

Milk Carton Garden

SCIENCE

Welcome spring with this activity! It will help students get the dirt on how plants grow and understand where food comes from.

Learning Outcomes

Your students will:

- Learn about sequencing and its importance in planting seeds.
- Observe and document the growth of the plant.
- Gain an understanding of how foods are grown.

The Activity

1. Determine if students will complete the activity on their own, with a partner or in a small group. This will help you plan quantities for your supply list.
2. Select seeds that grow well in shallow containers such as beans, peas, green onions and herbs. Buy multiple packets of seeds or photocopy packets so all students can review packet information.
3. Introduce the activity by starting a conversation with your students about planting seeds. Who has started seeds before? What do you know about starting seeds? What is needed for a seed to grow into a plant? (soil, water, sunlight and nutrients).
4. Review the “Key Words” with students.
5. Describe the activity to your students on pages two and three.
6. Do part one - researching plants. Knowing the steps in planting is a great lesson in sequencing! Younger students can look at the pictures on the seed packets while you point out some of the content included.
 - Explain to students that they will be researching plants using the information on seed packets.
 - Pass out seed packets to students in class. Have them complete the chart on page two.
 - Research extra information online if desired.
7. Do part two - planting your milk carton garden. You may need to help younger students with some of the steps like cutting the carton, making a prediction, etc.

Key Words

Germination: the sprouting of a seed that happens when water is added.

Plant parts: root, stem, leaves, flowers, seeds, fruit

Researching Plants

Seed packets contain a wealth of information about growing the plant. It's important to follow the instructions on the packet so the seed will grow into a healthy plant.

Read the seed packet before planting and record information in chart below.

Plant name	
Number of days until plant sprouts out of soil	
How deep to plant seeds	
How far apart to plant seeds	
How tall the plant will grow	
When fruit, vegetable or herb is ready to harvest	

Meal Ideas:

How to prepare or eat this food: _____

Planting the Milk Carton Garden

Supplies:

- Milk cartons (237 mL, 1 L or 2 L)
- Dish soap and water
- Permanent marker
- Rulers
- Scissors
- Potting soil
- Seeds that grow in shallow containers such as beans, peas, green onions and herbs
- Wooden craft sticks
- Spray bottle
- Copies of the growing chart

Instructions:

1. Cover tables with newspaper or paper towels to help with cleanup.
2. Prep your containers!
 - Pour a small amount of dish soap and water in each carton, close it and shake. Pour out the soapy water and rinse well.
 - Use a ruler and a marker to draw a line on the carton, about 3 inches (7.5 cm) from bottom (see illustration on next page). Poke a hole along the line on the carton. Insert the scissors through the hole and cut along the line, removing the top of the carton.
3. Scoop potting soil into milk carton and slowly add water to the soil until it is damp. Mix the soil with your fingers.
4. Let's plant! Check your worksheet "Researching Plants" to see how deep to plant your seeds. Use fingers to poke holes in the soil and place the seeds into the holes.
5. It's time to label your plants! Write the name of the seed on a wooden craft stick and place in the soil. You could also attach a drawing or the picture from the seed packet.
6. Find a sunny spot for your milk carton garden. Use a spray bottle to mist the soil twice a day.
7. Create a hypothesis for this activity. Some possibilities could be:
 - which seeds will grow the fastest
 - how many seeds will sprout
 - how long the seeds will take to sprout
 - the height of plant at a certain date, etc.
8. Use the chart provided to record stages of plant growth. Consider drawing or painting pictures of the different growing stages.
9. Take plants home or plant in a garden or pot at school once this activity is complete.

Cutting the Milk Carton

Use a ruler and marker to draw a line to guide cutting. Use tip of scissors to poke a hole along the line on the carton. Cut to remove the top of the carton.



My Plant's Growth Chart

Notice how your plant is growing. Record things like first sprout, first set of leaves, height or changes in the size of leaves.

Name of Seed Planted:

Date Planted:

Date	What I Notice

Expand Learnings in the Classroom

Connect Through Conversation

Use these conversation starters with students to expand on this topic.

Plant Growth

- Seeds get a signal to start growing when they are planted in moist soil. This is germination.
- The seed will develop roots, which grow down into the soil in search for water and nutrients. The roots help the plant stay upright as it grows.
- The outer layer of the seed splits and a shoot grows toward the surface. The seedling appears, breaking through the soil. The seed has now sprouted.
- The seedling grows leaves. The leaves begin to make food for the plant using sunlight, water and air.
- The plant will continue growing, producing vegetables, fruit or flowers.

Germination Rate

- Some seeds may not sprout like you'd expect. Get students to practice math by counting the number of seeds planted and comparing to the number of plants growing.
- Ask students how they think global warming could affect germination and plant growth.

Growing Seasons in Canada

- Talk to students about the weather during the four seasons of the year. Ask them if plants can be grown in their province all year long.
- Explain that greenhouses can grow plants when it is too cold outside. Get students to think if there are farms or greenhouses in their community.
- Research frost dates in your province so students know when it would be safe to transplant the seedlings outside. Talk about the importance of giving seedlings time to adjust to being outside before transplanting.

Caring for the Environment by Recycling

- Discuss how recycling a milk carton helps care for the environment.
- Ask students what other items are reused or recycled at home or school. Think about reusable items that could replace some single-use items.

Activities for Extra Fun

Food Systems

- Get students to research the journey food takes to get to your plate. They could start by thinking about the foods they ate yesterday.
- Explain that some foods travel a short distance, while others travel further.
- Did you know Canadian milk comes from farms located across Canada, including the Maritime provinces? Find out how many dairy farms are in your province.

Change a Variable

- Have students do an experiment where some seeds are grown in a greenhouse condition in the classroom.
- Get students to research how to do this. For example, they could make a cover by using clear plastic bottles or a plastic tent to place over their milk carton gardens.
- Compare to plants grown without a greenhouse cover to note differences.

Caring for the Environment by Reducing Food Waste

- Have students research food waste in Canada and its effect on the environment.
- Explain that when food waste ends up in a landfill, it decomposes and produces greenhouse gas, which damages the environment.
- Ask students to guess how much of the food grown in Canada is lost or wasted. They may be shocked to know that over half the food produced in Canada is lost or wasted each year.
- Most people aren't aware that household food waste is a large contributor. Ask students if they are contributing to the food waste problem in Canada. See if they have ideas to reduce food waste at home or school.
- Discuss a gardening activity which helps reduce food waste. Explain that it is possible to regrow vegetables like green onions or romaine lettuce by placing the stem in water until it roots.

Three Sisters Garden

- If you chose to plant beans in your garden, ask students to research the Three Sisters garden.
- The Three Sisters garden was traditionally grown by some Indigenous peoples and includes squash, corn and beans. Ask your students to research how these three plants support each other when planted together.