

Ulster County Resource Recovery Agency
Connecting Communities through Composting

G R O W U L S T E R G R E E N

Backyard Composting Guide



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Ulster County Resource Recovery Agency

Our mission is to protect public health and the environment and to promote sustainable materials management practices in Ulster County by efficiently managing solid waste materials with a focus on resource conservation.

For over 30 years, Ulster County Resource Recovery Agency (UCRRA) has been developing and implementing sustainable waste management programs for Ulster County. UCRRA is a solid waste authority, public benefit corporation, and permitted solid waste facility, managing all municipal waste generated in Ulster County.

UCRRA Organics Recovery Facility

UCRRA operates an industrial composting operation that opened in 2012 as a small pilot project. The Organics Recovery Facility processes food scraps from commercial partners like restaurants, businesses, and schools. We manufacture a high quality, sustainably-produced U.S. Composting Council STA certified compost product that we sell in bulk and in 1 cf bags.

Recycling Outreach Team

The UCRRA Recycling Outreach Team is available to help improve or implement waste reduction programs for residents, apartment buildings, businesses, and schools! Our team provides free professional and knowledgeable programming, and is dedicated to providing essential services to not only manage waste, but to reduce, reuse, and rethink waste. Please contact UCRRA (845-336-0600) to ask about our programs.



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Why Compost?

Composting has many benefits!

Backyard Composting is an easy and effective way to manage food scraps at home in an environmentally sustainable way.

Organic materials, like yard waste and food scraps, are highly recyclable through composting and the end product, compost, can be used in home gardens, on farms, lawns, or added to potted plants.

40% of food produced in the USA is never eaten

The value of this wasted food is estimated to be **\$161 billion/year** or **\$1500/year** for a family of four

Americans generate more than **250 million tons** of municipal solid waste each year

Food waste makes up the largest component (22%) of material buried in landfills

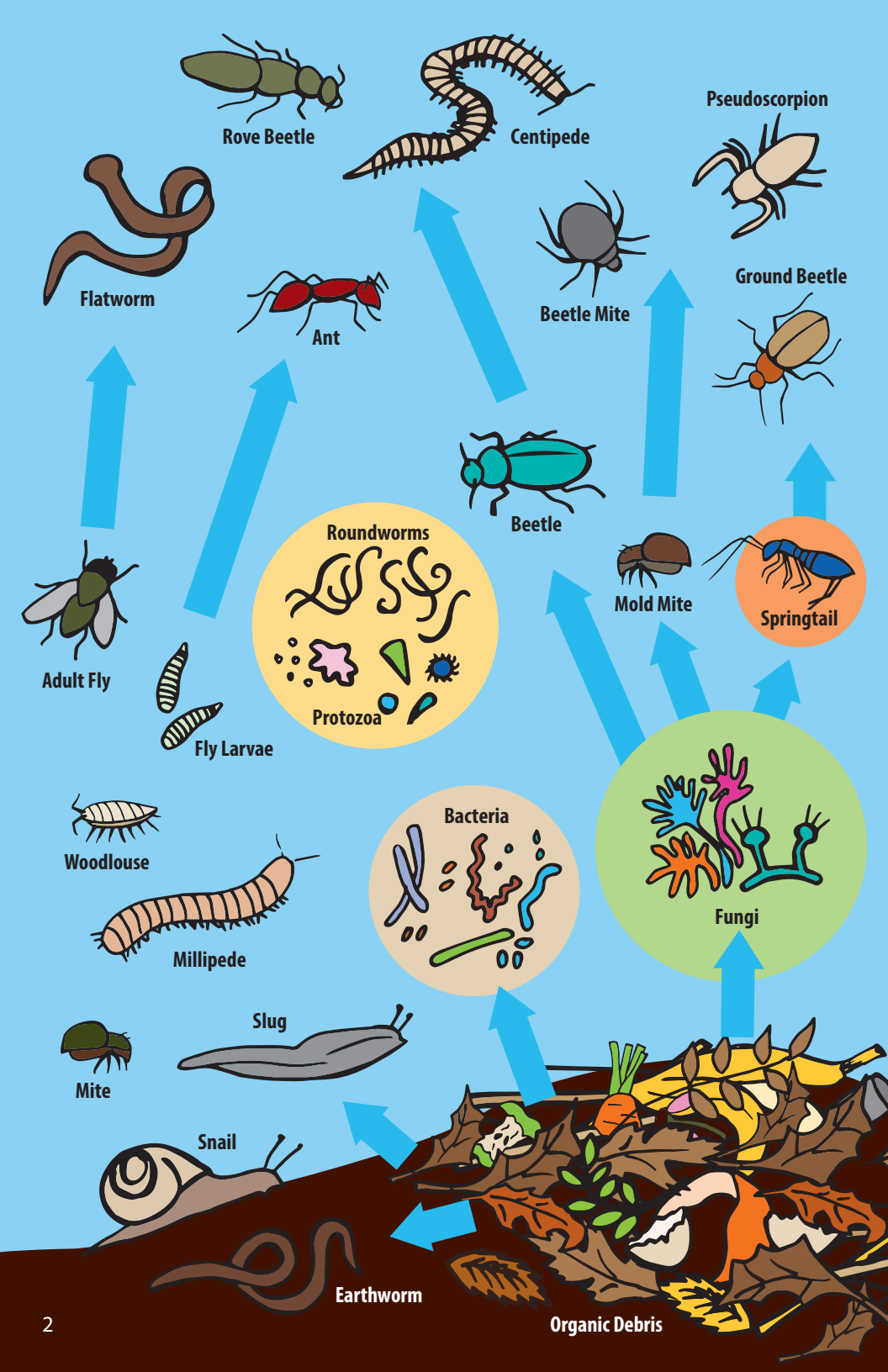
Food makes up **15% of the total waste stream** (nationwide)

