

# Meet the Milk Makers

## Activity Synopsis

This activity introduces cows as the major milk producers in the United States. Students learn about cows and how dairy farmers care for them, facts about dairy production, and the different breeds of dairy cows.

## Activity Outcomes

Students will be able to:

- Identify dairy cows as the major milk producers in the United States.
- Name three of the top five milk-producing states.
- List the six major breeds of dairy cows and state one fact about each breed.
- Identify five facts about cows.
- Explain three steps dairy farmers take to ensure the health and well being of their cows.

## Cross-curricular Outcomes

Students will be able to:

- Identify the major breeds of dairy cows found on Pennsylvania farms. (Environment and Ecology)
- Complete simple unit conversions within a system of measurement. (Mathematics)
- Compute math problems and make reasonable estimates. (Mathematics)
- Define, and correctly use, terms related to dairy farming. (Language Arts)
- Use photographs to identify different breeds of dairy cows. (Language Arts)

## Activity Length

**Part One:** 30 minutes

**Part Two:** 30-45 minutes

## Materials

- **A Dozen “Udderly Amazing” Facts about Dairy Cows** fact sheet
- **Meet the Milk Makers** word search puzzle
- **Dairy Breeds of North America** poster

## Advance Preparation

- Preview the suggested instructional strategy.
- Find out the student population for your building and the number of instructional days in your school year.
- Duplicate **A Dozen “Udderly Amazing” Facts about Dairy Cows** fact sheet and the **Meet the Milk Makers** word search puzzle, one per student.
- Display the **Dairy Breeds of North America** poster.
- Review “Modern Dairy Farming Practices & Milk Quality: Myths and Facts,” *Dairy Council Digest*, May/June 2007.
- Visit the following Web sites for more information about dairy farming.  
<http://www.agriculture.state.pa.us>  
<http://www.dairyfarmingtoday.org>

## After you’ve completed this lesson

go to **www.dairyspot.com** and

- Complete our **User Survey** with your thoughts on this lesson and the entire program.
- **Enter your school librarian or media specialist** into our drawing for a chance to win a book bag, filled with dairy and nutrition-related books, for your school library!

**MILK:**  
It Does a  
Student  
Body Good!

# Part One: All About Dairy Cows

**1. Begin this lesson by introducing cows as the chief milk producers in the United States.**

■ Ask students *what animal in the United States makes milk for people to drink?* **Cows**

■ While most people in the United States drink cow's milk, many people around the world get their milk from other animals. *What other animals produce milk for people to drink?*

**Goat, sheep, water buffalo, reindeer, yaks, and camels**

■ Explain that people have been drinking cow's milk for a very long time.

- Archeologists found a carved stone panel at the Temple of Ur in Babylon. The panel shows Sumerian priests milking cows and collecting the milk in large jars. This took place around 3500 BC! The Sumerians were probably the first people to raise cows.
- The Greek physician Hippocrates recommended milk as a medicine some 2,300 years ago.
- Christopher Columbus brought cattle to the New World on his second voyage, and the first cow in America arrived in the Jamestown colony in 1611 with the pilgrims. Cows came to the Plymouth colony in 1624.
- Until the 1850's, nearly every family in the United States had its own cow.

**2. Point out that very few people today have a family or "house" cow. Instead we rely on dairy farmers to produce the milk that we drink.**

*Ask students if they've ever visited or lived on a dairy farm or have seen a dairy cow.*

■ There are dairy farms in all 50 states and Puerto Rico.

■ Dairy is the number one agricultural business in Pennsylvania.

■ The top five dairy producing states are California (1), Wisconsin (2), New York (3), Idaho (4), and Pennsylvania (5).

- Pennsylvania ranked fifth in the U.S. in total milk production in 2006.
- In 2005, 561,000 cows in Pennsylvania produced over 10.5 million pounds of milk.  
*As a class, calculate how many pounds of milk, on average, each cow produced.* **18,717 pounds** (10,500,000 pounds ÷ 561,000 cows = 18,717 pounds/cow)
- About 99% of all U.S. dairy farms are family-owned and operated.

