

Backyard Composting

Composting is a natural, biochemical process which results in the decomposition of organic matter into a nutrient-rich, soil-like product. This process is facilitated by bacteria, fungi, worms, and many other microorganisms. Decomposition is nature's way of recycling plants, animals and other organisms back into the soil that supported them when they were alive. When we compost our food scraps and garden trimmings, we are mimicking this natural decomposition process. The finished compost can then be used to improve the quality of our garden soil. Another major benefit of backyard composting is the diversion of compostable materials from the landfill, where they decompose in an environment without air and release greenhouse gases.

Effort Scale:

Easy	1	2	3	4	5	Hard	Involves weekly maintenance (aeration) and monitoring (for moisture content). Your compost needs to be harvested one to two times each year.
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What Can I Compost?

Any organic material can be composted but some materials are more appropriate for backyard bins than others. The more diversity of materials the better your finished product will be:

OK to Compost	Not OK in Most Bins*
<ul style="list-style-type: none"> • Fruit scraps • Vegetable scraps • Rinsed egg shells • Shredded newspaper • Coffee grounds/teabags • Garden debris • Leaves/grass clippings • Human or pet hair (in small quantities) 	<ul style="list-style-type: none"> • Meat or bones • Dairy products • Bread • Cooked food • Weeds gone to seed • Cat and dog feces • Diseased plants • Weeds with rhizomes (e.g. morning glory)

To keep your compost bin secure from rodents and other small animals, make sure it has the following:

- A secure lid
- A bottom or baseplate (ideally with small holes to allow contact with the soil ecosystem while keeping out animals)
- No holes bigger than 1/4"



The Earth Machine composter, available for purchase at the Compost Education Centre, is enclosed and rodent-resistant.

Compost Bins

Backyard composting is best done in an enclosed bin rather than a large pile. Bins can be home-built or are available pre-fabricated.

An enclosed bin serves several purposes:

- Keeps the rain out, preventing the pile from becoming saturated with water and leaching nutrients
- Keeps rodents and other small animals out
- Makes for easy management and containment of the compost – i.e. easy to aerate and harvest

* In order to compost these materials, see Fact Sheet #3: Backyard Food Digesters, #4: Hot Composting, or #5 Trench Composting.

Locating Your Compost Bin

The location of your compost bin is more important than you may think. Your compost bin should be:

- ◆ **Out in the open.** You should avoid having your bin under trees or up against shrubs, wood piles or buildings (especially your house). These places provide protected habitat for rodents and can encourage them to take up residence in your bin.
- ◆ **On bare soil.** This allows soil microorganisms to enter the bin and assist in the composting process.
- ◆ **In a convenient place.** To make maintaining your bin as easy as possible.
- ◆ **In sun or shade.** Either is fine, but the sun creates more heat and thus accelerates the process.

How Do I Compost?

Composting simply requires mixing organic materials in an enclosed bin and ensuring that the conditions in the bin remain optimum for the decomposition of those materials. In order to create those optimal conditions for decomposition, you should take into consideration the following elements: green to brown ratio, surface area of materials, moisture, and air.

1. Greens to Browns Ratio

All organic materials contain both carbon and nitrogen. However, materials have different proportions of these two elements. Materials that are higher in nitrogen are called 'Greens' and materials that are higher in carbon are called 'Browns'.

Greens	Browns
<ul style="list-style-type: none"> • Fruit and veggie scraps • Fresh grass clippings • Fresh weeds and plants • Fresh animal manure (horse, chicken, cow) • Eggshells 	<ul style="list-style-type: none"> • Fallen leaves • Straw • Chipped woody debris • Shredded newspaper • Sawdust • Dry grass clippings

As a general rule, when making your compost, you should use equal amounts of brown and green materials. When adding materials, try to alternate between adding browns and greens. It is a good idea to always cover every layer of greens with a layer of browns (prevents odour, pests, and flies).

You'll have the most success with this composting method if you have a stockpile of browns available close to your composter. You may wish to stockpile leaves in the fall and winter as they fall from the trees. These can be stored in piles, bins or a home-made hoop bin (see Factsheet #6 - Urban Leaves) and accessed as needed.



Air:
Aerate each week.

Moisture:
Keep the material as wet as a wrung-out sponge.

Layering:
First layer should be rough twiggy material to allow airflow.

Subsequent layers should alternate greens and browns.

2. Surface Area of Materials

Materials that are smaller in size will break down much more quickly than large pieces – the greater surface area of smaller pieces makes it easier for compost organisms to digest the materials. You can cut up materials using many methods, including a lawnmower, machete, food processor, leaf shredder, knife or hand pruners. Essentially, you are kick-starting the process of decomposition by reducing materials in size.

3. Moisture

Moisture is important in a compost pile for two reasons:

1. It helps soften organic materials, making them easier for microorganisms to digest.
2. It supplies the water that microorganisms need to survive.