Food scraps are a valuable natural material that can be recycled into compost (an organic matter resource)

At the landfill, food waste degrades anaerobically and creates **Methane**, a greenhouse gas more potent than carbon dioxide

In Ulster County, each truck sent to the landfill travels 480+ miles roundtrip. By composting organic materials, UCRRA can reduce waste transport, which conserves fuel, saves money, and reduces the County's 'carbon footprint'!





What is Composting?

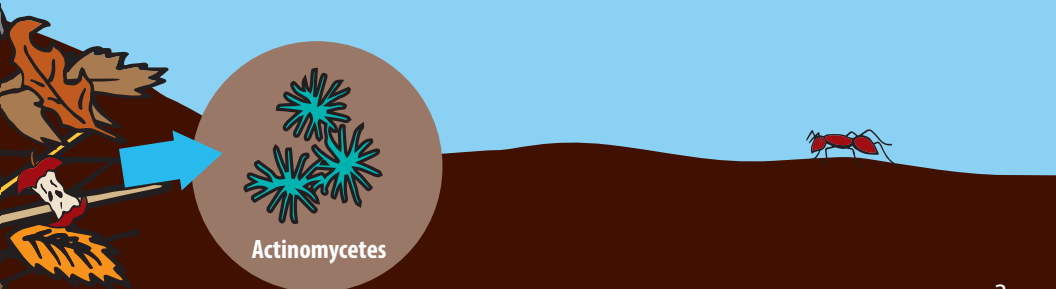
Composting is a natural process where organic materials (like food scraps, yard trimmings, and animal manures) are mixed together and managed in a controlled way. A network of soil organisms work to break down, *or decompose*, the plant materials. As soil organisms break down the materials, the compost pile heats up. By providing consistent management for the chemical, physical, and biological processes at work, composters create an ideal environment for the soil organisms to thrive - and the *end product is called compost*.

What is Compost?

