

# BACKYARD COMPOSTING

## Getting Started

### HOME COMPOSTING – The Simple Rules:

1. Mix some organic material into a pile or in a bin.
2. Add some dirt.
3. Keep the material moist.
4. Turn it occasionally.



### What Goes in a Composter?

In a typical household, organic materials make up approximately one-third of household waste. Much of this organic material can be properly handled in a backyard composting operation. Backyard composting reduces the amount of waste going to the landfill, and supplies nutrient-rich compost for use in your yard and garden.

### Composting Materials

- All vegetable and fruit waste – e.g. bananas and skins, beet tops, berries, citrus rinds, grapes, potatoes, peanut shells, cabbage, cucumber, onion, pumpkin, tomato, turnips, zucchini, etc., etc. (Bigger items such as corn cobs should be chopped up)
- Yard waste -- grass clippings, leaves & twigs, flowers.
- Coffee grounds & filters, tea leaves & tea bags, eggshells (crushed), bread, beans
- Garden wastes
- Hay, straw
- Soil (need to include some soil to help the composting process)
- Other Stuff – hair, rope, shredded paper, sawdust, peat moss, pine needles, string, cloth rags, feathers, etc., are compostable ... but not TOO much of any of those items (see 'Materials Requiring Caution' section)

## Materials Requiring Caution in Home Composting

<u>Material</u>	<u>Rationale</u>
Weeds	- Weeds such as crabgrass (with a rhizomatous root system) may survive the composting process. Most weeds are okay as long as they haven't gone to seed.
Paper	- Small quantities of shredded paper are okay (not glossy magazines). Paper is slow to break down and tends to mat, but is a good carbon source.
Sawdust, wood shavings	- Small quantities okay. Slow to break down. Use of treated wood is not recommended as the toxic chemicals from the treat may leach into the surrounding material.
Pine needles	- Small amounts okay. Acidic, with waxy coating. Slow to break down.
Rhubarb Leaves	- Small amounts okay. Contains an organic acid toxin (calcium oxalate)
Animal manure (cow, pig, horse, sheep, chicken, goat)	- Some care required. Well-rotted manure is better, due to lower nitrogen and moisture content. Manure may also contain active weed seeds.
Herbicide/pesticide treated plant material	- Caution required, as some residues may remain. Domestic (residential) pesticides & herbicides usually not as long-lasting as commercial products.

## Materials NOT Recommended for Home Composting

<u>Materials to Avoid</u>	<u>Rationale</u>
Meat, bones, fish scraps	- Odour problems. Attracts dogs, cats, rodents and insects
Oily or fatty materials, cheese and dairy products	- Oil and grease take a long time to break down, and may coat other materials, inhibiting their breakdown. Also attractive to insects.
Pet litter, cat and dog manure	- May contain disease organisms that are pathogenic to humans.
Diseased plants, weeds that have gone to seed	- The heat from the compost pile may not kill the disease, or inactivate the weed seeds
Dishwater	- Usually contains perfumes and grease.
BBQ ashes/coal	- Highly resistant to decomposition. Contain excessive amounts of sulphur.

## Five Important Points for Successful Composting:

1. Carbon to nitrogen ratio (i.e. the mix of 'brown' material to 'green' material)
2. Exposed surface area (i.e. the size of the material put in the composter)
3. Moisture content
4. Aeration (turning the pile to increase oxygen content)
5. Volume of material.

### 1. Carbon to Nitrogen Ratio – “Browns to Greens”

It is useful to think of materials with a high carbon content as being “brown”, and those with a high nitrogen content being “green”. Both are important in composting.

Examples of each:

**Browns** -- dead leaves, straw, hay, dryer lint, sawdust, dead plants, dry grass.

**Greens** -- fresh grass clippings, fruit and vegetable scraps, plants, manure.

It works best to have a mix of brown and green materials in the composter. Ideally, the proportion of browns to greens should be about 60% to 40%, but half and half works fine, too. Compost piles with too much 'brown' content are slow to heat up and break down. Piles with too much 'green' content will turn slimy and give off an ammonia smell.

