

The Dairy Farm

Description of Activity: Students will explore the characteristics of dairy cow breeds, determine their suitability for specific climates and investigate careers involved in the journey “from dairy to dish.” They will also design their own “super breed” tailored to specific production and climate challenges.

STUDENT LEARNING OBJECTIVES:

After completing these activities, students will ...

1. Identify and describe the characteristics and purpose of major dairy cow breeds.
2. Understand the variety of careers involved in the dairy industry, from production to consumer.
3. Evaluate which dairy breed(s) are most suitable for specific climates based on provided scenarios.

SUGGESTED TIME:

100 minutes (*Time requirements may vary based upon student understanding and class schedule.)

RESOURCES/REFERENCES:

- Culver's Virtual Field Trip Video, <https://AgExplorer.FFA.org/virtual-field-trips/fresh-frozen-custard-careers-from-dairy-to-dish/>
- Website: American Dairy, <https://www.americandairy.com/dairy-farms/dairy-cows/>
- Website: Midwest Dairy, <https://www.midwestdairy.com/farm-life/dairy-cows/>
- Website: New England Dairy, <https://www.newenglanddairy.com/meet-the-cows/>

EQUIPMENT AND SUPPLIES NEEDED:

1. A copy of the “Dairy Dream Team” worksheet for each student
2. Internet access to play the video in real time or embed it in a PowerPoint ahead of time
3. A stuffed animal or picture of a cow
4. Props representing various roles in the dairy supply chain (e.g., toy truck, ice cream cone, small milk jug, lab goggles, clipboard, etc.)
5. Blank paper
6. Colored pencils, markers and crayons
7. [Super breed scenarios](#) cut out, one per student

VOCABULARY:

1. Breed
2. Characteristics
3. Dairy
4. Prop

STUDENT ACTIVITY SHEETS:

Direct access to student activity sheets without lesson plan or answer key for easy upload to a learning management system or printing for classwork.

<https://ffa.box.com/s/mcx3qx25uuayknhcvk4dbv2pptt30zq> (Word)

<https://ffa.box.com/s/yas5txnlsvyh5v8qbgqs2o1dtr5zuzopq> (PDF)

https://docs.google.com/document/d/1kToV87JbiZsBvY0fuY86IESkEiV1l25m-bp_0h3T3ml/copy (Google)

LESSON PLAN:

1. **Bell Ringer:** List the jobs that are needed to go from dairy to dish.
2. **Introduction:** *Today, we're diving into the world of dairy cows! From their milk to the amazing fresh frozen custard at Culver's, we're going to uncover the secrets behind different dairy breeds, how they're milked and the amazing careers that make it all happen. By the end, you'll even get to design your own super cow!*

Play the Dairy Farm segment from the [Culver's Virtual Field Trip](#) on AgExplorer. Have students complete the questions on the Dairy Farm section of the Culver's Virtual Field Trip Student Guide.