■ The majority (77%) of U.S. dairy farms have less than 100 cows.

**3. Explain that all dairy cows are females. And like humans, cows cannot produce milk until they give birth.**

■ *What do we call a baby cow?* **Calf**

■ Cows usually have their first calf when they are 2 years old. *What do we call a cow that has recently given birth to a calf?*

**Fresh cow**

■ The **gestation time** for a calf is 9 months. Most pregnancies (95-97%) result in one calf. Sometimes a cow gives birth to twins.

■ A calf's mother is a **dam** and the father is a **sire**.

■ A **heifer** is a cow that has not given birth to a calf.

■ A **dry cow** is one that is not producing milk. The "dry" period lasts 50-70 days when a cow is preparing to give birth to a calf.

■ Most cows are milked for about seven years.

■ *What is a herd?* **A group of animals, such as cows, that live together**

■ Cows are often placed into groups with other cows of their age or milking status such as dry cows and heifers.

**4. State that dairy cows provide 90% of the world's milk supply.**

■ U.S. cows produce an average of 6-7 gallons of milk a day and give an average of 2,000 gallons of milk per year.

■ The best cows give more than 25 gallons of milk each day.

- *Ask students to calculate how many 8-ounce glasses of milk there are in 2,000 gallons of milk.* **32,000 glasses of milk** (1 gallon = 128 ounces; 128 ounces/8 ounces/glass = 16 glasses; 2,000 gallons x 16 glasses/gallon = 32,000 glasses)
- Ask students if this would be enough milk to serve the students in your school for lunch during the school year. Have students calculate how many 8-ounce servings of milk they would need to serve every student a serving of milk for lunch for the current school year.

**5. Point out that dairy cows belong to a special animal family called the **Bovidae** family.**

The subfamily name is **Bovinae** or **bovine**.

The cow's scientific name is *Bos taurus*.

■ A cow is a **bovid** or **cloven-hoofed** mammal.

- *What is a hoof?* **A hoof is the covering of the end of the foot of certain animals.**
- *Can you name other animals with hooves?*  
**Horses, bison, elk, deer**

- A cloven hoof is a type of hoof split into two toes, each covered by a layer of horn.
- Animals that have hooves walk on the tips of their toes.  
*How do humans walk? Humans walk on the entire foot.*

■ Did you know that even cows get pedicures? It is important to trim a cow's hooves on a regular basis in order to keep them comfortable.

Suggested Instructional Strategy

## Part Two: Breeds of Cows

**1. Have students read the title of the Dairy Breeds of North America poster. Ask students:**

■ *What does "dairy breeds" mean? Accept all reasonable responses.* Explain that a **breed** is a group of animals that have common ancestors. They also have similar characteristics. Relate breeds of cows to different breeds of dogs.

State that there are more than 9 million dairy cows in the United States today. Ask students:

■ *What is the name of the most popular breed of dairy cows? Holstein* (About 90% of dairy cows are Holsteins.)

■ *What do Holsteins look like? Most Holsteins have black and white spots. Some have red and white ones.* Explain that a Holstein's spots are like a fingerprint or a snowflake. No two cows have exactly the same pattern of spots.

Tell students:

- A Holstein calf weighs 80 to 110 pounds at birth.
- A grown Holstein cow weighs about 1,500 pounds and stands 58 inches tall at the shoulder.
- Holsteins are outstanding milk producers.
- Holsteins came from the province of Friesland, in the Netherlands. The first Holstein arrived in the United States in 1852.

**2. While many dairy farmers raise Holsteins, there are five other major breeds of dairy cows. Ask if students can name the other breeds of dairy cows. Jersey, Guernseys, Brown Swiss, Ayrshire, and Milking Shorthorn**

■ **Jersey** cows are a honey-brown color and are known for their big eyes and docile nature.

- A Jersey calf weighs around 60 pounds at birth.
- Jerseys are smaller than other breeds and weigh anywhere from 800 to 1,200 pounds.
- Jerseys are known for the high **butterfat** content of their milk. Explain that butterfat is the fat in milk.