### 2. Surface Area

This refers to the size of the material being put into the composter – the smaller the pieces, the faster the rate of decomposition. Splitting, chopping or shredding of material will help to provide the additional exposed surface area. It also pays to have materials of different sizes and textures blended together in a compost pile. That way, things such as fresh grass clippings are less likely to compress and clump up in the pile.

### 3. Moisture Content

The compost needs to be moist, as water is required to make nutrients available to the microbes. The rule of thumb is to keep the material as “moist as a wrung out sponge”. If you squeeze a handful of compost, only a couple of drops of water should come out. It works best to add water as you're building up the layers in the pile (rather than pouring it all on afterward, as can be difficult to get the water all the way through the material). If the compost crumbles and doesn't hold together at all when you squeeze it, the pile is probably too dry. You can add water when you're turning the pile. A hose or watering can works well. Adding 'greens' will also increase moisture content.

If the compost has a foul odour, it may be an indication of too much water. To reduce moisture content in a compost pile, you can mix in drier material (such as dead leaves) and/or turn the compost more frequently.

### 4. Aeration

Bacteria need oxygen in order to break down the organic waste. It is important for air to reach the centre of the pile, as this is the area of most biological activity and where the oxygen is used the fastest. Different methods to ensure aeration include:

1. Incorporate loose or coarser material (dry twigs, dead leaves or straw) throughout the pile in layers, or mixed in with denser material
2. Periodic turning or stirring of the pile to loosen it up. A pitch fork or garden fork works well, but you can also use a broom handle or hockey stick.
3. In bigger piles, you can use an air stack or pipe to ventilate the centre of the pile (usually not necessary when using a smaller backyard compost bin).

The frequency for turning or stirring depends on a variety of factors such as size of the pile, type of material in it and ambient air temperature. A good rule of thumb is to turn it every ten days or so. You may need to turn it more frequently during the late spring and summer than during the cooler fall period. Turning the pile too frequently (i.e. more than once a week) may reduce the heat too much in the centre of the pile – this will slow down the compost process.

## **5. Volume of Material**

The general rule of building a compost pile is to have it a minimum of one cubic metre in volume (3 ft by 3 ft by 3 ft). This size is required for self-heating purposes and for general aeration adequacy. The self-heating capability of a compost pile also depends upon the time of year and the type of compost container (if any). Closed black plastic containers – many commercial bins are made from black plastic – are useful in trapping solar heat, which increases the temperature of the compost. That means you can have a bit less material in an enclosed bin than in a pile.

## **Using a Compost Container**

Composting can take place in an open pile or in a compost bin. The choice depends on your specific needs. A bin can:

- Provide some protection from wind and rain that may otherwise scatter material, or make it too wet or too dry
- Aid in pile heat retention and trapping of solar heat
- Aid in keeping out rodents and other pests.

Some bins may not be large enough for the amount of material you have available to compost. Bins may also make it more difficult to turn or aerate the material.

## **End Uses of Compost**

Some benefits of incorporating compost into the soil:

- Loosens heavy clay soils to allow better penetration of air and water
- Increases the water and nutrient holding capacity of sandy soils
- Adds to the overall soil nutrient content
- Enhances soil's buffering capacity

Compost can be used:

- In the flower or vegetable garden: Mix compost into the soil in the spring or fall (a good rule of thumb is about one inch of compost per six inches of soil) or use throughout the growing season. If digging trenches for seeds or seedlings, sprinkle some compost in the trenches, or add as a top dressing.
- On soil around trees and shrubs: If planting new trees or shrubs, place some compost in the hole around the plant. For growing trees and shrubs, apply compost as a top dressing from the trunk out to the drip line (ends of the branches).
- As top dressing in planter boxes or house plants, and as part of a potting soil mixture (one-third compost with two-thirds potting soil).
- A top dressing for lawns. It's best to screen the compost first, so it is a finer material.
- Making 'compost tea' for watering plants. Fill a container with water, place compost into a sack (an old pillowcase works fine), then put it in the water. Let sit until water turns pale yellow. Water can be used on houseplants or in the garden. One batch of compost can be used a couple of times to make tea.

