

Backyard Magic

THE COMPOSTING HANDBOOK

Be eco-friendly



Backyard Magic

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Backyard Magic

Is there a compost pile in your past? For most New Brunswickers, the answer is yes. Our grandparents' generation knew the value of composting their yard and kitchen wastes. Giving back some of the nourishment they took from the earth made good common sense, and it still does!

In today's New Brunswick, composting is a traditional idea with a broad new appeal. It's making a strong comeback in all parts of the Province, as people look for positive things they can do themselves to benefit the environment. With just a little effort, the results can be very satisfying.

Composting uses nature's own recycling system. Weeds and leaves, grass clippings, vegetable peels, and various other organic wastes are turned into humus. That's an essential soil conditioner richer than anything we can buy.

Why throw away the raw material which generates something so valuable? Especially when composting has other benefits as well.



Reducing Garbage

Up to 30% of the garbage we throw out each week can go in the compost pile. Cutting domestic waste generation means a longer life for landfill sites and better environmental management for the entire community.

Helping Plants Grow

Your lawn, garden and house plants can never get too much compost. It gradually releases a variety of nutrients just when they're required by the growing plants. Insects and diseases don't seem to do as much damage where the soil is enriched with plenty of decayed organic matter. And there's another bonus: dark compost draws the sun's heat to warm the garden soil, making our short growing season a few days longer.

Building Up the Soil

Plenty of compost added to the soil will also act like a sponge, soaking up water when it rains and releasing it in dry spells. It improves the structure of both sand and clay soils, protecting them against drought and erosion.

How A Compost Pile Works

When leaves drop from a tree, they decay into soft black humus over time, without any help from people. When an animal dies, its remains slowly return to the earth. Anything that once lived will eventually decompose.

Composting is based on this natural process and begins with the thousands of microorganisms which live naturally in soil. They feed on a moist heap of organic waste materials, generating considerable heat in the process. Other groups of “decomposer” organisms go to work as the temperature rises, an ever-changing workforce of bacteria, fungi, and insects.

When the temperature drops, turning or stirring the pile gives the decomposers more oxygen and the heat builds again, helping to kill harmful bacteria. When all the easily decomposed material has been consumed, the temperature drops for the last time and earthworms and ants may move in, signalling that the compost is ready to feed new plants with its “recycled” nutrients.

Finished compost has the distinctive fresh smell of newly-turned soil or a forest floor in spring, and won't heat up again no matter how often you turn air into the pile. The ideal result of the composting process is crumbly, dark, soil-like humus where none of the original material can be identified. The nutrients stored in compost depend on the richness and variety of its ingredients, and on its exposure to harsh weather. But experienced gardeners know there is no such thing as bad compost!

Using the Compost You Produce

Finished compost adds nutrients and organic matter to the soil, improving its texture and increasing its ability to hold air and water. Because it doesn't burn plant roots, large quantities of compost can be applied to the soil at any time.

Soil Improvement

Try digging several centimeters (one inch) of finished compost into a flower bed or vegetable garden before planting. How much you use will depend on how much you have available: the soil can use it all.

You can also give trees, shrubs, and nursery seedlings a good start by planting them in half-and-half soil and compost. New lawns will develop healthy roots to keep them green, if compost is dug into the soil before the grass seed is applied. When an established lawn suffers winter-kill, working some compost into the bald spots before seeding again is another good idea.

Top Dressing

Treating lawns with just over a centimeter (half-inch) of compost serves as a very effective feeding when the ground has dried in the spring. By sifting the compost first, you can remove any unattractive large pieces or materials that may not be fully decomposed. These large pieces can be returned to the compost for further breakdown.

Side Dressing

You can also apply compost as a spot fertilizer. Scratch it lightly into the top layers of soil around the plant that needs a boost, and water deeply.



Compost “Tea”

Here’s a tidy way to supply compost nutrients to house plants or to spot-fertilize seedlings. Soak a burlap bag or old pillowcase of compost in a pail of water until the liquid is tea-coloured. Or stir one part compost into three parts water and pour off the “tea.” Using this liquid to water plants makes a difference, particularly in the middle of the warm growing season.

Mulch

Mulching should be done late in the spring when the ground is thoroughly warmed, but before summer’s heat, to conserve moisture. Spread approximately 8 cm (3 inches) of compost on top of the soil around trees and shrubs, from near the base of the trunk out to the dripline. You can also mulch around vegetables and flowers as soon as the plants are approximately 8 cm (3 inches) high, to keep roots cool and discourage weeds.

Potting Soil

House plants, window boxes and hanging baskets will all benefit from a potting soil mixed with sifted compost. Compost alone can be used for growing vegetables in containers, and for starting plants from seed. For indoor use, you may want to sterilize compost in the oven for an hour at 95°C (200°F), but don’t be alarmed by the (temporary) strong smell.

The Compost Recipe

Composting is a very basic process. You can simply toss grass clippings and leaves in a heap and let nature do the rest in its own good time, or you can help it along, by providing a balanced diet for the micro-organisms who'll do most of the work, as well as a home that meets their needs.

