



# FARM TO FAMILY-DAIRY

## Overview

Students will learn the importance of dairy products in their daily lives. This lesson plan will answer the question, “How does milk get from the farm to my table or glass?” Students will learn the sequence of producing wholesale dairy products on the farm such as milk and cream, processing and transporting safe and healthy dairy products and eating or drinking the dairy products at their table. It will also discuss food safety and the steps taken in the milk production sequence that help ensure a safe and wholesome dairy product such as cheese, ice cream, or yogurt.

## Objective

1. Students will match word definitions to match words to definitions that explain the process of milk handling.
2. Students will understand the sequencing of milk production.
3. Students will understand that energy flows from the sun to plants to animals in a process known as photosynthesis to provide human food for energy.
4. Students will learn to flow of energy in a process called photosynthesis.

## Background Information

Plants provide energy to animals like dairy cows in the form of carbohydrates. Forages such as alfalfa hay, are digested in the animal’s four stomach compartments to provide energy and nutrients to the dairy cow. This unique ruminant digestive system allows cows to use forage sources for energy that monogastrics, like humans cannot. The dairy cow then takes nutrients from feed and water to make food in the form of milk.

Almost all of the milk produced in the United States is required to be pasteurized to make it safe to consume. After the cow is milked, the milk is cooled to 45 degrees Fahrenheit and then the milk is tested before it is loaded on the truck. It is tested for bacteria and quality and then tested again after being unloaded at the processing plant. At the processing plant the milk is pasteurized and homogenized and packaged into cartons.

In Kansas there are approximately 310 dairy herds and 5 plants that process dairy products. There are about 137,000 milk cows in Kansas located on a mixture of 300 large and small dairy farms. Dairies in Kansas produce nearly 2.9 billion pounds of milk annually and they rank 16th in U.S. milk production. In recent years, the value of milk that Kansas produced reached nearly \$592 million and added approximately \$131 million and 482 jobs to the economy in Kansas.

**Suggested  
Grade Level:**  
3rd-5th

**Time:**  
40 minutes

**Subjects:**  
Science  
Social Studies

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## Vocabulary

**Trucking:** Milk is collected from the farm in a cooled tank truck and brought to the plant to be processed.

**Testing:** Performing checks to ensure healthy and safe food.

**Homogenization:** Fat is broken by machine into small pieces and distributed evenly through out the milk. This prevents cream from forming in each package.

**Pasteurization:** Milk is heated to 160 degrees Fahrenheit and then cooled quickly. This makes milk safe to drink and helps it to stay fresh longer. It was named for Louis Pasteur who discovered that high temperatures kill bacteria.

**Packaging:** Milk is placed into cartons and jugs with labels indicating nutritional information.

**Delivering:** Refrigerated trucks bring milk to schools and supermarkets for you to enjoy.

## Procedures

1. Watch the following videos as a class:

America's Heartland Dairy Videos:

- <https://www.youtube.com/watch?v=LEXBIfzn--g>
- <https://www.youtube.com/watch?v=dX2ypLI84nM&spfreload=10>

McCarty Dairy Farms:

- <https://www.youtube.com/watch?v=lrUhc7LtpGM>
- <https://www.youtube.com/watch?v=-KaQseyBYF4>

2. Have the students share thoughts of the videos with a partner.
3. Have the students share main ideas to the class.
4. Complete sequencing activity.

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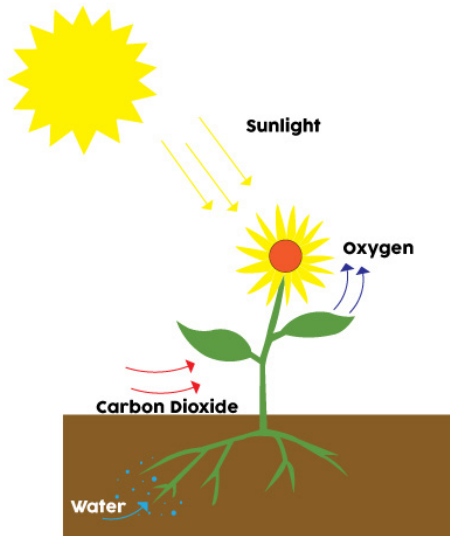
## Dairy Processing Steps

Copy and cut apart to distribute to groups of students. Match one bold step in the process to the italic definition of that step.

<b>The farmer feeds the lactating cow a balanced diet so she may produce milk.</b>	The cow needs to be healthy to produce milk naturally.
<b>The dairy farmer cleans the cow's udder.</b>	To make sure the cow stays healthy and the milk is as clean as possible.
<b>The cow is milked 2-3 times a day. Milking takes about 5 minutes per cow.</b>	Through the use of specialized machines that are designed to mimic sucking of the calf and to be comfortable to the cow.
<b>The milk goes into the bulk tank at the farm where it is kept cold at 39 degrees Fahrenheit or colder for 48 hours.</b>	Maintained at a healthy temperature keeps it safe to drink.
<b>The milk is tested at the farm and then taken to the processing plant.</b>	Testing ensures that the milk is safe from bacteria or antibiotic residues.
<b>The milk is tested at the processing plant for milk fat, protein and bacteria count.</b>	To make sure that the milk is safe, it is tested again before being processed.
<b>The milk is pasteurized and homogenized.</b>	Pasteurized milk is heated to at least 160 degrees Fahrenheit for 15 seconds to destroy bacteria. Homogenization disperses fat particles and ensures that the milk has consistent flavor.
<b>The products are packaged and delivered to stores, restaurants and schools.</b>	To ensure that you have delicious dairy products available to you wherever you eat.
<b>You drink milk, eat cheese, and have ice cream for dessert.</b>	Because 3-4 glasses of milk each day provide calcium and other nutrients to keep you healthy.

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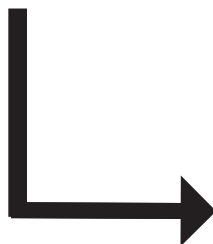
## Photosynthesis



Plants



Cow



Whole Milk	
Serving Size 8 fl oz (240mL)	
Servings Per Container 2	
Amount Per Serving	
Calories 150 Calories from Fat 70	
% Daily Value*	
Total Fat 8g	12%
Saturated Fat 5g	25%
Cholesterol 35mg	12%
Sodium 125mg	5%
Total Carbohydrate 12g	4%
Dietary Fiber 0g	0%
Sugars 11g	
Protein 8g	

You

# FARM TO FAMILY-DAIRY

## The Story of Milk

Use these words to fill in the blanks

trucks

parlor

grocery store

cow

processing plant

A \_\_\_\_\_ eats  
up to 8 times a day  
and likes cereal  
grains, forage, hay  
and cottonseed!

A \_\_\_\_\_ is  
where the cows are  
milked. The cow's  
udder holds the milk.

Special \_\_\_\_\_  
keep the raw milk cold

The \_\_\_\_\_  
pasteurizes the milk so  
we can drink it.

The milk is ready for us  
to drink. We buy it at  
the \_\_\_\_\_.

# FARM TO FAMILY-DAIRY

## The Story of Milk- Answers

A cow eats up to 8 times a day and likes cereal grains, forage, hay and cottonseed!

A parlor is where the cows are milked. The cow's udder holds the milk.

Special trucks keep the raw milk cold

The processing plant pasteurizes the milk so we can drink it.

The milk is ready for us to drink. We buy it at the grocery store.