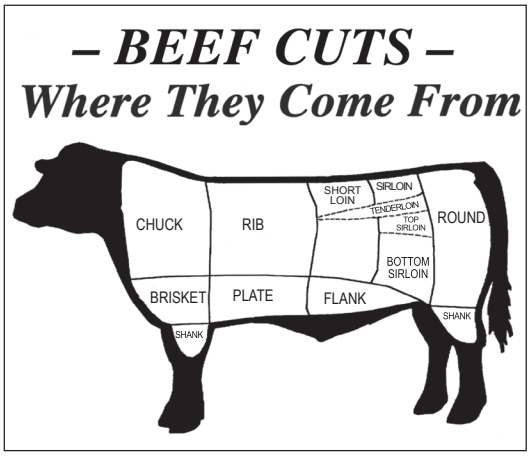
Commodity Fact Sheet

Beef

Information compiled by the California Beef Council

How Produced – There are approximately 620,000 beef cows on about 11,800 ranches in California. In addition, there are 1.84 million dairy cows, which also play an important role in the state's beef industry. Cattle are ruminants, which means they have a four-chambered stomach. Most beef cattle in California graze on land that cannot be used for raising other crops. There are four types of cattle operations; cow-calf, seed stock, stocker and feedlot. Many producers have a combination of these operations.



Cow-calf producers make up the largest segment of California cattle operations. These ranchers have a herd of breeding cows, replacement heifers (young cows) and bulls. The cows are bred to calve in the spring or fall. Calves are usually sold after they are weaned, at about seven months. After weaning, cattle are sent to feedlots for approximately 120 days where they are fed a high-energy ration of grain and hay. Nineteen percent of cropland in the nation is used to raise feed grains for livestock. Cattle are good recyclers and are often fed waste by-products such as almond hulls or rice straw.

Once cattle weigh approximately 1,100 to 1,200 pounds, they are processed. Ninety-eight percent of each animal is used, but less than half is eaten as beef. Cattle provide a multitude of by-products that consumers use every day, including photographic film, soap, tires, leather and pharmaceuticals.

Breeds – There are 275 recognized breeds of cattle throughout the world. Most breeds in California originated from Europe or have a Brahman influence. Brahman cattle from India are known for their tolerance to heat.

Cattle brought to the Western Hemisphere by the early Spanish explorers are Texas Longhorns. While extremely hardy, these cattle did not produce a palatable product. As a result, nineteenth century cattle producers imported purebred cattle, including European Angus and Hereford, to improve the quality of their herds. During the twentieth century breeds such as Charolais, Limousin and Gelbvieh became more prevalent due to their leaner meat characteristics.

Commodity Value – The sale of cattle and calves accounted for $1.82 billion in cash receipts in 2008 and was fifth in terms of value in the state's top 20 commodities in 2008. Nationally, California ranks fourth in total cattle numbers behind Texas, Kansas and Nebraska.

Top Producing Counties – Beef cattle are raised in every county in California except San Francisco. Tulare County has the most cattle—999,000 head in 2009—most of which are dairy cattle. In 2008, cattle and calves were the leading agricultural commodity in Calaveras, Del Norte, Imperial and Mariposa counties.

History – The introduction of cattle to North America mirrors the exploration and settlement of the continent by Europeans. Columbus introduced cattle to the Western Hemisphere on his second voyage to the New World in 1493. Spanish explorer, Hernando Cortez, took offspring of those same cattle to Mexico in 1519. In 1773, Juan Bautista de Anza brought 200 head of cattle to California to supply the early California missions.

The hide and tallow trade sustained the California economy while it was still under Mexican rule and hides were used as currency to buy supplies from Boston trading ships. When James Marshall discovered gold in 1848, the beef business boomed, feeding the fortune seekers who came to the gold fields. Many of the miners soon realized there was more money to be made in cattle than in prospecting.

Nutritional Value – Beef is a nutritionally dense food that is an excellent or good source of nine essentials nutrients. A three-ounce serving of lean beef contributes more than 10 percent of the Daily Value for protein, zinc, vitamin B_{12}, selenium, phosphorous, niacin, vitamin B_6, iron and riboflavin. Beef is the number one food source of protein, zinc and vitamin B_{12}. The U.S. Department of Agriculture's Nutrient Database shows that 29 cuts of beef meet government standards for lean or extra lean and that many cuts of beef are 20 percent leaner than they were 15 years ago. Half of the fatty acids found in beef are monounsaturated, the same "good fat" found in olive oil.

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Beef Activity Sheet

Cattle are ruminants.
Ruminants are unique because they have four-chambered stomachs.

1) Cattle chew food in their mouths.