Just like us, these decomposer organisms have three basic requirements: air, water, and food.

Air provides oxygen and enables bacteria to carry out "aerobic" decomposition. Without oxygen, "anaerobic" decomposition of the waste may take place instead. This is something we normally want to avoid, since anaerobic bacteria produce the rotten-egg smell often associated with decay.

There are two methods of aerobic composting, depending on whether or not the pile heats up. A "cold" compost pile will decompose as surely as a "hot" one, but it'll take much longer.

Cold composting is slow but it's easy. Someone with more space for compost than physical energy and time to devote to it may opt for the "cold" approach. This could also be the method to choose if your primary concern is reducing waste, rather than making quantities of compost.

In contrast, hot composting is a fairly fast method of creating compost and makes efficient use of smaller spaces. It does take more physical effort than cold composting, but gardeners who want as much compost as possible will usually choose this method.

There are many variations of approach, as individual as the people who compost. You might pick one method to start with and adapt it, as you gain experience over time. Above all, keep your system simple, convenient, and suited to your lifestyle.



Air

Air penetrates only the top layers of the pile, so it needs help to reach the centre. A vile smell around the compost tells you that anaerobic bacteria are moving in, and the pile may simply need to breathe. In hot composting, plenty of air is essential to develop the high temperatures that kill pathogens and speed the process of decomposition.

Turning

The most effective method of introducing air is to turn the pile with a garden fork. Lift the material from the top and sides, toss it into the more active centre of the new pile, then add the partially decomposed centre to the outside.

Stirring

If you would rather not do the work of turning a pile, try stirring it with a stick instead; this won't distribute the air as evenly, however, so the composting process will be somewhat slower.

Aerator Tools

You can buy an aerator, a rod with flaps on one end and a handle on the other, at a garden centre. You jab the tool into the compost pile, and the flaps unfold to loosen the materials as you pull it back out. The result is easier than turning and produces more air than stirring.

Air Stacks

Another approach is to build your compost pile around a perforated pipe, a bundle of long twigs, or a tube of wire mesh standing on end. This carries air to the centre between turnings. With air stacks, you can skip the turning, although the pile won't heat up as efficiently.

Elevated Compost

Most compost piles rest on bare ground, but you can build the pile on a raised platform of loosely spaced boards, allowing air to be drawn up from the bottom. If you elevate your compost, however, be sure to sprinkle garden soil through the compost to introduce those essential soil bacteria.



Water

Your compost pile should be as damp as a wrung-out sponge, moist to the touch, but no water should come out when you squeeze a handful.

Too dry?

You can poke holes in the pile and water it from the top with a trickling hose. Better yet, pull the pile apart and rebuild it, wetting each layer as it goes on. Very fibrous materials such as dead leaves may need to be soaked in a bucket for an hour or two.

Too wet?

A soggy pile should be turned so that clumps of material are broken up, letting air in and water out. If the compost is absolutely soaked, you can spread the materials to dry in the sun, or scatter peat moss through the pile as you rebuild it with the drier materials in the centre.

Food

Decomposer organisms work best with as varied a diet as you can feed them. The ingredients are all around us, almost anything that once lived is a candidate for the compost, so try for lots of variety to get a good mix of textures and plant nutrients.

In composting jargon, woody materials that are high in carbon (autumn leaves, paper, peat moss, sawdust, cornstalks, hay and straw, etc.) are called “brown” ingredients. Materials like garden refuse, manure, tea and coffee grounds, feathers, hair, and food scraps are high in nitrogen, or “green.” Some materials can actually be both: fresh grass clippings are “green,” for example, but dried grass is “brown.”



For successful results, you can use the simple rule that compost needs to be about half “brown” and half “green” by weight. Don’t bother to weigh your ingredients, though: an estimate is fine. Composting soon becomes a matter of instinct, like the cook who bakes without a recipe. If the pile doesn’t heat up, you know there’s not enough “green” in the mix, while a smell of ammonia means it needs more “brown.”

Materials To Use

Green (Nitrogen Rich)

- Algae
- Bone meal
- Coffee grounds
- Eggshells
- Feathers
- Flowers
- Fruit and fruit peels
- Grass clippings (fresh)
- Hair
- Manure
- Seaweed
- Tea Leaves
- Vegetables and peelings
- Weeds

Brown (Carbon Rich)

- Buckwheat hulls
- Coffee filters
- Corn cobs
- Cotton/wool/silk scraps
- Grass clippings (dried)
- Hay
- Leaves (dead)
- Paper
- Peat moss
- Pine needles
- Sawdust
- Straw
- Tea bags
- Wood chips
- Wood ash

This list is far from complete. Anything organic can, in theory, be composted -- some more easily than others. But common sense suggests a few exceptions. The following materials may cause problems in a backyard compost pile.

