





HOME COMPOSTING 101

What is composting?

Composting

is the controlled aerobic decomposition of raw organic materials (such as food scraps and dry leaves) via fungi, bacteria, and other microbes in order to create **compost**, a dark, crumbly, earthy-smelling soil amendment.

What are its benefits?

 Reduces waste	Wasted food is the largest single component of everyday garbage. Composting food scraps and yard trimmings diverts waste from polluting landfills and incinerators.
 Enhances soil	Applied to soil, compost enhances soil organic matter, structure, fertility, microbial activity, water holding capacity, and ability to resist plant diseases.
 Protects the climate	Landfills and incinerators emit potent greenhouse gases. But compost added to soils helps sequester carbon, while offsetting fossil-fuel-intensive fertilizers. Healthy soils are an important carbon sink.
 Grows community	Local composting encourages people to engage with each other while learning how their food is grown.

✓ **Materials that can be composted:** ✗ **Materials to avoid:**

GREENS		BROWNS		Materials to avoid	
 FRUIT & VEGETABLE SCRAPS (No stickers)	 FALL LEAVES	 MEAT, FISH, OR BONES	 EGGS OR DAIRY PRODUCTS	 FATS, OILS, OR GREASE	 COOKED FOOD
 EGG SHELLS	 PLANT STALKS (6" or smaller)	 PRODUCE STICKERS	 GLOSSY PAPER	 PET WASTE & KITTY LITTER	 TREATED OR PAINTED WOOD
 COFFEE GROUNDS & PAPER FILTERS	 WOOD CHIPS & SHAVINGS (Not chemically treated)	 DISEASED AND PEST-INFESTED PLANTS	 WEEDS WITH SEEDS	 HERBICIDE-TREATED PLANTS	 DRYER LINT
 TEA BAGS (No staples or plastic)	 SHREDDED NEWSPAPER & BROWN BAGS (No glossy pages)	 "COMPOSTABLE" TABLEWARE & PLASTIC BAGS	 USED TISSUES		

The 4 Ingredients Needed for Composting Microbes

GREENS

- Materials relatively high in nitrogen, which microbes need to grow and reproduce
- Greens help provide moisture

BROWNS

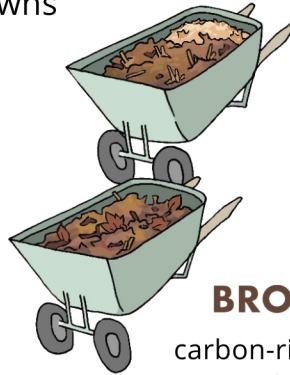
- Materials relatively high in carbon, which microbes need for carbohydrates and energy
- Bulky browns help keep the pile aerated and absorb extra liquid

Basic recipe of greens and browns:

1 part greens
2 parts browns



GREENS
nitrogen-rich material



BROWNS
carbon-rich material

AIR

- Composting is an aerobic process!
- Microbes need air to breathe
- The right pile density (AKA bulk density) is important for air flow and to maintain oxygen levels in the pile
- Mixing and turning reduce pile density making it easier for air to flow, and avoid anaerobic pockets (parts of the pile lacking oxygen)

WATER

- Microbes need water to live
- 50 to 60% moisture by weight is ideal during active composting
- Microbes live and move around in a thin film of moisture around each particle in the pile
- Moisture is needed throughout the entire pile!

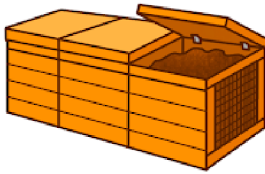
COMMON STEPS IN COMPOSTING

1

Determine composting system, location, and set-up

- Choose your composting system and where you will place it.
- Collect your brown materials: you will need at least twice as much as the food scraps you are composting.
- Set up browns storage and have readily available at all times.

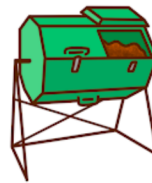
3-Bin System



Single-Chamber Tumbler



Double-Chamber Tumbler



Stationary System



Browns storage



2

Chop up large materials as needed

- Increasing surface area helps materials break down faster.
- Chop tough food scraps and garden trimmings (such as corn cobs, pineapple tops, broccoli stalks, vines, and long stalks).
- Do NOT cut avocado or mango pits! They will eventually break down.



! 2 to 6 inches is ideal.

3

Add to composting system

- For stationary piles, start with a 6-inch base of browns and looser material to create air flow.
- Remember the basic recipe: at least 2 parts browns to 1 part greens by volume (using a pail, bucket, or wheelbarrow may help).
- Pay attention to air flow, moisture level, and ratio of greens to browns in the pile.
- During the active composting stage, add greens until the bin/chamber/pile is full.

