



## Waste: How Things Compost

### Background and concepts

Composting organic waste, like fruit and vegetable scraps and plant material, like yard waste, is one of the simplest ways to decrease the amount of garbage we make. When this organic waste is sent to the landfill, the waste breaks down in an oxygen-starved environment and produces methane, a potent greenhouse gas that contributes to climate change. Composting recycles nutrients, helps us build healthy, fertile soil for our plants and gardens and reduces methane.

Source: [Saskatchewan Waste Reduction Council](#)

If you have internet access, watch these videos for information on different ways to compost: [Composting in 60 Seconds](#)

Make a composter in a glass jar using fruit and vegetable scraps and watch how it turns into compost over time.

#### In this activity, you will learn about:

- How things decompose
- How to reduce waste by turning organic materials into compost
- Predicting and recording observations.

#### Extension options:

- Make more than one jar and compare them.
- Share the results and photos of your jar with your teacher and classmates.



### Time

- 1 hour – to make the compost jar
- 15 minutes, one week later – to observe and record changes in the compost jar
- 15 minutes, one month later – to observe and record changes in the compost jar



**Optional:** 5 minutes daily for up to a month – to observe and record changes and take a photo of the jar.

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## Materials

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- **Carbon-rich (brown) materials:** Dry leaves, twigs, bits of straw, paper towel, dead plants, etc.
- **Nitrogen-rich (green) materials:** Grass clippings, fruit or vegetable scraps, eggshells, tea bags, coffee grounds, etc. *Note: Collect them the day you make the jar – to reduce the old fruit smell.*
- **Soil (a source of micro-organisms/bacteria):** Garden soil (not sterile potting soil). Collect 1 cup of soil from a garden, yard or nearby park.
- **Experimental items:** Small pieces of aluminum foil, milk cartons, cardboard, plastic, etc.
- **Water, air, warmth.**
- **Clear glass jar:** Like a large, pickle jar.
- **Cheesecloth (15cm square) and elastic band or string:** Use as a cover for the jar. Secured with a band or string, the cheesecloth keeps bugs away and allows airflow.



**NOTE:** If you don't have cheesecloth, other options can be using a piece of cotton cloth (you can even use swatches from old cotton t-shirts) or a piece of plastic with a few holes poked in it.



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## Procedure

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### Make the compost jar:

1. Gather the things you need to make your compost jar. The materials list and the included photos can help provide a guide.
  - **Don't** add meat, dairy products, or oily things like salad dressing to your compost jar. They will decompose but will create strong odors during the decomposition process.
2. Spread newspaper on your work surface, or work on a surface that is easy to clean.
3. Add layers of the materials to your jar:
  - A layer of soil
  - A layer of carbon rich "browns"
  - A layer of nitrogen rich "greens"
  - More soil
  - More browns
  - More greens
  - **Pack the jar really full** of layers of soil and compostable materials.
  - Add a few of the experimental items you gathered. Tuck them around the edges so you can see them.
  - The contents of the jar should not be wet but moist like a wrung-out sponge
  - not wet. Add a small amount of water if needed.
4. **Label the jar** with your name and the date.
5. **Optional:** Take a photo of what your jar looks like.
6. Cover the jar with a square of cloth and use an elastic, some string or yarn to hold it in place. Set it aside and let things start to decompose. Keep it at room temperature so that it does not freeze.
  - Wash hands.
  - Print and complete the **Day 1: Compost Observation Record**, or
  - Write down your answers on a piece of paper.





7. Keep an eye on the moisture level in the jar over the next few weeks. It shouldn't have water showing near the bottom of the jar. The contents should be damp. Add or drain water as needed.
8. **Optional:** Check the jar daily and note the main changes or take a photo of what it looks like.

### One week later:

1. Observe and record the appearance and odor of the jar using the **One Week Later: Compost Observation Record**.
2. If you want to change your predictions, record the changes on the form. Keep your first predictions and add your new ones.
3. Holding your hand over the top, gently shake the jar to move the contents around. That will bring more air into the jar.
4. If the contents of the jar are dry, add a little water.
5. Cover the compost jar and set it aside again.



### One month later:

1. Dump out the jar onto paper or a surface you can clean. Observe and record the contents of the jar using the **One Month Later: Compost Observation Record**.
2. **Optional:** You can continue this experiment for an extended period by replacing the compost in the jar to continue the decomposition process. However, at this point in time, the base of the experiment is complete. You can remove any large pieces of wood, paper, and any remaining experimental items. Put the rest into a home compost bin or bury it in the garden where decomposition can continue. Clean the jar for reuse.



## Day 1: Compost Observation Record

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**Date:**

**Student Name:**

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### Appearance

1. List what items you put in your compost jar below.
  
  
  
  
  
  
  
  
  
  
2. Predict: How do you think your compost will change in 1 week?
  
  
  
  
  
  
  
  
  
  
3. Predict: Which materials do you think will compost quickly? Which ones will take longer to compost? Explain.

### Odor

4. What does it smell like?
  
  
  
  
  
  
  
  
  
  
5. Predict: Do you expect the smell to change? Why or why not?



## One Week Later: Compost Observation Record

Date:

Student Name:

### Appearance

1. List the items you recognize in your compost.
2. How has your compost changed from last week?
3. Which items decomposed slower or faster than you thought they would?  
Change your predictions if needed.

### Odor

4. Has the smell changed from last week? If so, how has it changed?

### Water

5. Did you need to add water? Yes\_\_\_\_ No\_\_\_\_



## One Month Later: Compost Observation Record

Date:

Student Name:

### Appearance

1. List the items you put in the jar in the table below and mark if it was compostable or not compostable.

Item	Item decomposed (compostable)	Item did not decompose (not compostable)

2. Which items decomposed faster or slower than you predicted?
3. Based on your experiment, what composts, and what does not compost?

### Odor

4. Has the smell changed from last time? If so, how has it changed?



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## Additional Resources

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[Saskatchewan Waste Reduction Council \(SWRC\)](#): Information on various methods of composting, and descriptive videos.

[Landfill Gas Collection and Power Generation System](#): **City of Saskatoon**

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## Curriculum Connections

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**Grade 3 Science: ES3.1** Investigate the characteristics, including soil composition and ability to absorb water, of different types of soils in their environment. **ES3.2** Analyze the interdependence between soil and living things, including the importance of soil for individuals, society, and all components of the environment.

**Grade 4 Social Studies: RW4.2** Investigate the importance of agriculture to the economy and culture of Saskatchewan.

**Grade 5 Science: MC5** Investigate how reversible and non-reversible changes, including changes of state, alter materials. **MC5.3** Assess how the production, use, and disposal of raw materials and manufactured products affects self, society, and the environment.

**Social Studies: RW5.1** Explain the importance of sustainable management of the environment to Canada's future.

**Grade 6 Science: DL6.5** Assess effects of micro-organisms on past and present society, and contributions of science and technology to human understanding of micro-organisms.

**Social Studies: RW6.2** Contribute to initiating and guiding change in local and global communities regarding environmental, social, and economic sustainability.

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

*This lesson was adapted from Recycle Saskatchewan: How things Compost*





**Before:**



**After:**