Materials To Avoid

- pet wastes can contain extremely harmful bacteria;
- meat, fish, fats and dairy products are likely to smell as they rot and may attract four-footed visitors;
- insect-infested or diseased plants may persist in the compost;
- materials contaminated by synthetic chemicals or treated with herbicides or insecticides should never be used;
- weeds with mature seeds, and plants with a persistent root system (like crabgrass, ground ivy, or daylilies), may not be killed by the heat of the compost;
- leaves of rhubarb and walnut contain substances toxic to insects or other plants so most people choose not to compost them.

Building A Hot Compost Pile

Directions

1. Gather both “green” and “brown” ingredients, enough to make a compost pile measuring at least 1 meter (3 feet) in each direction (high, wide and long).

A smaller pile won't generate or retain enough heat to effectively kill any harmful bacteria present. If you choose healthy ingredients to compost, and keep pets and pests out, there's no reason for concern.

A much larger pile is more likely to compact, shutting out air, and is more difficult to work with.

2. Chop or shred into small pieces as much of the material as possible. Dry materials like leaves can be run through a shredder or under a lawn mower. A whipper-snipper in a garbage can works well too, like a big blender.

Shredded materials make a better home for decomposer organisms, with more surface area for them to work on. A shredded pile is also better insulated, has more pockets for air and retains moisture more easily. The finer the pieces, the faster your compost will be finished.

3. Layer 15 cm (6 inches) of well-watered “browns” and 15 cm of “greens,” mixing the two layers together.
4. Alternate and mix layers of each type of material, adding water as needed, until the pile is at least one meter (3 feet) high.

Adding the material in layers simply helps you judge the right proportions of “brown” and “green.” But everything should then be thoroughly combined to compost efficiently.

5. Cover the pile to protect it from heavy rain, and wait. The compost should begin to heat up within hours.

To witness decomposition in action, you can stick a metal rod into the centre of the pile for a few minutes, then check if it has warmed up. Compost thermometers are available at garden centres, or you can mount a meat thermometer at the end of a stick, if you want precise temperature readings.

Vapour emerging from aeration holes, and a fine grey fungus just under the surface, are other good signs of an active hot compost.

What if it doesn't heat up?

When a compost pile won't heat up, the problem is almost certainly one of three things: a) the pile is too small; b) it's too dry; c) it needs more "greens" or, especially in cold weather, a "starter" to give it more nitrogen.

Compost Activators

Garden suppliers sell compost starters or "activators," often composed of high-nitrogen fertilizers. In some cases, "inoculants" of dehydrated bacteria are also described as compost activators.

While high-nitrogen fertilizers may be helpful, the benefits of adding more bacteria from a package have yet to be proven. All the bacteria you need should already be present in the soil under the compost pile or the food and garden waste you add. You could try soaking ordinary garden soil in water for an hour and douse the heap with the teal-coloured liquid. But giving a boost of nitrogen to the bacteria you already have is the best solution.

Fresh stable manure is the ideal compost starter, though it may be hard for some of us to find; harder yet to explain to your next-door neighbours. While the commercial activators based on high-nitrogen fertilizers do heat up the compost quickly, it's hard to control the amount of nitrogen added this way and the excess may leach out or escape as ammonia into the air.

There are several effective organic alternatives: bloodmeal, finished compost, or well-composted manure, for example. Or, you can simply rebuild the compost pile with additional grass clippings or other "green" materials.

The Hot Composting Timetable

The temperature of the pile should rise steadily, peaking between 50°C to 65°C (120°F to 150°F), 24 hours to one week later. When the temperature begins to drop, the compost is ready for turning. Break up any clumps of material, and move the outside parts to the base and centre. If the pile is too dry, this is the time to wet it. Cover the pile again, and wait.

The temperature should peak again in about a week, in a pile made of well-shredded materials. Remember, the smaller the pieces, the faster the compost. As soon as it begins to cool, turn the pile once more. In another week or two, the compost should be finished; that is, dark and crumbly, fresh-smelling, with very little of the original material identifiable. When compost is ready for use, the temperature of the pile won't rise above 43°C (110°F) no matter how often you turn it.

Key Points to Remember

- Use equal amounts of “greens” and “browns.”
- Mix together a variety of ingredients.
- Shred or chop all ingredients, if possible.
- Build the pile large enough to retain heat.
- Turn or aerate the heap regularly to let in the air.
- Keep the pile as moist as a damp sponge.

The Compost Container

Anyone who has come back home after a long holiday knows that, given enough time, organic matter can decompose even in the back of the fridge. Out in the backyard, nature certainly doesn't care whether the compost is heaped out in the open or enclosed in a bin.

However, a container of some sort does help to keep the yard neat and the neighbours happy. A covered container also means the pile can retain both heat and nutrients, while keeping out rodents, raccoons and pets.



Hot compost piles need regular turning, and you'll want to harvest finished compost from time to time. So, above all, the container should make it easy to do this work. Beyond that consideration, you're safe in choosing a container for its appearance, convenience, cost, size, or other qualities.

All sorts of composting units are available commercially. Some are simply “digesters,” such as a cone covering a collecting basket in a pit. Others, with solid bases, have doors or chutes to let you harvest the compost from the bottom and put it to use.



