

Milk or Meat? Beef or Dairy?

Grade Levels

K - 2

Purpose

Students will identify the differences between beef and dairy cattle and determine the commodities produced by each type of cattle.

Estimated Time

Two 45-minute sessions

Materials Needed

- Beef and Dairy KWL chart
- *Cows on the Farm* written by Marci C. Schuh
- Beef and Dairy Commodity Fact Cards
- Beef and Dairy Quiz
- Glue or tape
- Plain white paper (two sheets per group)

Essential Files (maps, charts, pictures, or documents)

- [Beef and Dairy Ballot Cards](https://cdn.agclassroom.org/media/uploads/2015/07/23/Beef_and_Dairy_Ballot_Cards.pdf) (https://cdn.agclassroom.org/media/uploads/2015/07/23/Beef_and_Dairy_Ballot_Cards.pdf)
- [Beef and Dairy Commodity Cards](https://cdn.agclassroom.org/media/uploads/2015/07/20/Beef_and_Dairy_Commodity_Cards.pdf) (https://cdn.agclassroom.org/media/uploads/2015/07/20/Beef_and_Dairy_Commodity_Cards.pdf)
- [Beef and Dairy KWL Chart](https://cdn.agclassroom.org/media/uploads/2015/07/17/Beef_Dairy_KWL_chart.pdf) (https://cdn.agclassroom.org/media/uploads/2015/07/17/Beef_Dairy_KWL_chart.pdf)
- [Beef and Dairy Quiz](https://cdn.agclassroom.org/media/uploads/2015/07/20/Beef_or_Dairy_Quiz.pdf) (https://cdn.agclassroom.org/media/uploads/2015/07/20/Beef_or_Dairy_Quiz.pdf)

Vocabulary Words

beef cattle: cattle, both female and male, with muscular bodies primarily raised for meat

cattle: bovine animals consisting of different breeds, domesticated for producing beef and milk

dairy cattle: cattle bred for the ability to produce large quantities of milk (females only), from which dairy products are made

milking parlor: building where dairy cows are milked

Did You Know? (Ag Facts)

- One beef cow can produce about 475 pounds of beef, which is almost equal to 2000 hamburgers.
- Beef is a good source of ZIP (zinc, iron, and protein) along with other vitamins and minerals that we need to be strong and healthy.
- Did you know it takes 3,000 cow hides to supply the NFL enough footballs for 1 year?
- One dairy cow's daily milk production (about 70 pounds) can produce 8 gallons of milk or 3.3 pounds of butter or 7 pounds of cheese.
- A Holstein's spots are like a snowflake or human fingerprint; no two cows have exactly the same patterns of spots.
- With today's technology, some dairy farms have robots that operate their milking machines.

Background Agricultural Connections

In the United States, **cattle** are typically raised to produce beef and milk for our food supply. The term *cattle* can refer to any breed or gender of the bovine species. All breeds of cattle produce meat and all female cattle produce milk after they give birth. However, within the cattle industry, specific breeds of cattle are classified as either "beef" or "dairy" cattle due to their efficiency in producing either meat or milk.

Female cattle, or cows, produce milk. They begin producing milk after giving birth to their first baby, which is called a *calf*. Cows that are able to produce large quantities of milk are called **dairy cows**. Such breeds of dairy cows raised in the United States include the Holstein, Ayrshire, Brown Swiss, Guernsey, Jersey, and the Milking Shorthorn. Can any breed or type of male cow be used for milk production? No, male cows do not produce milk.

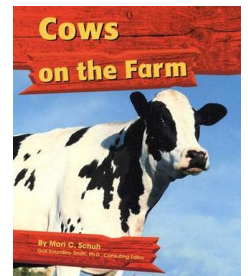
Cattle breeds that are more muscular are raised as **beef cattle**. There are many different breeds of *beef cattle* raised in the United States such as Angus, the most popular, along with other common breeds such as Hereford, Shorthorn, Charolais, Simmental, and Limousin. Female beef cows do produce milk after giving birth, but in much smaller quantities than a typical dairy cow. Female beef cows produce enough milk to raise their own calf.