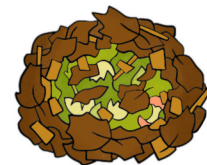
Lasagna method:
layer greens and
browns



Make a small hole
in the pile, add greens,
then cover with browns



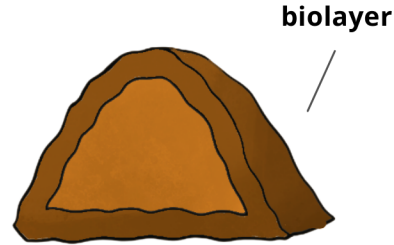
Mix greens and
browns separately,
then add to the pile



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Cover any exposed greens with browns

- No food scraps should ever be visible!
- 4 to 6 inches of browns will act as a biolayer or biofilter, preventing nuisance odors, flies and other unwanted critters.



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Aerate and mix regularly

- Mix, tumble, or turn the pile based on the composting system in use.
- When the bin/chamber is full or pile is at capacity, it's ready for active composting! Flip it into the next bin/chamber or start a new pile.

What does turning do?

- Provides microbes with air, stimulating microbial activity
- Releases trapped heat and moisture
- Distributes moisture, nutrients, and organisms throughout the pile
- Breaks apart clumps and "fluffs" materials

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Keep an eye on your compost

- Is the pile too dry or too wet? Check and adjust moisture as needed. Use the hand squeeze test.
- Does it smell bad? Troubleshoot by adding more carbon-rich materials and/or aerating and fluffing.
- Do you notice your pile heating up? You don't need a temperature probe but it can be helpful in gauging the process, particularly if you want to reach temperatures sufficient to destroy pathogens, fly larvae, and weed seeds.

Temperature Tells the Story

Composting microbes give off energy as they consume the organic material, causing the pile to heat up. Monitoring temperature will reveal how well the composting process is progressing. Low temperatures, for instance, indicate reduced microbial activity. Reaching certain temperature levels are critical for reducing the risk of pathogens.



131°F
(for at least 3 consecutive days)
reduces risk of pathogens



145°F
prevents most weed
seeds from germinating

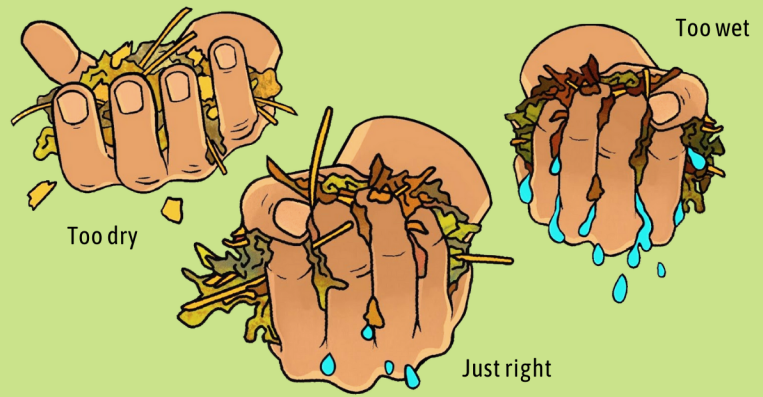


122 - 140°F
when rapid decomposition
is taking place

Moisture Tip:

Use the "Hand Squeeze" moisture test

! The ideal moisture level feels like a wrung-out sponge.



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Troubleshoot as needed

Critters	Odor	Moisture
<ul style="list-style-type: none">▶ Cover exposed food scraps with a thick layer of browns▶ Leave out meat, dairy, fats/oil, and cooked food▶ Maintain at least 3 feet of open space around the system (avoid clutter and trim vegetation) to eliminate potential rodent hiding places▶ Turn piles thoroughly and regularly to discourage rodents from creating a habitat▶ Add a barrier (such as gravel or hardware cloth) at the base of bin systems	<ul style="list-style-type: none">▶ Adjust recipe▶ Add more browns▶ Check moisture▶ Mix and fluff to aerate▶ Cover greens with dry browns	<p>Too Wet</p> <ul style="list-style-type: none">▶ Turn pile▶ Add more dry browns <p>Too Dry</p> <ul style="list-style-type: none">▶ Add water throughout the pile

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Cure

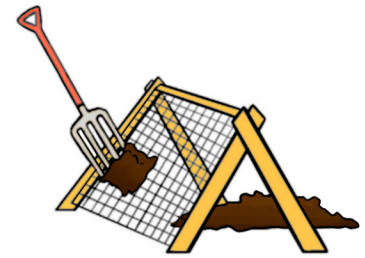
- Compost needs time to mature and become stable. This step is called "curing," and is the process by which compost finishes. Curing starts when the pile no longer heats up after mixing and food scraps are no longer visible.
- Either move old compost to new bin/chamber to cure or stop adding to the system altogether to allow the entire pile to cure.
- Cure for 2 to 9 months (minimum 4 weeks).
- By the end, the composted materials will have shrunk to about one-third of their original volume.