Your own system may be as simple as a circle of chicken wire, or a bottomless barrel with air holes in its sides. Just lift it away from the pile, set it up again nearby, and put the newer layers back in, leaving behind the finished compost.

Pens

One of the simplest structures is a circle of snow fencing or wire mesh supported by posts or stakes. At turning time, you unwrap and remove the fencing, set it up in a new location nearby, and fork the compost back into the pen. This requires a little more space and some lifting effort, and it leaves the compost in full view; but it is inexpensive, strong enough, and very easy to construct.

Bins

Bins are sturdier and more discreet than pens. They may require a little more skill to build but are still inexpensive. The four sides can be made of almost anything: wire screen stretched on wooden frames or old pallets standing on end. Three walls are normally fixed permanently together, but may be hinged, hooked or tied. One design has three walls of concrete blocks, stacked without mortar, and a fourth wall of removable boards.

To turn the pile, the front of the bin is removed and the compost forked out onto the ground. Then the pile is rebuilt in the bin. You do need the extra ground space in front of the bin for turning, but you don't have to lift the compost over a wall to get it back in. One variation calls for the bin to be set over a pit, to provide extra insulation. Although this encourages the presence of helpful earthworms, it does mean reaching down below ground level to turn the compost.

Drums

A rotating barrel composter can be made from a large drum with aeration holes punched in it, and fins inside to lift and mix the compost materials. A hinged loading door in the side allows wastes to be added gradually. Some are rolled on the ground to mix the contents; others are mounted horizontally on stands with crank attachments. Various commercial models are available.

If bacteria is introduced with a good amount of garden soil and the barrel is turned every few days, compost can be made in a few weeks this way with little physical effort.



Boxes

Perhaps the best small-scale system for the relatively energetic composter is a design known as the New Zealand box. A bottomless wooden box with ventilation spaces between the wall boards, its face is easily removable to facilitate turning. Since the compost rests directly on the ground, a lid is normally added to prevent nutrients leaching from the pile during heavy rains.



A New Zealand box or something similar can be made at home with a minimum of skill. It can be moved to a new location fairly easily, if required, and it keeps the compost neatly out of sight.

A popular variation has two or three compartments in a row: compost is turned from one box into another; the emptied box then accumulates the makings for another batch. It is ideal for people who use kitchen and yard wastes as they accumulate and can't save up enough materials to make a really big pile.

Other Ways to Compost

Cold Composting

If you aren't interested in the physical task of turning a compost pile, or if you have plenty of space and don't need the compost in a hurry, cold composting is the answer. Small households may accumulate organic waste too slowly to build a hot compost pile all at once, but you don't need much to start a cold compost. The pile builds gradually as materials come to hand.

Although the feeding process is less demanding, the results take a long time. You can wait from 6 months to a year for a batch of compost to be produced by this method. It depends on what goes into the pile: soft "greens" like grass clippings and kitchen wastes break down much faster than woody "browns" or unshredded pieces. On the plus side, absolutely no turning is required! But it's a good idea to build the pile around an air stack, or to poke it with an aerator tool occasionally, to help it along.

As with a hot compost, cold piles should be kept moist, and need a variety of foods for the decomposer organisms to prosper. The lower layers decompose first, because new material is constantly being added to the top. A compost container isn't necessary, but it may help you to get at the finished stuff on the bottom.

Whatever you choose, a fancy container or a pile in the corner of the yard, compost produced slowly will need to be covered or a lot of its nutrients will be “weathered away” over time. This means the resulting material will still be valuable as a soil conditioner, but not very effective as a fertilizer.

Soil Incorporation

Soil incorporation is probably the simplest method of composting. Food and yard wastes are finely chopped, mixed with soil, and buried 20 cm (8 inches) or deeper in the earth. Depending on soil temperature, bacterial activity, and the carbon content of the wastes, decomposition will take from one month to a year.

One word of caution, however! High-carbon materials (like raw autumn leaves) are not appropriate for this method, because they’ll steal their nitrogen from the surrounding soil. Leaves may also acidify the soil or inhibit the growth of plants if they are dug into the ground without first being at least partially composted.

Even high-nitrogen materials should be given ample time to decompose underground before the area is used for planting, because the decomposer organisms will take nitrogen wherever they can find it while they’re working. Some people get around the problem of nitrogen loss by adding bloodmeal to the soil before they bury the compost materials.

Postholing

A posthole digger is a handy tool for soil incorporation, although a spade will do. The idea is to dig a series of holes around the drip line of trees and shrubs, or in a fallow area of the garden (to avoid stealing nitrogen from growing plants), and bury organic wastes there. The compost is made right where it is most needed. You can use what space you have, then start over where the first load has composted. If the holes are dug before the ground freezes, you can continue to dispose of wastes in this way all through the winter.

Rotation Trenching

Trenching involves digging a long pit instead of separate holes, usually between rows in a garden. It is capped with a layer of soil as the wastes are gradually added.

