



BEEF BASICS

LESSON PLAN

Grade Level(s)

3 - 5

Estimated Time

2 Hours

Purpose

Students will understand the importance of the beef cattle industry including the products cattle produce, the production process from farm to plate, and how cattle can utilize and obtain energy from grass and other forage.

Materials

Activity 1

- Paper plate with grass and weeds
- Paper plate with pieces of beef jerky
- "Chew It Twice" activity sheet, one per student (attached)
- Two round magnets per student, one with pompom attached

Activity 2

- Items from the "Beef By-products List" (attached)

Activity 3

- *Beef Cattle in the Story of Agriculture* by Susan Anderson and JoAnne Buggey
- Round Robin Q&A Cards (attached)

Suggested Companion Resources

- [Beef Cattle in the Story of Agriculture](#) (Book/Booklet)
- [Cattle Kids: A Year On the Western Trail](#) (Book/Booklet)
- [Bon a la Beef Videos](#) (Multimedia)

Vocabulary

steers: male cattle that are only raised for meat

ruminant: an animal that uses a series of stomach compartments and chew its cud in order to digest plant cellulose

rangeland: open land that domesticated animals use for grazing and roaming

polled: cattle that are naturally born without horns

inedible: not possible or safe to eat; not edible

heifer: female cattle that have never had a calf

edible: suitable or safe to eat

digestion: the process by which food is changed to a simpler form after it is eaten

cow: female cattle that have had a calf

calf: the offspring of a cow

cellulose: the main component of green plants like grass and shrubs; not digestible by humans but very nutritious to ruminant animals

by-product: something that is made in addition to or that is leftover from the production of the desired good; can still be very useful in different ways

bull: male cattle that are or will become fathers

Interest Approach or Motivator

1. Tell your students that there are 2 primary products that cattle produce. Ask if they can tell you what they are. If they need a hint, tell them that both products fall in the category of "food."
(Cattle produce milk and meat)
2. Explain that there are different breeds or varieties of cattle just like dogs, cats, and other animal species. For example, some specific breeds of dog have special skills and abilities. Labradors and Pointers are good hunting dogs, Border Collies and Heelers have instinctive animal herding skills, and Hounds are very skilled at tracking scents. Ask your students if they think different

breeds of cattle have different traits or characteristics to make them unique in producing either milk or meat. (Yes)

3. Explain that humans have been selectively breeding cattle for desirable traits since they were first domesticated around 10,000 years ago. Some traits that are commonly selected include hardiness, temperament, and even appearance. Most modern cattle breeds have been specialized to efficiently produce either milk or meat (not both). Based only on the pictures below, see if your students can guess which breed is typically raised for milk and which breed is typically raised for



Holstein

When you think about cattle and cows, the iconic black and white Holstein is likely to be the first to pop into your mind. As you can see from the picture, the udder is very well developed but the cow itself is very thin and bony. This is a milk breed, and it puts as much energy as possible into making milk instead of meat and fat.

Red and Black Angus

These breeds, named for their color and Scottish origins, are two of the most popular breeds of beef cattle in the U.S. This is partly because they are naturally polled (do not have horns), they do well on the range with little attendance, and they produce excellent quality, highly marbled meat. Notice that their bodies are thick and sturdy, giving them the ability to pack on the pounds.

beef.



Background Agricultural Connections

The average American consumes 67 pounds of beef each year. As a country, we devour nearly 50 billion hamburgers annually. Not only is beef an important part of the American diet, but it also plays a significant role in our economy. The beef cattle are raised in every state across the nation. Texas, Nebraska, and Missouri rank as the states with the highest inventory of beef cattle.

Why such a high demand for beef? In addition to being prized for its delicious taste, beef provides many nutrients essential to the human diet. Humans need complete proteins with balanced amino acids in order to build muscle, nerves, and organ tissue. Animal proteins are one way to fill this nutritional need. Beef is a good source of ZIP: zinc (a mineral that ensures proper functioning of the immune system), iron (a mineral that helps red blood cells carry oxygen to body cells and tissues), and protein (a nutrient that builds, maintains, and repairs body tissues); as well as B12 (a vitamin that promotes healthy skin, nerves, and red blood cells).

Another reason that cattle are important is that they are ruminant animals. Their four-compartment stomach allows them to graze pastures and rangelands, eating grass and plants (that humans are unable to digest) in areas where it would be difficult or impossible to grow other food crops. These grazing animals convert plant cellulose into high-quality food for humans. Because of this ability, as well as their generally calm and manageable demeanor, people have relied on cattle as a food source for thousands of years.

In the United States, cattle were introduced in the early 1500s, coming from Mexico through Texas and California. The English later brought large numbers of cattle when they founded the Jamestown Colony.

