

Agriculture is an essential industry that we all rely on to provide us with food for our tables. Food that helps us maintain a well-balanced, healthy diet.

Agriculture in the Classroom – Manitoba invites your students to explore the world of dairy. First, students can take a virtual tour of Signer Farms, a local dairy operation in Kleefeld, Manitoba with host dairy farmer, Stefan Signer. Then students can expand their learning with curriculum linked activities.

Students will:

- Explore the production of milk on a local dairy farm
- Learn what dairy cows need to stay safe and healthy - building features, life processes and animal nutrition needs
- Learn proper terminology related to dairy animals
- Identify what products are made from dairy and what nutritional benefits dairy offers
- Compare properties of liquids versus solids, and make their own homemade butter
- Recognize that the work done by dairy farmers provides food for all Canadians

GRADE 2 ACTIVITIES – CURRICULUM OUTCOMES

Curriculum Outcomes Grade 2 Science Cluster 1 and Cluster 2		Activities		
		Signer Farm Video	Activity 1	Activity 2
2-1-01	Use appropriate vocabulary related to their investigations of growth and changes in animals. Include: food groups, Canada's Food Guide to Healthy Eating, offspring, adult, behaviour, life cycle, stage, life processes, as well as terms relating to life cycles studied.	✓	✓	
2-1-04	Recognize that food is a form of energy and that healthy eating is essential for growth and development.	✓		
2-1-07	Recognize that foods humans eat come from plants and animals, and classify foods accordingly.	✓	✓	
2-1-08	Recognize that all animals can have offspring, and that offspring generally resemble their parents.	✓	✓	
2-1-09	Compare the appearance of young and mature animals of the same type.	✓	✓	
2-1-10	Compare the length of time from birth to adulthood for humans and other animals.		✓	
2-1-16	Observe and describe an animal's life processes. Include: eating habits, movement, rest patterns, breathing.	✓		

2-2-02	Identify substances, materials, and objects as solids or liquids.			✓
2-2-03	Investigate and compare properties of familiar solids. Include: have mass/weight, take up space, maintain their shape.			✓
2-2-04	Investigate and compare properties of familiar liquids. Include: have mass/weight, take up space, have no definite shape.			✓
2-2-05	Identify similarities and differences among properties of familiar solids and liquids.			✓
2-2-08	Identify liquids used in the home, and describe how they are used. Examples: milk for drinking and cooking, detergent for cleaning			✓
Curriculum Outcomes Grade 2 Social Studies Cluster 2		Activities		
		Signer Farm Video	Activity 1	Activity 2
KE-036	Give examples of goods produced in Canadian communities.	✓		✓
KE-037	Describe different types of work in Canadian communities studied.	✓		✓
VE-013	Appreciate that their quality of life is enhanced by the work and products of other Canadian communities.	✓		✓

GRADE 2 ACTIVITIES

First, watch this virtual tour of Signer Farms, a dairy farm located in Kleefeld, MB (20:38)

<https://www.youtube.com/watch?v=Nq01OY-OhHg>

ACTIVITY 1 – DAIRY COW WORKSHEET

PROCEDURE:

This worksheet will:

- Introduce cow vocabulary (calf, heifer, cow)
- Identify that dairy cows produce milk, the foods that come from milk and that dairy foods are part of the protein food group on Canada's Eat Well Plate.
- Compare growth, development, and the length of the time from birth to adulthood for humans and dairy cows.

ACTIVITY 2 – BUTTER IN A JAR

PROCEDURE:

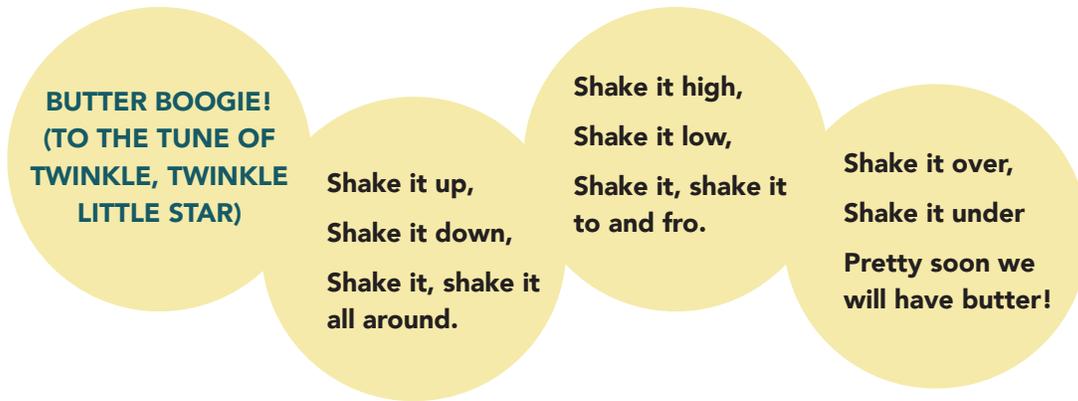
- Pour about 40 mL of heavy cream into each jar. The jars should be about ½ full. Add a pinch of salt (if preferred). Put the lids on tight!
- Give each child a jar. Ask them:
 - » What is in their jar? (cream)
 - » What farm animal produced this food? (dairy cow)
 - » Is it a solid or a liquid? Give reasons for their answer. (liquid – has mass/weight, takes up space, has no definite shape.)
 - » Tell the students to shake their jar briskly. Note: Cream in a 2 oz. (60mL) container should take 5-10 minutes to form butter. The more cream in a container, the longer it will take. Room temperature cream will take less time than very cold cream. Students will notice as time passes and they are shaking, small clear areas will begin to form along the sides of their jars. This is a sign that the butter fat is beginning to solidify. Soon you will be able to taste your homemade butter - keep shaking!
 - » While the students are shaking their jars, you could talk about how the Dairy Industry in Manitoba provides work, goods, and products for all Manitobans or you could sing the song below.

MATERIALS NEEDED:

- One copy of the [Dairy Cow Worksheet](#) for each child.

MATERIALS NEEDED:

- Heavy whipping cream (You will need about 40mL per student, enough to fill a baby food jar ½ full)
- One small plastic or glass jar with tight fitting lid per student. Baby food jars work well! (Or 2 oz./60mL plastic cups with lids available from restaurant supply stores)
- Salt (if you prefer salted butter - you can make it without too!)
- Sieve (to strain the buttermilk from your jar, leaving behind the solid butter)
- One cup/glass to strain the buttermilk into
- Knife or spoon, one per student, to scoop and spread their butter
- Crackers, small buns or a slice of bread - one per student, to spread their butter on



- Have students describe what is in their jar. Is it a solid or a liquid? Give reasons for their answer.
- The correct answer is both! Students should see both solid butter and liquid buttermilk in their container. When the cream was agitated, the fat molecules banged into each other and clumped together forming a solid. The remaining liquid is called 'buttermilk' because it's what is left after much of the butter fat has been removed to form butter. This is old-fashioned or churned buttermilk, and it is the thin, slightly acidic liquid left over after churning butter from full-cream milk.
- Students will need to drain off the buttermilk into another cup or glass. Students can taste the buttermilk. Buttermilk is low in fat and contains protein and a wide range of vitamins and minerals, including: Vitamin C, Thiamin, Riboflavin, Vitamin B12, choline, calcium, magnesium, phosphorus, potassium, and selenium.
- Students can scoop out the butter from the jar with a knife and spread it on a cracker/bread to taste. Butter contains Vitamin A and Vitamin D but is also very high in fat, so it is best to only include a little of it in your diet.

FAST FACTS FOR MANITOBA'S DAIRY INDUSTRY

1. The dairy industry in Manitoba includes dairy production and processing, employing around 1,600 Manitobans.
2. There is a total of 277 farms and 14 processing plants, managed by 12 dairy companies.
3. There were 41,200 mature dairy cows and an additional 20,800 replacement heifers in 2017.
4. All dairy farms in Manitoba are family owned and operated.
5. The dairy industry is supply managed and allows dairy farmers to match supply of milk production to meet the demands of Canadians.
6. Manitoba supplies around four per cent of Canada's demand for dairy products.
7. Dairy Farmers of Manitoba marketed 358.1 million litres of milk in 2017.
8. The value of dairy processing rose by over 18 per cent from 2016 to 2017, generating \$510.9 million in revenue in 2017.

ASSESSMENT

Have students draw and label a step-by-step guide for making butter. Discuss the steps together as a group.

To see how the butter they buy in the store is processed, watch *How it's Made – Butter*, (5:06)

<https://www.youtube.com/watch?v=qwb2uZLSLhw>

EXTENSION ACTIVITY

[Mystery Milk Find Word Search](#) – Have your students find these milk products on this fun word search!