Compost is a crumbly, dark material that looks and smells like soil – but it is not soil. Compost is a natural humus material high in organic matter, soil microbes, and plant micronutrients. Compost can be used to plant trees, shrubs, flowers, vegetables; it can be used on lawns, sown directly into fields and garden beds or used in potted plants. Compost aids in soil moisture retention, improving soil structure, and has many other horticultural uses and benefits.

'Myths' About Composting

You may have heard that compost piles attract pests and create odors in your backyard. These issues can easily be avoided by knowing a few simple tips. Or you may think that composting is complicated, but anyone can be successful at home composting by learning 'the basics'. Or maybe you think home composting takes up a lot of time and outdoor space. There are many ways to make compost, and each bin or method has pros and cons. Composting happens, with or without much 'fuss' but successful composting does take a little TLC. There's really no right or wrong way to do it, and the best way to learn is to just get started!



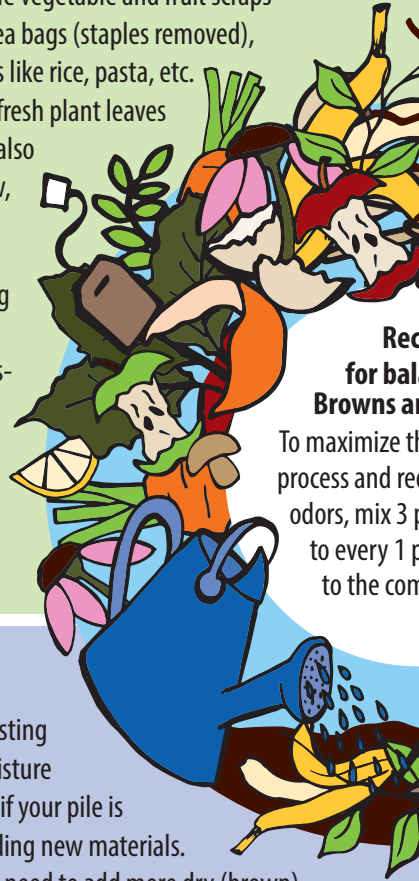
Greens

“Greens” are fresh, moist, nitrogen-rich plant materials that typically break down quickly and should be mixed or covered with a thick layer of browns. All food scraps, and some yard wastes, are considered to be ‘greens.’ In addition to adding nitrogen, greens typically add moisture. Tip: always bury or cover your food scraps completely so that no food is showing on the top layer of the bin or compost pile. This helps reduce odors, pests, and control moisture.

Compost these greens: Food scraps including: inedible vegetable and fruit scraps (cores, skins, ends, etc.), coffee grounds, coffee filters, tea bags (staples removed), stale bread, nut shells, egg shells, uneaten cooked foods like rice, pasta, etc. Other ‘greens’ from the garden include: grass clippings, fresh plant leaves and trimmings, weeds (no seeds). Animal manures are also considered greens: chicken, rabbit, pig, goat, sheep, cow, horse manures mixed with natural animal bedding.

Avoid composting these greens: Butter, fats, cooking oils, meats (cooked or raw), bones, fish scraps, milk or dairy products, salad dressings, cooked foods with excessive oils/sauces, vegetable/fruit seeds, dishwater, etc.

Never compost these: Diseased plants, chemically-treated plants or grass clippings, weeds with weed seeds, etc. cat, dog, bird manures or cat litter bedding.



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Water

Water is both an input and an output during the composting process, so moisture levels will always be changing. Moisture depends on the mix of materials being composted, and if your pile is exposed to weather. Always look for moisture when adding new materials. You may need to add water if the pile is dry. Or you may need to add more dry (brown) materials if the compost pile is too wet. This isn't an exact science, but a good rule of thumb is to aim for 45-60% moisture, damp enough so that a handful of material feels moist, but dry enough that a hard squeeze produces one or two drops of water.

low moisture = slow decomposition, soil microbes go into dormancy

high moisture = slow decomposition, dense or compacted pile, odors, and nutrient leaching

Browns

"Browns" are dry, woody, carbon-rich plant materials that typically break down very slowly. In addition to adding carbon, browns also add good structure and porosity to the compost mix, allowing air to flow freely through the pile.