This method is often used by British gardeners in a simple three-year rotation of 1) soil incorporation, 2) crops, and 3) pathways. In the first year a trench is dug, filled with nitrogen-rich wastes, and covered with soil. The row next to it is used to grow crops and a third row is used as a path.

In each successive year, the fertile soil of the previous year's trench is used to grow the crops, and the former path is the composting trench. Thus the garden's soil is continuously renewed. Although this method demands far less space than a conventional composting system, it does require three rows to grow one row of crops. Each garden will suggest its own variations. Trenches can be dug under the pathways in use, one section at a time, as the space is needed. In a garden too small for paths, a two-year rotation of crops and trench is fine.

Mulching

Mulching copies nature's way of composting on the surface of the soil and gardeners have been doing it for centuries. Woody, "brown" organic materials are spread in a layer on the ground, over a garden, or around shrubs and trees. Because they are not dug into the soil but decompose on the surface, they don't disturb the pH balance of the soil or rob it of nitrogen.

Although it is perhaps the slowest method of composting, mulching offers other benefits. It discourages weeds, protects soil from compacting or eroding, and keeps the roots of plants cool and moist in hot weather, insulated in the winter.

Can I Compost This?

Ashes	Maybe	From untreated wood or paper, yes, in small amounts; but not from barbecues, plywood, coloured or glossy paper
Banana Skins	Yes	Decompose rapidly; can help to activate a slow compost; loaded with plant nutrients
Cardboard	Yes	Shred, soak, and mix with “greens”; but try first to reuse or recycle it
Citrus Fruits	Yes	Shred rinds; bury in compost to discourage fruit flies
Coffee Grounds	Yes	Good earthworm food; use directly on many plants; compost shredded filters, too
Corn Cobs	Yes	Shred; adds both fibre and nutrients to compost; good mulch; slow to break down
Dairy Products	No	Fats seal off air from compost; odours attract pests
Diseased Plants	No	Compost heat may not destroy disease; destroy or discard to avoid spreading
Dishwater	Maybe	If water doesn't contain grease or chemical cleansers, use it to wet pile
Dust and Lint	Maybe	Use vacuum cleaner debris and lint from clothes dryer, if mostly natural fibres
Eggshells	Yes	Dry and crush first; good earthworm food; slow to break down; help neutralize acidity; as mulch, may discourage slugs

Evergreen Needles	Maybe	Highly acidic; better yet, use as mulch
Fabrics	Maybe	Small scraps of wool, cotton, felt and silk; not synthetic fibres or blends
Feathers	Yes	Keep somewhat wetter than usual; extremely high in nitrogen
Fish	Maybe	Odours and pests are problems with fresh or smoked fish, but dried fishmeal is fine
Grass Clippings	Yes	Available and valuable; mix well to avoid clumps; leave some clippings to feed lawn
Hair	Yes	Both human and pet hair; keep quite damp; avoid using if coloured with chemicals
Hay and Straw	Yes	Very good fibre, nutrients usually low
Leaves	Yes	Shred and soak; add both nutrients and fibre; tend to be slightly acidic
Manure	Yes	Cow, horse, pig, rabbit, poultry, the fresher the better, helps any compost
Meat and Bones	No	Odours and pests are problems; but dried, ground bonemeal is fine source of nitrogen
Soil	Yes	Adds decomposer soil organisms; scatter lightly through pile to avoid compacting
Nutshells	Maybe	Crush delicate shells like peanuts; heavier shells are better used as decorative mulch
Paper	Maybe	Shred; not glossy/coloured which contain chemicals; better to recycle if possible

Pet Wastes	No	Risk of pathogens and parasites; use only barnyard manure (horse, cow, sheep, etc.)
Rhubarb	Maybe	Raw leaves poisonous to humans; composted leaves may harm insects and other plants; stems are fine; roots may continue to grow
Sawdust	Maybe	Hardwood sawdust, yes, in very small quantities; softwoods may inhibit composting; plywood may contain chemicals
Seafood Shells	Yes	Crush or grind very finely; break down very slowly; reduce acidity; good mulch
Seaweed	Yes	Rinse off salt so it won't contaminate soil; great fertilizer
Sod	Yes	Knock off excess soil; pile upside down; cover to prevent rooting; compost separately to avoid compaction
Soup	Maybe	Vegetable, yes; do not use soups with cream or meat-based broths to avoid odours and pests; read labels on canned soups.
Tea Leaves	Yes	High in nitrogen; can be applied directly to some plants; compost tea bags too
Toadstools	Yes	Decompose quickly; excellent source of many minerals
Weeds	Yes	Discard mature seeds, persistent roots, weeds treated with herbicides/pesticides
Wood Chips	Yes	Shred if possible and soak; use big pieces as mulch first, compost when weathered

15 Questions and Answers About Composting

Structure/Space:

Do I need a bin to make compost?

No, organic matter will eventually decompose without human help. But a container of some sort will keep your pile neat, protect it from the weather and pests, and make the job of tending it much easier.

Where is the best place to put a compost pile?

Pick a sheltered spot, out of the full summer sun if possible. Avoid trees and shrubs that may push their roots up into the pile. And give some thought to both convenience and appearance in choosing a location.