3. **Activity:** Each student needs a copy of the worksheet "Dairy Dream Team."
 - a. **Part 1:**
 - i. Begin by displaying a stuffed animal or picture of a cow at the front of the classroom. Place a variety of props representing roles in the dairy supply chain on a table nearby. Examples:
 - Farmer: A toy tractor, a toy pitchfork or a bag of feed
 - Nutritionist: A chart or diagram of cow feed rations or a plastic model of grains
 - Veterinarian: A stethoscope, a toy syringe or latex gloves
 - Milk Machine Operator: A rubber hose or a small vacuum pump (to represent a milking machine)
 - Truck Driver: A toy truck or miniature milk tanker
 - Quality Assurance Technician: A clipboard with a checklist, a small lab flask or goggles
 - Food Scientist: A lab coat, a beaker or a small container of ice cream mix
 - Processor: A milk carton or a small bottle of cream
 - Packaging Specialist: Empty containers, labels or sealing tape
 - Marketer: A flyer or advertisement for milk or dairy products
 - Retailer/Grocer: A miniature shopping basket, price tag or receipt
 - Consumer: A toy ice cream cone, a spoon or a small carton of yogurt
 - ii. Say: *Have you ever thought about how milk from a cow gets turned into the delicious Culver's fresh frozen custard? There's an entire team of people behind the scenes, each with a critical role in making it happen.*
 - iii. Begin by discussing the journey of milk from the farm to the consumer.
 - iv. Hold up each prop, one at a time, and ask students to guess which career it represents. As they identify a career, discuss the role briefly (e.g., "Farmers provide feed and care to the cows to keep them healthy and productive").
 - v. Hand each prop to a student as you introduce its corresponding career. Continue until every student has an item representing a career in the chain. *For larger class sizes, consider grouping students up or only having 10 to 15 students participate.
 - vi. As students hold their props, guide the class in creating a visual timeline, starting with the cow and ending with the fresh frozen custard. Students can stand in a line or form a circle, holding their props to illustrate the interdependence of these roles.
 - vii. Have students fill in their student activity sheet as you complete this activity. You may need to add or delete rows in the table on the activity sheet depending on how many students you have.

- viii. When done, say: *Looking at all these careers, what surprises you about how many people are involved in getting milk from the farm to your table?*
 - ix. Say: *Now that we have identified many of the careers needed to go from dairy to dish, we are going to dive into the first step of the process, which is the dairy cows!*
 - b. **Part 2:** Using the following websites, have students explore the various dairy cattle breeds that make up the “Dairy Dream Team.” Guide them to fill in the information in the tables on their student activity sheets as they read about each of the seven breeds. They should do one table per breed.
Websites:
 - American Dairy, <https://www.americandairy.com/dairy-farms/dairy-cows/>
 - Midwest Dairy, <https://www.midwestdairy.com/farm-life/dairy-cows/>
 - New England Dairy, <https://www.newenglanddairy.com/meet-the-cows/>
 - c. **Part 3:** Say: *Imagine you are a dairy farmer or a researcher who needs to develop a new breed of cow that will thrive in a specific environment. It could be a hot, dry climate, a cold region or an area with limited resources. The cow needs to be productive, efficient and resilient.*
 - i. Students will each be given a [super breeds scenario card](#).
 - ii. Using the information on their cards, they will create a “super breed,” using at least two breeds, that fits their scenario.
 - iii. Direct them to answer the questions on their student activity sheets.
 - d. **Part 4:** Using what they learned in Part 3, have students use a blank sheet of paper to create an eye-catching flyer for their “super breed.” When done, direct them to answer the conclusion questions.
4. **Follow-up:** Groups present their “super breeds” to the class and discuss the challenges and benefits of their designs.
5. **Optional – Extended Learning Opportunities (Not factored into time requirement):** Have students tour a dairy farm in your local area.
6. **Exit Ticket:** What careers that you learned about today would you be most interested in and why?

Name: _____

Dairy Dream Team

PART 1

Directions: Complete this worksheet as your class participates in the “careers from dairy to dish” activity.

Prop	Career It Represents	How That Career Impacts Culver’s
Example: Syringe	Veterinarian	Allows for healthy cows and safe milk to make fresh frozen custard

1. What career surprised you the most and why?

PART 2

Directions: Using the following websites, explore the various dairy cattle breeds who make up the “Dairy Dream Team.” Fill in the information below as you read about each of the seven breeds.

- American Dairy: <https://www.americandairy.com/dairy-farms/dairy-cows/>
- Midwest Dairy: <https://www.midwestdairy.com/farm-life/dairy-cows/>
- New England Dairy: <https://www.newenglanddairy.com/meet-the-cows/>

Breed:	Draw a picture of this breed:
Where are they from?	
Fun fact:	
What are they primarily used for and why? (milk, ice cream, cheese, etc.)	
Characteristics: • • •	
Description of breed: (Two or three sentences)	

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Characteristics: • • •	
Description of breed: <i>(Two or three sentences)</i>	

1. What is your favorite dairy breed and why?
2. What breed of dairy cow would do best where you live? Why?

PART 3

Directions: Using the information given to you on your “super breeds scenario card” answer the following questions.