Tip: smaller pieces = faster composting.

Compost these browns: Garden wastes including: dry leaves, small branches (twigs, sticks, pine cones, pine needles, etc.), natural wood chips/sawdust, soil, old potting mix, hay, straw, corn stalks, etc. Other 'browns' include: Cardboard (shredded, no tape/dyes), uncoated paperboard (paper towel rolls, toilet paper rolls, etc.) shredded paper, newspaper (no glossy or magazine type paper), clean paper towels/napkins (no chemicals).

Never compost these: Diseased or chemically treated plants, or plant waste with weed seeds, ashes/coal, charcoal, treated/painted wood, colored mulch products, waxed cardboard, glossy paper, paper towels with cleaning chemicals, compostable packaging.



Tip Turning and Greens

Turning the composting pile helps to reduce pests and mix the brown and green parts. Turn the pile as often as you can or whenever you have the time. Once per month is commendable, but more importantly, consider turning according to the pile conditions or when adding new material.

Air

Composting is an aerobic process, meaning it requires oxygen. Air should be able to move freely throughout the pile or it can become anaerobic, which leads to foul odors and other chemical byproducts that can be harmful to plants. To add air, or to aerate, the compost pile, manually mix or turn over the material with a pitchfork, shovel, or specialized tool. Some compost systems aerate passively by the design of the bin.

Turning fluffs and loosens compacted areas, mixes material to better blend browns with greens, and re-charges the composting process with fresh air. Turning the pile can also help control moisture, release trapped gases, and invigorate the process.

How Often Should You Turn the Pile?

Turn the pile as often as you can or whenever you have the time. Once per month is commendable, but more importantly, consider turning according to the pile conditions or when adding new material.

Composting Methods: Choosing a Bin and Bin Location



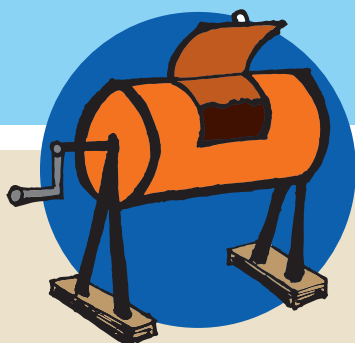
Enclosed Bins

Pros

- A fully enclosed container helps deter pests and keeps a nice, neat appearance
- There are lots of options for commercially-sold bins or you can make your own using chicken wire or an old trash can!
- TIP: When possible, the bottom of the composters should make direct contact with the ground
- A good option for: 1-2 people with a small amount of yard waste and limited outdoor space

Cons

- Best for batch style composting
(once it's full you'll need to wait to add more, or use more than one bin)
- Once full, these bins can become difficult to turn and harvest the finished compost
- Small size = not ideal for someone with lots of yard waste
- Fully enclosed bin = monitor pile dryness



Compost Tumblers

Tumblers have all the same pros and cons as enclosed compost bins. Additionally, consider these features. . .

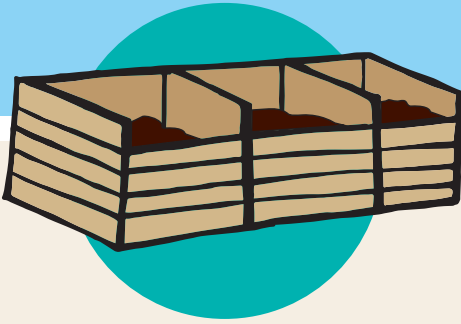
Pros

- Tumblers offer a more efficient way to turn the material high up off the ground (no need for other turning tools)
- A good option for: urban composting, 1-2 people with a small amount of yard waste and limited outdoor space

Cons

- Tumblers typically costs more than other stationary bins
- Once filled to capacity, these units become difficult to turn
- Wear & Tear – handles rust, fall off etc.