Process/Problems:

What is the “easiest” way to compost yard wastes and food wastes?

Woody or “brown” yard wastes, like tree trimmings and autumn leaves, can be shredded and used as mulch around plants and on paths. Eventually they’ll return to the soil. Food wastes, as well as green yard wastes like vegetable tops and grass clippings, can be dug into the ground. Use larger-scale “soil incorporation” only where you won’t be planting for a few months.

Can I compost in the winter?



Even research teams on the South Pole have composted their garbage successfully! You can retain heat a little longer in the fall by covering the pile and insulating the container, perhaps with bags of leaves. Increasing the amount of “green” or using a compost activator may help keep the temperature up. Keep adding to the compost through the winter: it may not seem to be doing much, but the frozen materials will quickly finish breaking down when spring comes.

What if the pile has an odour?

An earthy scent is normal and inoffensive, but a well-built compost shouldn't produce unpleasant odours. If it does, your problem is either too much "green" stuff (ammonia smell) or too little air (rotten-egg smell). First, aerate the pile. If the odour persists, turn and rebuild the pile with more "brown" materials.

Should I wear gloves to handle compost?

If you haven't composted pet manures, which contain bacteria harmful to humans, there is no need to wear gloves. Finished compost can be handled just as you would garden soil.

How can kitchen wastes be stored for later composting?

Collect food scraps in a plastic container in the fridge or freezer, if you have space, or keep a tightly lidded container handy, covering each addition of compostable food wastes with just enough peat moss or sawdust to control odours.

Should I add ground limestone, soil, or fertilizer?

A perfectly good compost pile can be built out of nothing fancier than leaves and grass clippings. Lime will balance out the pH of a pile of highly acidic materials, like pine needles. However, most compost is naturally close to neutral in pH by the time it is ready for use. A scattering of soil should be added if your compost isn't in contact with the ground, because it is the soil organisms that do the decomposing work. With a variety of ingredients, fertilizer is seldom necessary.

What if the compost pile doesn't heat up?

The odds are that an inactive compost pile just doesn't have enough "greens" in it to start its temperature rising. The answer is to rebuild the pile with more high-nitrogen materials or a "starter" like manure "tea." That will probably solve the problem, but also check that the pile is as moist as a wrung-out sponge.

How do I compost with too many high-nitrogen materials?

You can dig extra "greens" directly into the soil, store some in a freezer or sealed container, buy peat moss to mix with it, or, as a last resort, dry some in the sun to decrease the nitrogen content. Perhaps a composting neighbour can use a donation?

How do I compost with too many high-carbon materials?

This is often a problem in autumn, when there's no shortage of dead leaves. If you have space, bag some and store them for covering up the food scraps you'll add through the winter, or for spring and summer when "browns" are harder to find. Bags of leaves also make insulating windbreaks for compost bins. Or moisten the leaves and store them in sealed bags to begin decomposing. In spring, add them to the compost. Mulching is another alternative, but shred the leaves finely and again, a composting neighbour might be able to use your surplus.

Finished Compost:

When is compost "finished" and safe to use?

When an active compost pile fails to heat up once more, and very little of the original material can be recognized (perhaps an eggshell or the shapes of old leaves), the compost is ready to use. It will be the rich brown colour of good soil and smell something like the humus of a forest floor.



Does it need to be sterilized or screened?

Compost doesn't need to be sterilized or screened for the garden. For use indoors, it should be put through a strainer or quarter-inch screen and sterilized in the oven for 1 hour at 95°C (200°F). You will probably want to screen the compost you use to topdress the lawn as well.

Do I need to fertilize if I use compost?

The nutritional value of compost depends on the materials that were used to make it. That's why it's important to put as much variety into the pile as possible. If you're trying to enrich a severely depleted garden plot, or growing plants like peonies that demand a lot of food, you might want to add some commercially produced organic fertilizer. Soil testing is a good idea in this case. For most gardens and flower beds, however, compost provides a concentrated source of balanced nutrients as well as the organic matter the soil needs to store them.

What if I make too much compost?

It's hard to imagine such a situation! The earth can use all the organic matter you can give it, and you can apply compost at any time of year. Dig it into flower beds, layer it over

a vegetable garden, or spread it under a tree to feed the roots. Finely screened compost can be scattered over a lawn, or sterilized and mixed with potting soil for house plants. And you can store compost in a bag or holding pen, as long as it is well protected from rain, wind and sun.

Composting Indoors

No backyard or garden? Collect your kitchen waste in the freezer or a covered pail to give to a composting friend. Or make your own compost indoors!

Holding Units

With a basement, garage, porch or balcony, you have plenty of space for a cold composting container.

Try a large metal or plastic garbage can with a lid. Punch nail holes in the sides and top, and stir with a broom handle or use an aerator stack to get oxygen into the compost. Start your compost with a "brown" layer: approximately 8 cm (3 inches) of peat moss, sawdust, or shredded leaves from someone else's fall clean-up.

