

How To Compost (Outdoors)

Grade 6 Science: Life Science - Diversity of Living Things (DL)

Grade 7 Science: Life Science Interactions with Ecosystems (IE)

Outcome: Grade 6: DL6.5 Assess effects of microorganisms on past and present society and the contributions of science and technology to human understanding of microorganisms.

Outcome: Grade 7: IE7.3 Evaluate biogeochemical cycles (water, carbon, and nitrogen) as representations of energy flow and the cycling of matter through ecosystems.

Materials:

- Container/Bin for compost - see notes
- Shovel, garden fork, or pails for adding materials.
- Water
- Soil
- Nitrogen (green) Sources:
 - o Kitchen scraps: ex: raw or cooked fruit and vegetable wastes, coffee grounds and filters, tea bags, egg shells, bread, pasta
 - o Green plant material: green grass clippings, fresh plant material (trimmings)
 - o Agricultural manure: cow, horse, sheep, chicken
- Carbon (brown) Sources:
 - o Dry, brown plant material: leaves, grass, dry plants, straw
 - o Wood products: wood chips or sawdust (very high in carbon and slow to compost)
 - o Paper: strips of newsprint, used paper towel, etc.

Materials to Avoid:

- Meat, bones and dairy products (create odours and attract animals)
- Fat and oils (hard to break down)
- Sawdust from treated wood (contains toxic materials)
- Diseased plants, weeds with mature seeds, persistent weeds
- Pig, dog and cat manure (contain parasites)

Background Information

What is Compost?

Compost is ready-to-use organic matter for your soil. Mature compost looks dark, feels crumbly and smells earthy. Adding compost to your soil:

- increases its ability to hold water
- improves soil structure
- provides a low-level, slow-release fertilizer
- boosts the number of “good” soil microbes

How the Composting Process Works

When organic materials are made into piles, it speeds up the natural decay process. You can make compost from a wide range of “waste” materials.

Bacteria and Fungi: These are the main workers in a compost pile. Usually these tiny creatures are already on the compost materials when we put them in the pile.

Water: Composting materials need to be kept as moist as a damp sponge. In Saskatchewan, this means we may have to add water on a regular basis.

Food: The bacteria and fungi need a balanced diet:

- Carbon (brown) materials such as dead leaves, dry grass and straw.
- Nitrogen (green) materials such as green grass clippings, fresh plants and food scraps.
- 3 parts brown to 2 parts green is a good balance.

Oxygen (Air): When bacteria have access to oxygen, they break down material faster, give off enough heat to kill weed seeds, and don’t create bad smells. Turn the compost with a garden fork or an aeration tool.

Particle Size: The bacteria work faster if their food is in smaller pieces. Break up plant stalks and other bulky items as you add them. Woody materials need to be shredded.

Soil: Small amounts of garden soil or finished compost help absorb odours and add more compost creatures to the pile.

Pile Size: Compost piles work better if they are at least a cubic meter in size, but materials can be added gradually. (Shrinkage - One of the big surprises in the composting process is how much the pile shrinks. Finished compost has only one quarter to one half of the volume of the starting mix.)

Making a Compost Pile

Start with a 15 cm layer of coarse material, like plant stems, that are sturdy enough to create some air spaces in the bottom of the pile or bin.

Add a 10 cm layer of nitrogen (greens) and a shovel full of soil.

Cover with a 15 - 20 cm layer of carbon (browns).

Add water until all materials are damp and mix the top two layers with a garden fork.

Continue to add a combination of greens and browns as they become available and mix in soil and water.

Stirring the top layers weekly and adding water if needed will keep a hot pile going. After three months in warm weather material at the bottom of the pile should be cool, dark, crumbly and ready to use. (In winter compost piles freeze. As soon as the pile thaws out in spring, the composting process starts again. You can keep adding food scraps throughout winter and wait until spring to mix in leaves and soil.)

Compost Containers/Bins

Bins can be purchased or built. When building or buying, consider:

- ease of use for adding materials, turning and harvesting compost.
- Size amount of material you want to compost.
- appearance
- cost
- skill required to build or assemble.
- ability to keep animals away from contents.

Siting: Place your bin in a shady spot.

Single Plastic Unit: It handles a modest volume, is relatively inexpensive and easy to assemble, and keeps most animals out of the compost. Bins are available for sale at many stores. For more information contact: info@saskwastereduction.ca.

Three Unit Bin: It handles larger volumes, allows easy access and is usually built on site. Construction plans for a wooden 3bin unit are available at <http://www.saskwastereduction.ca/resources/Composting/3compbin.html>

Troubleshooting

Compost is Smelly: Turn compost materials with a fork and add some carbon (brown) materials and soil.

Compost is Dry: Add water until contents are as moist as a damp sponge.

Pile is moist but has never heated: Mix pile and add some nitrogen (green) materials.

Mice: Set traps. Review the avoid list for kitchen scraps. Make sure bin is placed at a distance from entryways to buildings.

Harvesting and Use of Compost

Compost is ready to use when it is dark, crumbly and earthy smelling. Shovel it out of the bin onto garden or place bin in a new spot, remove finished compost and shovel unfinished compost back into bin.

Compost is an excellent soil amendment. Eg. dig it into gardens or sprinkle it on the grass.

Compost Tea: place a shovel full of compost in a pail of water for several hours. Use the tea to water plants.

This lesson is adapted from the handbook, *Composting and other Down-to-Earth Solutions*, prepared by the Saskatchewan Waste Reduction Council. For additional information on composting go to:

<http://www.saskwastereduction.ca/resources/Composting/composting-index.html>