mixture soak for 4-6 hours, then strain it - use a sock or nylon - and apply compost solution to plants.
- Finished compost can be used as mulch and incorporated into the soil and partially decomposed compost, can be used as mulch on top of the soil.

### What to Compost and what to Avoid?

DO COMPOST: GREEN/Nitrogen Material: Coffee grounds, Grass clippings and Yard trimmings, Manure: cow, horse, poultry, sheep, rabbit (check animal feed sources, they should be free of herbicides & pesticides). Fruit & vegetable waste (in rodentproof container).

BROWN/Carbon Material: Leaves, Straw (without herbicides & pesticides), Sawdust & Wood chips, Woody yard trimmings.

**AVOID COMPOSTING\***: Cat and Dog manure, Dairy and Meat, Weeds with seeds, Diseased plants, Wood ashes. (\*Meat and milk products may attract rodents and create odor, and dog and cat manure can contain pathogens and diseases.)

### **Tips for Making Composting EASY!**

- Make watering your compost easy, by making sure a source of water is near your compost and locate it in the shade to help keep it moist.
- Make it easy to use your compost by locating your compost close to your garden.
- Make it easy to build your compost pile, collect leaves in the fall and store them for layering and mixing into your compost with “greens” throughout the year.
- Make it easy to compost kitchen waste “greens,” by stockpiling! Collect kitchen waste inside and then stockpile it outside, by tossing it and a couple handfuls of leaves into a large container (use a 5-bucket with lid, or 20-30 gallon storage container with lid, punch or drill ¾ inch holes in the sides for air circulation) and then when you’re ready, add it to your compost or start a new batch of compost. Place the kitchen waste into the center of a compost (4-6 inches of leaves around the kitchen waste act as a “biofilter” to prevent odors and the pre-decomposed kitchen waste is less attractive to critters). Kitchen waste can also be composted using worms (vermicomposting) or in closed containers, such as tumblers that are rodentproof.
- Make “charging” your compost easy. Sprinkle soil on compost material layers and mix in to “charge” the compost (inoculate/add microbes).
- Make it easy to reduce weeds. If you think weeds with seeds are in your compost, make sure you manage your compost to get it to heat up to kill seeds (145 degrees). Or you can just keep weeds with seeds out of the compost, or put them in black plastic bags and in the sun for a month to solarize seeds. You can also test the compost, put in pot and water it to see if weed seeds grow. The easiest way to manage weeds is to MULCH! After applying compost, apply a leaf mulch layer on top, to help keep soil moist, cool plants, and reduce weeds.
- Make composting clean, wear work gloves and wash hands after composting.
- Can’t compost or don’t want to? Then add life to your soil by buying and using compost to grow your plants and make your garden healthier!

### **Additional Resources:**

- Maryland Cooperative Extension, University of Maryland, Home and Garden Information Center Publications: <http://extension.umd.edu/hgic/information-library/home-and-garden-information-center-publications>
- Montgomery County Division of Solid Waste Services, <http://www.montgomerycountymd.gov/SWS/composting/>
- The Rodale Book of Composting: Easy Methods for Every Gardener, Rodale Books, 1992
- Cornell Waste Management Institute, Cornell University, <http://compost.css.cornell.edu/>

Sources (accessed 2/7/17):

<http://www.epa.gov/wastes/conserve/composting/benefits.htm>

<http://whatcom.wsu.edu/ag/compost/fundamentals/>

<http://www.extension.umn.edu/garden/yard-garden/soils/composting-and-mulching-guide/index.html>

<https://extension.umd.edu/mg/locations/composting>

<https://ilsr.org/composting-best-practices/>

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