What is your scenario?
Design Considerations: 1. 2. 3.
Breed best suited for each consideration and why: 1. Consideration 1: 2. Consideration 2: 3. Consideration 3:
What breeds will you choose to combine and why?

PART 4

Directions:

- Use a blank sheet of paper to create an eye-catching flyer for the “super breed” you brainstormed in Part 3. When done, answer the conclusion questions. Check off the following information as you include it on your flyer:

- _____ Breed name: Give your breed a fun name based on its characteristics.
- _____ The primary goal of your breed
- _____ The most important traits of your breed
- _____ A picture of your breed
- _____ The area your breed would best thrive in
- _____ Physical characteristics of your breed
- _____ Benefits of your breed
- _____ A catch phrase or slogan for your breed

Conclusion Questions:

1. What was the most challenging part of creating your super breed?
2. If your super breed could be used for a specific dairy product, which would it be and why?
3. How might the development of new breeds or technologies in dairy farming help address challenges like climate change or limited resources?

KEY: Dairy Dream Team

PART 1

Directions: Complete this worksheet as your class participates in the “careers from dairy to dish” activity.

Prop	Career It Represents	How That Career Impacts Culver's
Example: Syringe	Veterinarian	Allows for healthy cows and safe milk to make fresh frozen custard
Answers will vary.	Answers will vary.	Answers will vary.
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1. What career surprised you the most and why?
- Answers will vary.

PART 2

Directions: Using the following websites, explore the various dairy cattle breeds who make up the “Dairy Dream Team.” Fill in the information below as you read about each of the seven breeds.

- American Dairy: <https://www.americandairy.com/dairy-farms/dairy-cows/>
- Midwest Dairy: <https://www.midwestdairy.com/farm-life/dairy-cows/>
- New England Dairy: <https://www.newenglanddairy.com/meet-the-cows/>

Breed: Holstein	Draw a picture of this breed: Answers will vary.
Where are they from? The Netherlands	
Fun fact: Their spots are like snowflakes, no two are the same.	
What are they primarily used for? (milk, ice cream, cheese, etc.) Milk, yogurt, ice cream	
Characteristics: • Most common dairy breed • Black and white markings • Best milk production	
Description of breed: (Two or three sentences) The most recognizable of the dairy breeds, Holsteins are typically black and white with clearly defined markings. They are noted for high milk production and their large size, which makes them popular among farmers everywhere. The mature weight of a Holstein is around 1,500 pounds, and they can produce up to 2,600 gallons of milk each year.	

Breed: Jersey	Draw a picture of this breed: Answers will vary.
Where are they from? Isle of Jersey	
Fun fact: Borden Dairy introduced the famous Elsie the Cow, a Jersey, in 1936.	
What are they primarily used for? (milk, ice cream, cheese, etc.) Butter, cheese and ice cream	

Characteristics:

- The smallest of the dairy breeds
- The most heat tolerant breed
- Their milk is very high in butterfat

Description of breed:

(Two or three sentences)

Jerseys are the smallest in body size of all dairy breeds, but they mature quickly and are noted for producing the highest level of milkfat among dairy animals, which makes them popular among cheese and ice cream makers.

Breed: Brown Swiss

Where are they from? Switzerland

Fun fact: Brown Swiss cows in Switzerland are taken to high mountain meadows during the summer. The cows wear large cow bells so farmers can find them in foggy mountain pastures.

What are they primarily used for? (milk, ice cream, cheese, etc.) Cheese

Draw a picture of this breed: Answers will vary.

Characteristics:

- Gray-brown coloring
- About 1,500 pounds at maturity
- The oldest breed

Description of breed:

(Two or three sentences)

Brown Swiss cows are strong and vigorous, but with a velvet-like coat. They are noted for strong legs and milking persistency and can quickly adapt to different environments.