Rangelands cover approximately 26 percent (about 587 million acres) of land across America. This land is generally too arid and mountainous to be suitable for cultivation but can sustain grazing of domesticated animals when well managed. The pasture or range is one of the most important resources to a beef producer because it provides the food and water that the animals need at little cost and effort. Producers are allowed to use public lands for grazing and work with the U.S. Forest Service or the Bureau of Land Management (BLM) to ensure that the land remains healthy.

Typically, cattle are turned out to graze on their allotted land late in the spring. Mothers will raise their calves on the open range throughout the summer. The producers will keep a close eye on their cattle, monitoring their growth and health during this time period. Sometime in the fall, the cattle will be rounded up. At this point, the cattle that will be saved for breeding stock will be separated from the cattle that will go into beef production. The breeding stock includes pregnant mothers who will give birth in the spring and will be returned to the range to complete the cycle all over again.

The animals designated for beef production will usually spend four to six months at a feedlot where they are fed a grain-based diet that helps them gain weight quickly. During this "finishing phase," the cattle's health is monitored on a daily basis. When market weight is reached, the animals are sent to a processing facility. The average beef animal weighs 1,200 pounds and yields approximately 520 pounds of meat. While beef cattle are primarily raised for meat, they also provide valuable by-products such as medicine, paint, adhesives, soap, cosmetics, detergents, and hundreds of other products. Including by-products, as much as 99% of the animal is used.

Procedures

Activity 1: Snack time

1. Explain to the students that you have a snack for them. Place a plate of grass and weeds and a plate of beef jerky on a table. Instruct the students to line up behind their choice.
2. Discuss their choices. Did anyone choose the grass? Why or why not?
3. Explain that people don't usually eat grass because it contains cellulose that cannot be digested by humans.
4. Ask the students to make a list of foods made with beef. Explain to the students that we have foods like steak, hamburgers, beef tacos, etc., because of grass. Discuss the fact that beef cattle graze pastures and rangelands. The cattle eat the grass and convert the plant cellulose into beef.
5. Introduce the word ruminant to the students. A ruminant is an animal that has multiple compartments in its stomach. It first chews its food to soften it, swallows it, and then later regurgitates it to its mouth and continues chewing. This is called *chewing the cud* or *ruminating*.
6. Ask each student to follow the digestive process of cattle using the "Chew it Twice" activity sheets and their magnets. Use the pompom magnet to represent the cow's food. The other magnet will magnetize the pompom magnet from underneath the paper and will be used to move the "food" through the cow's digestive system.

Activity 2: Beef By-products

1. Choose items from the "Beef By-products List" to put on a table. Tell the students that all of these items have something in common.
2. Form groups of 4-5 students. Have each group create ten "yes or no" questions in an attempt to discover what all of the items have in common.
3. Each group will take turns asking one question each until one group is able to correctly state that all of the items are made from parts of cattle. Explain that meat and milk are the principal products that come from cattle. The items on the table are secondary products also known as by-products.
4. Sort each item by which part of the cow it comes from and/or whether it is edible or inedible.

Activity 3: Pasture to Plate



1. To help students understand how beef gets from the pasture to the plate, watch video clip from the Field Trip! Series, [Beef-Part 1](#) and read the book *Beef Cattle in the Story of Agriculture*.
2. Download, print, and use the round robin Q&A cards to review key concepts from the movie and book.
3. Explain that the round robin begins with the teacher asking a question. The correct answer is on one of the student cards. That student reads the answer followed by the next question on their card. This process continues until all questions and answers have been read.

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

- [Round Robin Q&A Cards](#)
- [Beef By-products List](#)
- [Chew It Twice activity sheet](#)

Enriching Activities

- Play the interactive game, [The Steaks Are High](#).
- Read the [Beef eReader](#) as a class or on digital devices. You may also print student copies of the [Beef Reader](#) for each student or group of students to read.
- Visit the *Interactive Map Project* website and show the [Beef Cow Inventory Map](#). Identify the top beef producing states and then find where your state ranks in beef cattle inventory.

Author(s)

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Organization Affiliation

Utah Agriculture in the Classroom

- [Agricultural Literacy Outcomes](#)
- [Education Content Standards](#)
- [Common Core Connections](#)

Agricultural Literacy Outcomes

Culture, Society, Economy & Geography

- Provide examples of agricultural products available, but not produced in their local area and state

Food, Health, and Lifestyle

- Diagram the path of production for a processed product, from farm to table

Plants and Animals for Food, Fiber & Energy

- Provide examples of specific ways farmers care for animals
- Understand the concept of land stewardship and identify ways farmers care for land, plants, and animals

Agriculture and the Environment

- Recognize the natural resources used in agricultural practices to produce food, feed, clothing, landscaping plants, and fuel (e.g., soil, water, air, plants, animals, and minerals)