There are many different ways to compost! There is no 'right or wrong' way to decide which type of bin to use – the important considerations are: how much and what types of materials do you have to compost, and how much money and time do you want to spend on composting?



Three Bin Systems

Pros

- Many DIY design options (made from pallets, cinder blocks, mesh screens, etc.)
- Shape of the compost system makes shoveling/turning easier
- Allows you to stockpile yard waste while still having a mixing bay for active composting, and a place to store finished compost
- Can handle lots of material, larger piles = hot composting
- Easy to harvest finished compost
- Pile is open to the weather and elements = less watering
- A good option for: gardeners with lots of yard waste, large families, group composting programs

Cons

- Permanent structure, hard to move
- Turning is more labor intensive
- Pile is open = needs more maintenance to prevent pests

Compost Piles/Heaps

Pros

- No start-up costs! All you need is a tool to turn the pile
- Can handle lots of material, larger piles = hot composting
- Pile is open to the weather and elements = less watering
- A good option for: low budget composting, gardeners with lots of yard waste, large families, group composting programs

Cons

- Messy appearance
- Pile is open = needs more maintenance to prevent pests

For fast, hot composting, the ideal compost pile size is 3 ft x 3 ft x 3 ft.

Choosing a Bin and Bin Location



Vermicomposting

Pros

- Low maintenance – worms do the work for you!
- Can be done indoors, all year round
- Lots of options for commercially-sold bins or you can make your own using old storage bins
- Produces a 'Compost Tea' that can be used to water plants
- The resulting 'vermicompost' is a high quality, nutrient rich compost
- A good option for: apartment dwellers, families with kids, people with a small amount of yard waste, scalable for group composting like in classrooms or office buildings, winter composting

Cons

- Not a good way to manage yard wastes
- Worms can't eat everything (citrus, meat/bones, dairy etc.)
- Must chop food in smaller peices
- Harvesting the compost is labor-intensive (must sort worms from compost)
- Poorly managed bins can produce odors and fruit flies



Bokashi

Bokashi is a fermentation method of 'pickling' food scraps in a sealed bucket, aided by a 'bokashi mix'. Bokashi has most of the same pros and cons as vermicomposting. Additionally, consider these features...

Pros

- Can manage meat, fish, bones, fats, dairy, grease, and other hard to compost materials
- A good option for: advanced composters, winter composting, and 'zero waste' composters

Cons

- Need to purchase or make your own bokashi mix
- More likely to have some odors
- Not a stand-alone compost system, the end product should be added to another composting system

These options cover the basic bins – but there are many styles of compost bins and other composting methods, such as ditch composting and digesters!

Where Should You Site Your Compost Bin?

Convenience is key: how far are you willing to walk to dump your food scraps or garden waste, to add water, or to access tools? What do your neighbors think about composting? Do you want to share access to the compost with them? Tip: winter composting is more successful when the bin or pile is placed up against a wind shield like a fence or outbuilding. Composting can be done in shady areas or direct sunlight (though sunny areas can dry out the compost pile).

How Soon Will Compost Be Finished?

Composting takes time. Certain management techniques can speed up the process. With good management composting can take as little as 4-8 months. With more passive management and more stubborn materials, composting can take 1-2 years.

Is it done yet?

Finished compost is dark, crumbly, and smells earthy. Compost needs time to rest, or mature, before it is ready to use (even when it looks like finished compost it may still be immature). Using compost before it is ready can damage plants. If 'brown' materials are not fully decomposed, it can temporarily reduce the amount of nutrients available for plants. If 'green' materials are not fully decomposed, it can produce unwanted or imbalanced natural chemicals like organic acids that can be harmful to plants. Immature compost can also contain weed seeds.

Try the Jar Test to see if your compost is ready. Place a small amount of compost in a glass jar, add enough water to cover the compost, and then seal the lid for seven days. When you open the jar, if the compost smells nice and earthy, then it's done!