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Screen (optional)

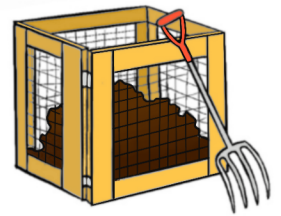
- After curing, sift the compost through a screen with mesh that is 1/4 inches or smaller.
- Screening removes materials that have not broken down (such as wood chips, corn cobs, and fruit pits) as well as contaminants.
- Remove contaminants like produce stickers, twist ties, and plastics.
- Reintroduce compostable material screened out (the "overs") back into the active pile.
- Screening is important to remove woody materials, which when left in compost will use up nitrogen in soil that plant roots need.



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Store and use finished compost

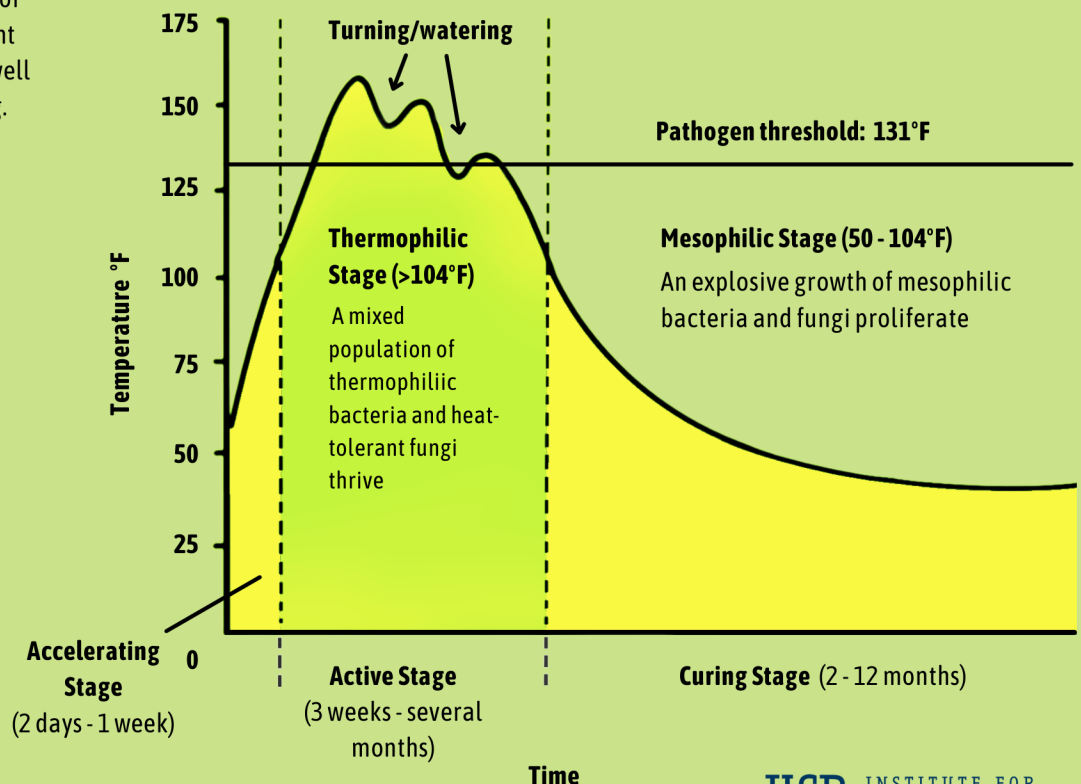
- Store compost in a separate bin or chamber (or outside under a tarp).
- Finished compost is dark brown, crumbly and loose, and has an earthy smell.
- Use finished compost for soil, potting mix, and mulch.



Composting Timeline

The timeline for the full composting process depends on many factors such as starting material mix, adequate aeration, and moisture levels. More active management will speed the process but curing still takes time!

This chart illustrates the rise and fall of the pile's temperature during different stages of the composting process as well as the impact of turning and watering.



Visit ILSR's Home Composting Website:



ilsr.org/home-composting | Sept. 2023

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