2) After the food is swallowed, it travels down the esophagus to the rumen.

3) In the rumen, the largest chamber of the stomach, the food mixes and softens with the aid of microorganisms.

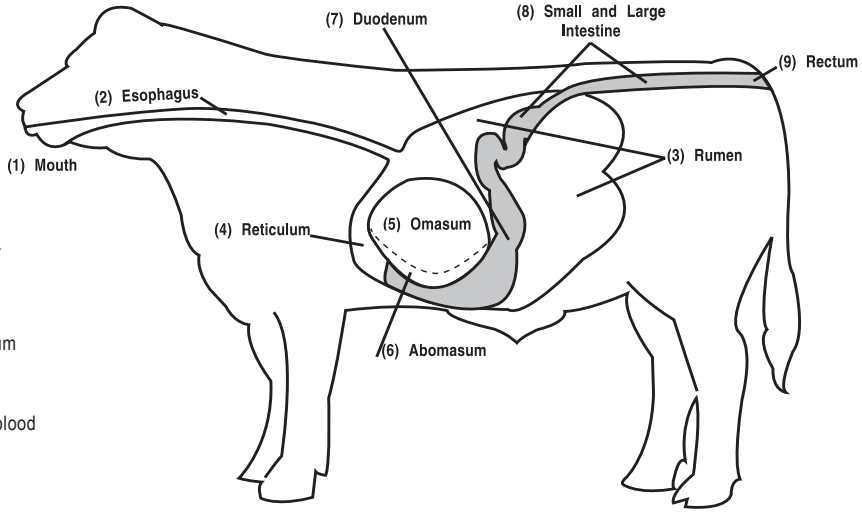
4) Food travels from the rumen to the reticulum where further digestion occurs. Large food items are returned to the mouth for further chewing. This food is called cud.

5) When the food particles are small enough, they pass through the omasum where water is removed.

6) The food travels to another stomach chamber called the abomasum where stomach juices continue to digest the food.

7-8) From the abomasum, food moves through the duodenum and the small and large intestines where nutrients are absorbed into the blood stream and utilized by the animal.

9) Waste products are excreted through the rectum as manure.



Lesson Ideas

- Use a Venn diagram to compare and contrast monogastric and ruminant animals. How does their digestive system affect their nutritional needs?
- Given cattle weight at the time of processing, how many pounds of the animal is used? How many pounds are eaten as beef?
- Create a timeline depicting significant events within the beef cattle industry.
- Research the following breeds of cattle and locate their place of origin on a world map: Angus, Brahman, Charolais, Gelbvieh, Hereford, Limousin, Maine-Anjou, Nellore, Santa Gertrudis and Shorthorn.

Fantastic Facts

1. How may chambers does a cattle stomach have?
2. What percentage of beef cattle is used in some way?
3. Name two beef by-products that are used to make a wide variety of products.
4. Why did people originally raise cattle?
5. What is the most popular form of beef served?
6. Name one mineral in beef that is readily used by the human body.
7. The five most popular sports in the United States depend on by-products from cattle. See if you can name them.

1) Four 2) 98 percent with less than half eaten as beef 3) Hide, tallow, fat or bones 4) For their hides and tallow 5) Ground beef 6) Iron, zinc 7) Baseball, football, basketball, soccer and volleyball

Lesson Plan: From Sun to Steak

Introduction:
Cattle, ruminant animals, are able to digest plant cellulose—a substance indigestible by humans. This unique characteristic of ruminant animals assists in converting energy into forms that can be used by other animals including humans. Beef and dairy products result from the ruminant digestive process. In this activity the students will create a mural which depicts the energy flow from the sun to food people eat.

Materials: Butcher paper, dictionary, glue sticks, index cards, lengths of yarn in a variety of colors, markers.

Procedure:
1. Have students find the definition for “ruminants” and list a variety of animals that fit into this category.

2. Discuss how students will create a mural showing the energy flow from the sun to the food people eat.

3. Divide students into pairs or trios. Distribute one of the listed phrases to each group:
   - cattle and sheep
   - plants get their energy from sun, water and air
   - grazing animals live on land not suitable for crops
   - people eat fruits, vegetables, meat, dairy products and grains
   - crops grow on fertile land
   - ruminant animals have a unique digestive tract
   - the food from the farm is processed, packaged and sent to stores
   - bacteria, earthworms and snails are examples of decomposers

4. Have students draw a scenic background for their mural made of butcher paper. There should be hills, valleys, waterways and an urban city with stores and houses.

5. As a class, decide which phrase best fits in which part of the mural.

6. Have the students create a scene to add to the mural that shows what their card indicates.

7. Incorporate key sentences into the mural.

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