



Lesson Two: Steps of Dairy Production Iowa's Dairy Story TEACHER LESSON PLAN

Objective: To help youth understand the stages of dairy production.

Iowa Core Curriculum Met:

Literacy Standard

Content Standard 1: Students can comprehend what they read in a variety of informational texts.

Science Standards

Content Standard 1: Students can understand and apply skills used in scientific inquiry.

Content Standard 2: Students can understand concepts and relationships in life science.

Supplies Needed

"From Farm to Food to You" poster. (Download from web)

"From Farm to You: The Story of Milk" Video (Download ahead from web)

"From Farm to Food to You" Teachers Guide

Colors, markers, colored pencils, scissors, glue, file folder or ledger size paper for each child.

Milk from Cow Mix-Up - one for each student

Learning Activities:

Activity 1: Create a Dairy Unit Portfolio

Introduction to Unit:

- A. View the Video "From Farm to You: The Story of Milk." Find the videos on the Iowa's Dairy Story website: <http://www.extension.iastate.edu/allamakee/info/dairystory>.
- B. Review the poster "From Farm to Food to You" addressing the steps of dairy production. (Some of this will be a review from the video)
- C. Dairy Farmers: The Iowa milk cycle begins at the dairy farm. There are approximately 1,790 farms producing milk in Iowa. Dairy is the 5th largest agricultural business in Iowa.
- D. There are 7 basic dairy breeds – Holsteins are black and white, Jerseys are yellowish-brown, Guernseys are tan and white, Brown Swiss are dark brown or gray, the Ayrshire are white with reddish spots, the Milking Shorthorns can be red or white or roan colored, and the Red and White Holstein are red and white in color. About 90% of the milk cows today are Holsteins.

Reviewing the Poster: You can have students read the information from the poster and share additional information provided.

Feeding: Full-grown dairy cows can weigh about 1,400 pounds. These cows drink about 25-50 gallons (a bathtub full) of water a day. They eat about 40 pounds of feed and hay, and 50 pounds of silage every day. 90 pounds of food would equal to about 480 hamburgers a day. People eat about 4 pounds of food each day. A cow spends about 6 ½ hours a day eating. That's the same length of time as a school day. It takes about 2 days for a cow's body to turn the food into milk.

Milking: Cows are brought into a milking parlor. The cow's udder is washed. This keeps the milk clean. It also sends a signal to the brain to "let down" the milk. On the average cows are milked 2 times a day. Some

farms will milk their cows 3 times a day. It takes about 5 minutes to milk a cow. The average cow milks 8 gallons of milk per day.

Parlor: In the milking parlor, the milk is pumped into clean sterilized containers. The milk is cooled to below 40 degrees F. to keep it fresh and tasting good. Milking equipment is checked for cleanliness to make sure quality standards are met.

Transportations: A milk hauler picks up the milk from the farm and stores it in his truck, which is like a giant thermos to keep the milk cold. He transports the milk to a processing plant. It takes two days for milk to go from the farm to the retail store, and on average it travels less than 100 miles to get to the grocery store.

Inspection: More than a dozen tests are run to make sure milk is safe and free of harmful bacteria and of the finest quality possible. After the milk is tested it is pumped into a processing machine that will pasteurize and homogenize it. Each farm is visited by a Dairy Inspector to make sure the farmer is practicing proper sanitation and following the Iowa Dairy Laws.

Processing: To pasteurize milk, it is heated to more than 160 degrees for 15 seconds to kill all bacteria and keep it from spoiling. Milk directly from cows has pieces of cream in it that are larger than the rest of the fluid so it separates. The heavier fluid falls to the bottom, and the cream rises to the top. Before homogenization was invented, you would have to stir your glass of milk and drink it quickly. Homogenization breaks these particles down into tiny pieces that blend together to make a consistent creamy mixture. Milk is then processed into milk, ice cream, cheese, yogurt, butter and other dairy products.

Packaging: It is packaged into all different sizes of containers to be sold at grocery stores, restaurants, or in schools. It takes 1 cup of milk to make an 8 ounce container of yogurt. It takes 19 cups of milk to make 1 pound of cheese.

Enjoy: The dairy products are then shipped to the grocery store for you and your family to buy and enjoy. There are lots of different dairy products for you to choose from. Milk and other dairy foods are great tasting and nutritious too. Your body needs calcium for strong bones and teeth. The best way to get calcium is from milk and other dairy products.

Activity 1: Create a Dairy Unit portfolio.

Activity Length: 25 minutes

Directions: Use as many or as few steps to this activity as you like.

- A. Have student color, cut, arrange and affix collage dairy production squares in the order they occur on unit portfolio cover. Reproduce the Milk From Cow Mix-Up for each student. (The portfolio could be made by giving a file folder for each student, or have them make their own folder by using a ledger size piece of paper and folding one long edge up 2 ½ inches and then fold in half to make the folder.)
- B. Allow students time to color each step in the process
 - a. Ask students to write one comment about each step in dairy production under each photo
- C. Have students take home the portfolio to their parents and teach their parents about the steps of dairy production.
 - a. Have students ask questions to parents or grandparents about if they milked and what they had to do on their farm.
- D. Have students share their portfolio with the class the comment they chose to put with each step of dairy productions

Discussion:

- A. What are other businesses in the community that would use similar production methods or steps?
 - a. Production, transportation, processing, consumption
- B. What other foods would go through similar processes?
- C. What businesses in your community do similar processes to a dairy farm?

Going Further/Optional Activities: Use the list of ideas at the end of the “From Farm to Food to You” Teachers Guide. There are lots of great Activities for students to participate in.

Fun Online Activities:

Visit www.swissvalley.com/consumer/kids/games.cfm