Collect your kitchen scraps into a covered pail as they come along. Every few days, when the pail fills up, just toss the contents onto the compost and cover each addition with a little more "brown" stuff to control odours. Add a few handfuls of topsoil if you can get it, or compost from an earlier batch, and keep all the materials as moist as a wrung-out sponge.



Harvesting the compost is easiest with two cans on the go. Once the first can is filled, just stir it every few days and keep it moist. New kitchen scraps go into the second can. By the time it is full, the first batch should be ready for use.

Bags-and-Pails

Even without the space to hide large containers, or the physical ability to stir the contents, you can still compost anaerobically (without oxygen). Composting this way takes six months or a year, but it requires very little effort, just some storage space.

Collect kitchen scraps in a covered pail and sprinkle sawdust or crumbled peatmoss over each addition to it. Or store food wastes (clearly labelled) in the fridge or freezer. When

the pail is full, empty it into a sturdy plastic bag without holes and add just enough water to moisten it thoroughly.

Half-fill each bag and seal it very tightly. To be on the safe side, you may want to put it inside a second bag. Don't be tempted to peek until it's had time to finish composting: decomposer organisms working without air produce an awful smell!

Store the bags out of your way, on a balcony when the weather is warm, or in a storage closet. The compost is ready to use when you open a bag and it doesn't smell of decomposition once the air from inside has dispersed.

Worm Composting

Let worms do the work! Composting with earthworms, or "vermi-composting," is great for apartment dwellers who don't have yard space, and for homeowners who don't want to hike through snowdrifts to a backyard compost bin. And many kids love keeping hundreds of wigglers for pets. There are several companies in Canada, who can sell you the bins, bedding, worms and all.

Covered Bin

Your worms can live in a plastic bin or wooden box, with plenty of airholes punched in the sides and top. Line the worm bin with nylon net to keep the small ones in. Holes in the bottom are needed for drainage, so you'll want a tray under the bin. Some people move their worms out to a balcony or yard in warm seasons. You may find it more convenient to have several smaller, more portable units rather than one large one. The size of the box will also depend on how much space you have.

Bedding

Loam or black topsoil, available from garden centres, makes a particularly good bedding material. Bedding can also be shredded newspapers, soaked to soften the edges (the worms will eat this too, so avoid coloured inks and glossy paper) or a mixture of sawdust, peat, shredded leaves, and soil.

Fill the bin with about 30 cm (1 foot) of bedding, about as damp as a wrung-out sponge, not soggy and not dry. With a lid on the bin and regular feeding of the worms, maintaining the correct moisture level shouldn't be difficult.

Worms

It's true that earthworms aren't pets for the squeamish, but they are great little composters! You'll want the kind of worms that are sold for fishing bait, such as red wigglers or brandling worms, not ordinary field worms from someone's garden. Redworms normally live in barnyard manure piles, and feed on fresh organic material. Field worms are better at digesting things that are already well decomposed and aren't likely to survive in a worm bin on a diet of kitchen scraps.

Your valuable little redworms will live quietly in their dark box and multiply rapidly. Just bury your leftovers in their bedding after each meal. It is unlikely that you will have too much waste to compost: redworms will eat their own weight in kitchen scraps and bedding each day. The castings they produce are incredibly rich fertilizer and look like fine-textured soil. For each cubic foot of worm bin, plan on using 200 grams (approximately half a pound) of red wigglers (about 500, depending on their size).

Food

Coffee grounds, vegetables and fruit are the recommended food for worms. A varied diet is important. Avoid bones, dairy products, meats, garlic and potato peelings. What doesn't cause odours or attract insects will simply take a very long time to break down. Eggshells are essential to keep the bedding from becoming too acidic for the worms. Dry them well, crush them, and sprinkle the tiny pieces over the top of the bedding.

Temperature

Redworms will survive in temperatures from 5°C to 32°C (40°F to 90°F) but prefer it at or above room temperature. If you keep the worm bin outside in good weather, be ready to bring it in promptly when the temperature drops.

Harvesting the Castings

Removing the worm-compost couldn't be easier. You will notice that redworms hate the light. They'll wriggle down into their bedding whenever you take the lid off the bin. Every few months, when the castings outweigh the bedding that remains, place the opened bin under a very bright light and give the worms ten minutes to get well away from the surface. Then the coast is clear for scraping away the worm castings from the top layer.

When you start to see the worms again, keep the light on them and give them another ten minutes to go deeper still. And remove the next layer of compost. Keep going in this way until the harvest is done. Then fill up the bin with fresh bedding and start again.

Outdoors

Some people build special worm pits to take advantage of the worms' natural talents. To make a worm pit, all you have to do is dig a square hole 60 cm (2 feet) deep and set a bottomless box over it. The compost materials and worms are tossed in here. You can keep adding organic waste as it accumulates.

Keep the pile damp and dark, and the worms will do the rest. Remember to harvest your compost carefully, in bright sunshine, to save the worms from an unpleasant fate. They won't live long if they're stranded in ordinary garden soil, dumped there with a forkful of compost.