Breed: Guernsey	Draw a picture of this breed: Answers will vary.
Where are they from? Isle of Guernsey	
Fun fact: Known for their rich, golden color of milk, they were given the title “Golden Guernsey.” Their milk color is due to high levels of beta carotene (a source of vitamin A) in the milk.	
What are they primarily used for? (milk, ice cream, cheese, etc.) Specialty products like golden milk, butter and cheese	
Characteristics: - Fawn colored with white legs - Higher level of butterfat and protein in milk - Medium in size	
Description of breed: (Two or three sentences) They are known for their golden-yellow pigmentation and great size and strength. A mature Guernsey cow typically weighs around 1,100 pounds.	

Breed: Ayrshire	Draw a picture of this breed: Answers will vary.
Where are they from? Scotland	
Fun fact: Because of their adaptability, Ayrshires are found in most parts of the world, including Southern Africa	
What are they primarily used for? (milk, ice cream, cheese, etc.) Milk and cheese	

Characteristics: - Known for their horns - Medium in size - Known as the “aristocrat” of dairy breeds
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Description of breed:

(Two or three sentences)

They are regarded as a medium-sized breed and can grow to a mature weight of approximately 1,200 pounds. The breed can efficiently produce large quantities of high-quality milk and is renowned for its foraging ability.

Breed: Red and White Holstein

Where are they from? The Netherlands

Fun fact: Most Red and White cows are Holstein cattle, but they may also have genetics from other cattle that have reddish coats, such as Milking Shorthorns or Ayrshire.

What are they primarily used for? (milk, ice cream, cheese, etc.) Milk and yogurt

Draw a picture of this breed: Answers will vary.

Characteristics:

- Look like Holsteins except with red and white spots
- Have large frames
- They are known for a strong immune system and tolerance to heat.

Description of breed:

(Two or three sentences)

This breed is the most recently recognized, coming into the breed family in 1964. The mature weight of a Red and White Holstein is about 1,400 pounds. They are known for a strong immune system and tolerance to heat.

Breed: Milking Shorthorn

Where are they from? Northeastern England

Fun fact: This breed is part of the foundation for other red types of milk cows. This includes Swedish Red cattle and Illawarra cattle in Australia!

What are they primarily used for? (milk, ice cream, cheese, etc.) Milk, butter and meat products

Draw a picture of this breed: Answers will vary.

Characteristics:

- They are a dual breed (meat and milk).
- Large, they are often white and roan in color
- Their milk is known for its high protein-to-fat ratio.

Description of breed:

(Two or three sentences)

Shorthorns are known for high levels of fertility, grazing efficiency and ease of management that result in the breed being highly suitable for many different environments. They are also popular among farmers for their durability, longevity and ease of calving.

1. What is your favorite dairy breed and why?

Answers will vary.

2. What breed of dairy cow would do best where you live? Why?

Answers will vary.

PART 3

Directions: Using the information given to you on your “super breeds scenario card” answer the following questions.

What is your scenario?
Answers will vary.
Design Considerations:
1. Answers will vary. 2. Answers will vary. 3. Answers will vary.
Breed best suited for each consideration and why:
1. Consideration 1: Answers will vary. 2. Consideration 2: Answers will vary. 3. Consideration 3: Answers will vary.
What breeds will you choose to combine and why?
Answers will vary.

PART 4

Directions:

- Use a blank sheet of paper to create an eye-catching flyer for the “super breed” you brainstormed in Part 3. When done, answer the conclusion questions. Check off the following information as you include it on your flyer:

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- _____ A catch phrase or slogan for your breed

Conclusion Questions:

1. What was the most challenging part of creating your super breed?

Answers will vary.

2. If your super breed could be used for a specific dairy product, which would it be and why?

Answers will vary.

3. How might the development of new breeds or technologies in dairy farming help address challenges like climate change or limited resources?

Answers will vary.