Microorganisms do most of the decomposing in your compost pile, so their survival is very important. In fact, making a good compost pile is all about creating optimum living conditions for microorganisms. Without enough water, microorganisms cannot thrive and will die or go dormant and the pile will decompose very slowly. However, too much water can slow down decomposition – it prevents air from getting into the pile and creates anaerobic (without air) conditions. Anaerobic composting is a much slower process than

aerobic composting and can create a strong, unpleasant odour. A good compost pile should be as wet as a wrung-out sponge and smell earthy or sweet.

If you are putting a lot of kitchen scraps into your compost bin you will want to be very mindful of the moisture level. Kitchen scraps generally have a very high water content and can quickly result in the presence of anaerobic bacteria without a balanced carbon-nitrogen ratio. Be sure to balance them out with a sufficient amount of dry, brown materials.

4. Air and Ventilation

Air provides microorganisms in your compost pile with the oxygen they require to carry out the decomposition process. It is important to ensure there is enough air in your pile at all times. This can be done in several ways:

- Start with a layer of coarse sticks on the bottom of your pile to allow air flow at ground level
- Do not use thick layers of material that are prone to matting down easily - moist grass clippings, excessively wet kitchen scraps or large amounts of newspaper.
- Periodically include thin layers of rough materials like sunflower stalks, small twigs, or corn cobs. Although these materials take longer to break down themselves, they increase airflow within the pile.
- Lightly mix each layer of green and brown materials together as you add them to prevent pockets of green materials from going anaerobic.

Even if you employ the above methods to keep air in your compost pile, it is still important to actively aerate your pile on a regular basis. An easy way to do this is with an aeration tool (pictured below), a pitchfork or old ski pole. Simply push the tool into the compost pile, twist and lift out (5-10 times should be adequate). This aerates the pile without mixing the finished material at the bottom with the fresh material on the top too much. Thus, when you go to harvest your finished compost, it remains mostly separate from the unfinished material.

Aerating your compost pile once or twice a week will help accelerate the composting process. Added benefits include increased rodent resistance and a more even decomposition resulting from mixed materials.



Common Compost Problems

Symptom	Problem	Solution
Compost pile has a bad odour	Not enough air; pile too wet	Turn it; add coarse, dry material (straw, cornstalks)
Pile is dry throughout	Not enough water; too much brown material; or pile is too small	Turn it and moisten materials; add fresh green materials; cover pile; water pile (summer)
Pile is damp and sweet-smelling but still not breaking down	Imbalance of greens and browns	Ensure you are adding equal parts of green and brown material
Pest infestation - rodents or birds	Incorrect food scraps added; location; open bin	Don't add meat, fats, bones or other animal wastes; use a rodent-resistant compost bin like the Earth Machine; relocate bin to open area; aerate regularly; make sure your top layer is brown material
Flies	Food scraps not covered	Cover green materials with brown material

Harvesting Your Compost

How Do I Know When My Compost is Finished?

A backyard compost bin can take 6-12 months to compost completely. The closer you follow the directions on this fact sheet, the quicker the process will be!

There are a few ways that you can tell if your compost is finished:

- Material is dark and crumbly and there is little sign of food scraps (i.e. it looks and feels like soil).
- Material has an earthy smell.
- Volume of bin has reduced significantly.

Once your compost is finished, it is time to harvest it from the bin. A well-designed bin allows you to harvest from a door at the bottom. Open or remove this door and use a shovel or hard rake to pull the material out of the bin. Alternatively, you can shovel off the top of



A simple screen can be made from 1/2" hardware cloth and a 2x4 wooden frame. This can be used by one or two people to sift the compost.

the pile onto the ground or into a wheelbarrow, harvest the finished material left in the bin, and replace the unfinished material to begin the process over again. Using a screen, sift out any materials that are not fully decomposed and return them to the compost bin (see picture on the left).

Once the compost is sifted, store it in a dry place so the rain will not leach the nutrients out of it. It can easily be stored under a tarp or in another compost bin. Finished compost should be used within a few months after harvest.

Using Finished Compost

Finished compost is one of the backyard gardener's best friends. Here are some of the many ways you can use it:

- ◆ Lightly dig in to the top 6-8 inches of soil for spring or fall planting, or use it as a mulch any time.
- ◆ Mix into a home-made potting soil recipe.
- ◆ Top-dress potted plants, hanging baskets, perennials, and container gardens.
- ◆ Sprinkle it on the lawn as a top dressing.
- ◆ Add compost to hole whenever transplanting plants
- ◆ Use it to brew compost tea for fertilizing and to increase pest resistance in your garden (ask us for details).



1216 North Park St.
Victoria, BC V8T 1C9
250-386-9676
info@compost.bc.ca
www.compost.bc.ca
Wednesday - Saturday
10am-4pm