Beef and dairy cow production in the United States are two distinct industries because of the trait differences mentioned above: milk production in large quantities vs. more muscular cattle raised for meat. As of January 1, 2015 the beef cattle inventory was up by 1% from the previous year at 89.9 million. The top five states that raise all cattle both beef and dairy include Texas, Nebraska, Kansas, California, and Oklahoma. In 2012, there were 915,000 cattle and calf operations to include 29.7 million beef cows and 9.3 million milk cows. The total beef consumed in the United States was 25.5 billion pounds for 2014. Milk production was calculated in 2014 to be 206,046 million pounds. These stats prove that both beef and dairy are a large component of the human diet.

The cow that produced 1,500 quarts of milk per year a hundred years ago can produce 7,812 quarts per year today. One first grade student would have to drink 85 plus cartons of milk a day for an entire year to equal this amount. The dairy cows are normally milked twice a day, depending on the farm in a building called a **milking parlor**. Automatic milking machines are used today and help the dairy farmer keep accurate records regarding milk production from each cow.

Interest Approach - Engagement

- Print the KWL provided in the *Essential Files*. This should be kept on chart paper so that it can be used and posted throughout the entire lesson. Ask the students the following questions and place their answers in the first two columns. The third column will be filled in at the conclusion of the lesson.
 - What I Know
 - What do you know about beef cattle?
 - What do you know about dairy cattle?
 - Do beef and dairy cattle look the same or different?
 - Which group of cattle produce milk? beef? ice cream? hamburger?
 - What I Want to Know
 - What do you want to learn about beef cattle?
 - What do you want to learn about dairy cattle?
 - What foods do I eat that are produced by beef cattle?
 - What foods do I eat or drink that are produced by dairy cattle?
- Next, read the book, *Cows on the Farm* written by Mari C. Schuh and point out the differences indicated in the book between beef and dairy cattle. Tell the students they will be learning about the products that both beef and dairy cattle produce that are included in their diets.



Procedures

Activity One

- By show of hands, ask students if they like milk, cheese, ice cream, hamburger, and steaks. Ask students, "where do you think these products come from?" "Do these products come from the same type of cows or different?" "Which products are produced by a dairy cow?" "Which products are produced by a beef cow?" Allow students time to explore their positions. Refer back to the KWL chart and remind students of their previous responses. Add any changes or different responses not mentioned prior to the beginning of the lesson.
- Have students suggest ways in which cows could be different (coat color, gender, weight, size). If needed, prompt by asking them to consider some of the physical differences noticed between themselves and their classmates.
- Divide students into groups of 3 - 4 students. Distribute one set of the *Beef & Dairy Commodity Cards* per group, glue or tape, and 2 pieces of plain white paper per group.
- Ask students to label 1 sheet of paper *Dairy Cattle* and the other sheet of paper *Beef Cattle*.
- Give oral instructions. First, students should solve all of the addition problems and write the answer directly behind the "=" sign. Next, students will pair the cards with the same sum. For example, a card with the equation $4+1=5$ will match with the card $3+2=5$. Last, tape or glue matching boxes together to form a complete sentence strip. Tell the students to keep like colors together, red with red and blue with blue.
 - Note that the 2nd line of the cards is in black text and will be matched to make a fact statement. The third line of the cards lists a commodity that is produced by cattle. Blue text indicates a dairy product. Red text indicates a beef product.

$2+0=2$ They eat silage, grass, alfalfa. Dairy cows make	$1+1=2$ clover, wheat, and hay. yogurt.	$1+4=5$ Beef cows are Beef cows make	$3+2=5$ heavily muscled. cubed steak.
$5+1=6$ Their bodies start making milk after Dairy cows make	$4+2=6$ they have a baby calf. butter.	$2+4=6$ They do not produce Beef cows make	$3+3=6$ large amounts of milk. hamburger.