## **Common Compost Questions**

### **Why Should I Compost?**

Organic materials are a valuable resource in the garden. Mulches and compost improve soil texture and plant health, prevent erosion, and hold moisture and nutrients. By composting, a typical household can reduce the amount of garbage they send to a landfill by one-third. This saves waste collection and disposal costs, and extends the life of landfills (all of which ultimately save taxpayers' dollars).

### **Where Should I Place the Compost Bin?**

The main thing is that the bin is in a CONVENIENT location for you. The easier it is to use, the more you will use it. Aside from that, try for a level, well-drained sunny area. If you have neighbours close by, ensure that the bin's presence and operation will not be a nuisance to them.

### **How Do I Know When the Compost is Ready to be Used?**

Finished compost:

- Is dark in colour (like soil)
- Has a crumbly texture
- Smells 'earthy'
- Typically requires one growing season to be ready

### **Can I Compost in Winter?**

Bacterial activity slows down dramatically under typical Alberta winter conditions, and the compost pile will enter a dormant state. Materials can, however, still continue to be added. If the composter fills up, kitchen wastes can be stored outside in sealed containers or plastic bags and left to freeze. In the spring, the material in the composter will undergo several freeze/thaw cycles that aid in the breakdown of cell structure, and the pile will begin to shrink fairly quickly. The compost pile will become active again as ambient temperatures rise. If a lot of kitchen waste has been added, you may need to mix in drier materials such as straw or dead leaves to absorb the excess water generated from the thawing kitchen waste.

### **Do I Need to Use a Commercial Compost Starter or Accelerator?**

No. You do need to provide 'starter bacteria' when you first begin a compost pile, but that can be done by adding garden topsoil or finished compost to the mixture. You can also add bonemeal or bloodmeal. Once your compost bin is started, the main thing is to keep a proper mix of brown and green materials.

## TROUBLESHOOTING

Concern	Possible Causes	Solution
Rotten Odour	<ul style="list-style-type: none"> <li>Excess moisture (anaerobic conditions)</li> <li>Compaction</li> </ul>	<ul style="list-style-type: none"> <li>Turn pile. Add dry, porous material such as dead leaves, sawdust or straw</li> <li>Turn pile, or make smaller</li> </ul>
Ammonia Odour	<ul style="list-style-type: none"> <li>Too much greens (nitrogen)</li> </ul>	<ul style="list-style-type: none"> <li>Add brown (carbon) material, such as leaves, sawdust, straw</li> </ul>
Low Pile Temperature	<ul style="list-style-type: none"> <li>Pile too small</li> <li>Insufficient moisture</li> <li>Poor aeration</li> <li>Lack of greens (nitrogen)</li> <li>Cold weather</li> </ul>	<ul style="list-style-type: none"> <li>Make pile bigger or insulate sides</li> <li>Add water while turning pile, or cover top</li> <li>Turn pile</li> <li>Mix in green sources such as grass clippings, manure or food scraps</li> <li>Increase pile size or insulate pile with an extra layer of material</li> </ul>
High Pile Temperature	<ul style="list-style-type: none"> <li>Pile too large</li> <li>Insufficient ventilation</li> </ul>	<ul style="list-style-type: none"> <li>Reduce size of pile or turn into two piles</li> <li>Turn pile</li> </ul>
Pests – rodents, insects	<ul style="list-style-type: none"> <li>Presence of meat scraps, dairy products or fatty food</li> </ul>	<ul style="list-style-type: none"> <li>Remove inappropriate food from the pile, or cover with a layer of soil or sawdust, or turn pile to increase temperature</li> </ul>

Most of the information included in this hand-out came from the ‘The Master Composter & Recycler Resource Manual’, written by the City of Edmonton, Asset Management and Public Works. The manual is not available for purchase, but I can supply you with further information from it if you are interested. Good web-sites to check out include:

City of Edmonton: [www.gov.edmonton.ab.ca/waste/](http://www.gov.edmonton.ab.ca/waste/)

Action on Waste: [www3.gov.ab.ca/env/waste/aow/](http://www3.gov.ab.ca/env/waste/aow/)

Canadian Composting Council: [www.compost.org](http://www.compost.org)

For further information or if you have any questions about backyard composting, contact:

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