Here in New Brunswick, our climate is too extreme for redworms to survive outdoors through the winter. Some worm-owners in milder areas have good luck using very deep worm pits with thickly insulated walls, but it's risky business indeed. Better, bring the worms indoors to a bin as soon as a real frost threatens.

Explorations in Composting

For teachers, youth group leaders, or day-care supervisors, here are some simple experiments which will help your kids understand how composting helps the earth and plants. You won't need much in the way of equipment, and the results are fun to watch.

How does compost help growing plants?

Activity

1. Soak six or eight beans overnight in water.
2. Fill one jar or flowerpot with ordinary soil dug up from your garden, lawn, or pathway.
3. Fill a second jar or pot with the same kind of soil, but mix it half-and-half with finished compost. If you don't have a compost pile yet, you can use composted manure from a garden centre.
4. Plant a few beans in each pot.
5. Place them where they will be warm and have some sunshine.

6. Keep the pots watered, and check each day to see what happens.

Soils that contain lots of decomposed organic matter, like compost, can store more food for the plants and release it to them as they need it. Unless you are lucky enough to have very rich soil already, you'll probably find that the beans grew faster and stronger in the pot that had compost added to the soil.

How does compost help soil structure?

Activity

1. Find two wide-mouthed glass containers (mayonnaise jars are perfect).
2. Make two small baskets or wire racks of quarter-inch screen. For each rack you will need a piece of screen about 7.5 cm by 25 cm (3 inches by 10 inches). Bend the wire so that it fits down into the jars like a little basket.
3. Find a place where the soil is very light in colour, like a construction site or a heavily farmed field. Collect several clumps of soil about the size of a fist.
4. Collect a second sample of soil clumps from dark earth, such as a garden that has been fed regularly with compost, or a park.
5. Fill the jars with water within 2.5 cm (one inch) of the top.
6. Place the lumps of soil in the baskets and lower them gently into the jars. Watch closely!

Why does the soil in one basket fall apart and drop to the bottom of the jar? Organic matter, like decomposed leaves and roots, helps soil hold water and air. When organic matter is used up, we have to give nature time to replace it, or feed the earth with compost. When earth holds together like this, it can stand the hard rains that wash away less healthy soil.

Can everything be turned into compost?

Activity

1. Find four or five wide-mouthed glass jars. You'll want to be able to see through the sides of them.
2. Collect a banana skin or apple core, a scrap of newspaper, a leaf (green or brown), and a piece of plastic. There may be other things you want to test as well.
3. Place each of these items in a separate jar. Hold them close to the side, where you can see them, and fill the jars with ordinary soil.
4. Don't cover the jars, but make sure the soil covers your samples.
5. Water every day, just enough to keep the soil damp. Don't let it dry out or freeze.
6. Watch what happens, or doesn't happen, in each jar.



You'll soon notice changes in some of your samples as they start to decompose. Some change faster than others, and the piece of plastic won't change at all! Anything that once came from a living thing is called "organic" and will break down. You can use these to make compost. What do you think happens to all these things when they're taken away by the garbage collector and buried in a landfill?

Other Experiments to Try

The Garbageless Lunch

Knowing what will break down in a compost pile and what won't, try to pack yourself a lunch that won't leave garbage behind. Will a chocolate bar make garbage? A banana? Should you choose waxed paper or a plastic bag for wrapping your sandwich? Here's something tricky to think about: is it better to use a paper napkin, even though it will decompose, or a cloth napkin that you can wash and use again tomorrow? What will you carry your lunch in?

Taking Out the Trash

This week, count the number of garbage bags your family fills. Maybe someone will help you weigh them. Write down what you discover.

Was this an ordinary week? Figure out how much garbage you'd have after a year. Where does the garbage go, and what happens to it? What do you think might happen when there's no more space for our garbage?

Next week, collect all the organic garbage in a separate pail or bag. It will start smelling before the end of the week, so keep the container closed when you aren't filling it. At the end of the week, count and weigh the regular garbage bags that your family has filled. Compare the results to last week's garbage. Is there a difference?

Notes

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Thank you to the Fredericton Backyard
Composters for providing some photographs.

The Short Course in Composting

With nothing fancier than fallen leaves and grass clippings, you can make the rich dark humus that the earth needs to support growing plants. And composting organic wastes can reduce by more than a third the amount of garbage produced by your household.

Compost can be made in as little as two weeks, or it can take as much as a year, depending on the effort and attention you want to give to the process. Most organic materials, chopped or shredded into small pieces, will decompose quickly if they're kept moist and turned or stirred regularly to expose them to air.

Organic wastes will break down into humus even without a compost container. But some sort of barrel, box or pen will keep your backyard compost pile tidy and discourage animal pests.

Indoors or out, anyone can compost. And almost anything that once lived is a candidate for composting. Some organic wastes are trouble-makers to avoid, however. Although active compost piles build up temperatures high enough to kill many weeds and harmful bacteria, meat and fish, bones, dairy products and fats, pet wastes, diseased plant materials, and those weeds with hardy roots or ripe seeds should not be composted.