6. Have the students glue or tape the fact strips in chronological order to the sheets of paper they labeled in step 4. All of the blue sentence strips should be taped to the paper labeled *Dairy Cattle*. All of the red sentence strips should be taped to the paper labeled *Beef Cattle*. All 8 strips for each the beef and dairy cows should fit on one piece of paper. When finished, students will have two fact sheets, one for beef cows and the other for dairy cows.
7. Ask each group of students to stand and read one sentence strip from both beef and dairy fact sheets.
8. For more understanding ask students the following questions after they have read their beef and dairy fact: "Why do you think its important for farmers to care for their cows? What would happen if farmers didn't raise beef or dairy cows? What products that come from beef and dairy cows do you think are the most important?" "Do farmers raise crops only to feed their beef and dairy cows?" "Are some crops grown for both humans and animals to eat?"
9. In conclusion, have each group work collaboratively to read and answer the 10 questions on the *Beef and Dairy Quiz*. Discu responses once each group has completed the quiz.

Activity Two

1. Break the students into two groups.
2. Pass out a Beef and Dairy ballot to each student. Ask each student to vote for their favorite food provided by beef cattle on Ballot A. Then, follow the same procedure to vote for their favorite dairy food on Ballot B.
3. Have each group count their votes and create a tally chart to record how many students chose each beef or dairy product from the ballot.
4. Groups will then use this data to create a bar graph showing the number of votes each beef or dairy product received.
5. The bar graphs should be drawn on large size sheets of chart paper and each hung on opposite walls of the classroom.
6. Provide each group with sticky notes.
7. Have each group examine the bar graph drawn by the opposite group. Each student in each group will create at least 2 problems per student that are simple put-together, take-apart, and compare problems using information presented in the bar graph.
 - o Directions for creating simple put-together, take-apart, and compare problems can be found on the [Common Core](http://www.corestandards.org/Math/Content/mathematics-glossary/Table-1/) (<http://www.corestandards.org/Math/Content/mathematics-glossary/Table-1/>)website.
8. Students will record their problems on the sticky notes and place them on the bar graph.
9. Once each group has placed the problems on the chart paper from the opposite group, have them return to their original chart paper and begin solving the problems.
10. Have each student in each group pull down two problems (sticky notes) from the chart paper and solve.
11. Select a few of the problems from each group and determine if the problem has been solved correctly.
12. Ask students:
 - o "Why is a bar graph more useful than a pictograph for this data?"
 - o "What kind of statements can we make about the data that was collected?"
 - o "Which dairy product was favored the most and least?"
 - o "Why do you think this product was liked/disliked by the majority of the class?"
 - o "Which beef product was favored the most and least?"
 - o "Why do you think this product was liked/disliked by the majority of the class?"
13. In conclusion, have the students refer to the KWL chart created at the beginning of the lesson. Fill in the last column by asking the following questions:
 - o "What products do we eat that come from beef cattle?"
 - o "What products do we eat that come from dairy cattle?"
 - o "What new information did you learn about beef cattle?"
 - o "What new information did you learn about dairy cattle?"

Concept Elaboration and Evaluation

After conducting these activities, review and summarize the following key concepts:

- Cattle are raised on farms and produce milk and meat for our diet.
- Some breeds of cattle are raised specifically for meat. Other breeds are raised specifically for milk.



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Enriching Activities

- Twins Rianna And Sheridan Chaney have written a series of books that depict the care and health of beef and dairy cattle. Read the #3 book, *Star Becomes a Mother*, and book #2 *Mini Milk Maids on the Moove* while focusing on the distinct differences between dairy and beef cattle. Lesson plans and additional activities for these books can be found at www.pabeef.org.
- For a sweet treat, use the Rock n' Roll Ice Cream recipe found on the Illinois Ag in the Classroom Dairy Ag Mag found on page 7. Follow this [link](http://www.agintheclassroom.org/TeacherResources/AgMags/Dairy%20Ag%20Mag%20for%20SmartBoard.pdf). (<http://www.agintheclassroom.org/TeacherResources/AgMags/Dairy%20Ag%20Mag%20for%20SmartBoard.pdf>) You will need the following materials.