- **Hoof trimmers** are trained professionals who specialize in the trimming of a cow's hooves.
- They examine the hooves to look for injury or other hoof-related problems.

- Jerseys came from the Isle of Jersey, one of the islands in the English Channel.

■ **Guernseys** are excellent grazers and produce milk that is golden in color. The milk is also rich in butterfat.

- Guernseys are tan in color with distinctive white spots. They have a gentle disposition.
- Guernseys were bred on the British Channel Island of Guernsey by a group of monks who came to the island to farm and defend the land.
- Guernseys came to the United States in 1831.

■ **Brown Swiss** produce the second largest quantity of milk annually of any dairy breed. Because of the butterfat and protein contents, milk from Brown Swiss is ideal for making cheese.

- Brown Swiss cows are larger than most breeds and are known for their large ears.
- They are dark brown to silver grey in color. They are a very rugged, but docile breed.
- The Brown Swiss breed of dairy cattle came to America in 1869 from the Swiss Alps.

■ **Ayrshires** came to America from the County of Ayr in Scotland in 1822.

- Ayrshires are red and white. The red markings can vary in color from orange to brown.
- Ayrshires are medium-sized cattle and weigh between 1,000 to 1,300 pounds as adults.

■ **Milking Shorthorn** dairy cows came from Northeastern England in the Valley of the Tees River in 1783.

- Milking Shorthorn is one of the oldest recognized breeds in the world.
- Milking Shorthorn cattle are red, red and white, white, or roan, a mixture of red and white.
- A grown cow usually weighs about 1,400 pounds.

### 3. Explain that farmers are committed to providing safe, high quality milk. In order to do this, dairy farmers take great care of their cows.

■ In addition to a nutritious diet, dairy farmers provide good medical care for their cows.

- Farmers check their cows every day during milkings to make sure they are healthy.
- A veterinarian also visits the farm to ensure that cows are healthy. Like children, cows receive regular check-ups and preventive vaccinations.
- Cows, like people, sometimes get sick. The vet may need to treat the cow.

■ Dairy farmers also provide healthy living conditions for their cows.

- Dairy cows always have access to food and fresh clean water.
- Many farmers use “free stall housing.” This is a type of barn

that allows cows to move freely between eating and resting. Cows sleep in stalls, which are just like beds.

- Cows always have room to lie down and stretch. Cows may rest on mattresses, sand or other bedding.
- On warm days, some farmers use fans and **water misters** to keep cows cool and comfortable.

### 4. Distribute the **A Dozen “Udderly Amazing” Facts about Dairy Cows** fact sheet. Review the facts with the students. Have students answer the questions as a small group or homework assignment.

#### Check for Understanding

Have students complete the **Meet the Milk Makers** word search puzzle as a class or homework assignment.

## Going Further:

**Dairy Farm Corner** Each day display an item related to dairy farming in a special area of the classroom. Items might include a toy tractor, photos (barn, silo, cows, cornfield, etc.), and ads or catalogs for agricultural products. Have a short class discussion about the new item.

**Dairy Tasting Party** Select a dairy product such as milk, yogurt or cheese. Identify four or five different varieties of the product, for example, four or five flavors of milk or yogurt, or types of cheese, for the students to sample. Develop a simple chart students can use to record comments. Discuss taste and preferences. Have students record their top two favorites. Use the data to create a graph of class favorites. Involve the foodservice director or parents in collecting/donating the dairy products.

**Reading Corner** Display a collection of books about cows and dairy farming in your classroom or in the school library. Encourage students to read at least three books. For titles refer students to the **Suggested Reading List** in the Resources folder.

**Invite an Expert** Invite a dairy farmer, a cooperative extension agent or a veterinarian to your classroom to discuss dairy farming and answer questions students may have about the industry.

**Holstein Patterns** No two Holsteins have the same pattern or spots. Have your students create their own unique Holsteins. Have students draw an outline of a cow. Using black paint and a sponge or their thumb, have students create a Holstein pattern on the outline. Once the paintings are dry, have students examine their cow. Is there a distinguishing pattern? Have students think of a name for their cow.