Before using the compost, let it dry out and rest in a small pile or on a tarp in the sun for a few weeks.

It's As Easy as 1,2,3

Step 1: Gather browns & greens. Collect food scraps using an old coffee tin, a bucket, or a store-bought kitchen caddy. Chop scraps into small pieces! Stockpile your browns. Tip: bag up leaves until you're ready to use them!

Step 2: Mix or layer browns & greens. Lay browns into a nest in your bin or pile. Then, add greens in the center and cover with another layer of browns. This is called 'lasagna composting'. For large batches, manually mix the materials instead of working in layers.

Step 3: Show some TLC! Add water and/or turn the compost pile as needed.

Home Composting Troubleshooting Guide

Symptom	Possible Problems	Solutions
Pile has a bad odor	Material is too wet and compacted, or not enough 'browns'	Add dry materials (dry leaves, woodchips, straw or shredded paper) to balance moisture. Then turn the pile to add air. If using a small bin, poke holes deep in the pile with an old broom stick or tool and leave lid off the bin.
	Wrong materials in the pile	Keep meat, fish, fats, and bones out. Large amounts of cooked foods can cause odors. Be sure to always cover or bury food scraps well.
Mosquitoes or flies	Presence of stagnant water	Eliminate any puddles or standing water.
	Wrong materials in the pile	Remix the outer layer of material into the hot center of the pile so any fly larvae will be destroyed. Flies may indicate the food scraps are too exposed and not buried well enough. Keep highly putrescible foods (meats fats, bones, etc.) out and be sure to always cover or bury food scraps well.
Earwigs, slugs, mites, or other insects	No problem - Pile is composting correctly!	Insects are a good sign of a productive compost pile. However, if a large population of one insect – the compost food web could be unbalanced. Remix the outer layer of material into the hot center of the pile so any fly larvae will be destroyed.
White "ashy" substance in compost pile	No problem – Pile is composting correctly!	Actinomycetes are a form of bacteria that resemble fungi, and may appear like white/gray spider webs during the final stages of composting. They play an important role in degrading tough, woody biomass that's harder to breakdown. Molds and yeasts take over during the final stages of composting but fungal species can be numerous during the whole process.
Pests (raccoons, rats, bears, etc.)	Wrong materials in the pile	Keep meat, fats, bones, etc. out of bin and cover food scraps well.
	Foods scraps are exposed or not contained well enough	Chop food into smaller pieces so it breaks down faster. Contain compost by securing the bin into the ground, or covering with a tarp and bricks, etc. Never leave food scraps exposed – always bury or cover with 'browns'.
Compost pile isn't heating up/ nothing is breaking down	Material is too dry, or not enough greens (nitrogen)	Wear a gardening glove and squeeze a handful of material; Is it damp? If too dry, use a hose or watering can to add some moisture. If material is too dry it's also possible that there's not enough 'greens' in the mix.
	Pile is too small	The ideal pile size for active composting is 3'x3'x3'. Smaller piles won't heat up. Add more material, or insulate the sides and top of the bin/pile.
	Cool weather	<i>See Solutions for Frigid, cold weather.</i>
	Large, undecomposed items	Smaller pieces = faster composting. Make sure food scraps are cut into 1-3 inch pieces and yard waste is broken down or shredded as much as possible.
	Compost may be finished	If it looks dark, crumbly and smells earthy it may be done! Try the jar test: put some finished compost in a sealed jar for 24 hours. If you open the jar and smell any foul odors, let the compost continue to cure and mature before using it.
Frigid, cold weather	Lack of oxygen	Turn the pile more frequently.
		Composting slows during the winter. Increase pile size and/or insulate the sides and top of the bin/pile. Build a wind break by covering the bin/pile with a tarp or by moving the bin/pile up against a fence or building to protect it from harsh winds. Do not turn the pile in the winter, as this will only make the pile lose heat. In the Spring when the snow melts, the compost may become overly wet or saturated, so add dry browns and give the pile a big turn as soon as possible.