1. 1 lb. clean and empty coffee can
 2. 1 pt. Half & Half
 3. 1/2 c. sugar
 4. 1 tsp. vanilla
 5. Any choice of fruit depending upon desired flavor you want to make
 6. Ice
 7. Rock Salt
 8. Duct Tape
- Use the Illinois Ag in the Classroom [Dairy Ag Mag](http://www.agintheclassroom.org/TeacherResources/AgMags/Dairy%20Ag%20Mag%20for%20SmartBoard.pdf) (<http://www.agintheclassroom.org/TeacherResources/AgMags/Dairy%20Ag%20Mag%20for%20SmartBoard.pdf>) to learn more about the production of milk on a dairy and the [Beef Ag Mag](http://www.agintheclassroom.org/TeacherResources/AgMags/Beef%20Ag%20Mag%202013%20for%20Smartboard_2.pdf) (http://www.agintheclassroom.org/TeacherResources/AgMags/Beef%20Ag%20Mag%202013%20for%20Smartboard_2.pdf) learn more about beef cattle and the products they produce. "Ag Mags" are 4-page, interactive magazines designed for kids. Each Ag Mag includes interactive links.



Sources

- <http://www.mda.state.mn.us/maitc> (<http://www.mda.state.mn.us/maitc>)
- <http://www.beefusa.org/> (<http://www.beefusa.org/>)
- <http://www.ers.usda.gov/data-products/dairy-data.aspx> (<http://www.ers.usda.gov/data-products/dairy-data.aspx>)

Suggested Companion Resources

- [Beef Cattle in the Story of Agriculture](https://www.agclassroom.org/matrix/resource/263/) (<https://www.agclassroom.org/matrix/resource/263/>)
- [Cattle Kids: A Year On the Western Trail](https://www.agclassroom.org/matrix/resource/187/) (<https://www.agclassroom.org/matrix/resource/187/>)
- [Chuck's Ice Cream Wish \(Tales of the Dairy Godmother\)](https://www.agclassroom.org/matrix/resource/1034/) (<https://www.agclassroom.org/matrix/resource/1034/>)
- [Clarabelle](https://www.agclassroom.org/matrix/resource/11/) (<https://www.agclassroom.org/matrix/resource/11/>)
- [Levi's Lost Calf](https://www.agclassroom.org/matrix/resource/862/) (<https://www.agclassroom.org/matrix/resource/862/>)
- [Milk Comes From a Cow?](https://www.agclassroom.org/matrix/resource/381/) (<https://www.agclassroom.org/matrix/resource/381/>)
- [My Family's Farm Book Series](https://www.agclassroom.org/matrix/resource/1006/) (<https://www.agclassroom.org/matrix/resource/1006/>)
- [The Milk Makers](https://www.agclassroom.org/matrix/resource/146/) (<https://www.agclassroom.org/matrix/resource/146/>)
- [Compliments of Cattle Poster](https://www.agclassroom.org/matrix/resource/392/) (<https://www.agclassroom.org/matrix/resource/392/>)
- [Where Does Your Cheeseburger Come From?](https://www.agclassroom.org/matrix/resource/942/) (<https://www.agclassroom.org/matrix/resource/942/>)
- [Bon a la Beef Videos](https://www.agclassroom.org/matrix/resource/265/) (<https://www.agclassroom.org/matrix/resource/265/>)
- [Make Mine Milk](https://www.agclassroom.org/matrix/resource/225/) (<https://www.agclassroom.org/matrix/resource/225/>)
- [The Journey of Milk](https://www.agclassroom.org/matrix/resource/234/) (<https://www.agclassroom.org/matrix/resource/234/>)
- [Before the Plate Website](https://www.agclassroom.org/matrix/resource/996/) (<https://www.agclassroom.org/matrix/resource/996/>)
- [Discover Dairy](https://www.agclassroom.org/matrix/resource/176/) (<https://www.agclassroom.org/matrix/resource/176/>)

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