

*News Article*

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## Understanding agriculture: beef

If you are one who is perplexed by simple questions about agriculture that you don't understand, read on. Today's article is a primer on beef, written primarily for the curious non-farmer.

I am aware that many people look into pastures along Indiana's roadways, and upon seeing any bovine animal, utter the words, "Hey look, cows!" Well, you may be partially right.

While you may be mostly correct if the animals you are looking at are dairy animals (discussed in a prior article), the same may not be true with beef animals. For a more accurate term involving adult male and female beef animals, use the term "cattle."

Several other terms are used in beef production. A young beef animal of either sex is called a calf. An immature female is called a heifer, and an immature male is called a bull. A mature female who has had a calf is called a cow, and a mature breeding male is called a bull. A castrated male is called a steer. Most beef cattle raised for harvest of their meat are steers or heifers. A group of beef cattle is called a herd.

The term "beef" covers several breeds of cattle raised primarily for their meat. Some of the more commonly recognized breeds include Angus, Hereford, Shorthorn, Limousin, Charolais and Simmental. Some producers will also feed out dairy steers as "dairy beef" animals, since dairy products come from the cow. Unless bulls are kept for breeding purposes in a dairy herd, there is no other practical use for the males.

Meat products people eat from beef animals include hamburger, steak, roast beef, and brisket. Veal is tender, lighter colored meat harvested from younger beef and dairy beef animals. Consumers can procure these products from private "freezer beef" producers/vendors, local farmers, local meat lockers or meat markets, groceries, and online sources.

Consumers have noticed words used to describe the quality grades of beef from USDA. In order from highest quality to lowest, these are Prime, Choice, Select, and Standard.

According to the Indiana Beef Council, 65% of the beef cuts sold in U.S. meat cases are lean and there are 38 cuts of lean beef that can be used across a variety of cooking methods. Beef is a popular choice of many home grillers.

According to U.S. Department of Agriculture, a broiled 3 oz. patty of 83% lean ground beef has 218 calories, provides 22 grams of protein, and has 14 grams of fat. A 3 oz. sirloin steak, lean only, has 166 calories, provides 26 grams of protein, and has 6 grams of fat.

Beef is a great source of protein. According to Indiana Beef Council, when comparing the amount of food product to provide the same 25 grams of protein: 3 oz. of beef has 173 calories, 1 1/3 cups of edamame has 249 calories, 1 2/3 cups of black beans have 379 calories, 6.5 tbsp. of peanut butter has 613 calories, and 3 cups of quinoa has 666 calories.

Several medical products can also be obtained from beef by-products. These include insulin (for diabetes), glucagon (for hypoglycemia), soft cartilage (for plastic surgery), heparin (an anticoagulant), and other products.

Additionally, leather can be made from the hide of beef cattle.

In terms of beef production, a bred heifer has a gestation (pregnancy) period of about 283 days (about 9½ months) before giving birth to a baby calf. Birthing is called calving.

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Beef producers ensure that baby calves receive colostrum milk from their mothers a few hours after birth. Colostrum is the first milk available from the mother, and it gives calves antibodies to fight off diseases. As calves approach weaning age (separation from mother when they are old enough), they may be given extra feed with high energy. Producers call this "creep feeding," or feeding calves by using a special feeder that is inaccessible to larger animals.

Essential nutrients for beef cattle include water, energy, protein, minerals, and vitamins. Cattle are fed various grains, roughages (forages like hay, pasture, or silage), and nutritional supplements. This combination of grain and roughage is necessary because beef cattle have a ruminant (4-chambered) stomach that requires it. Salt and minerals are usually provided free-choice (always available) to growing beef cattle in a block they can lick. Clean water is also made available free choice.

Ruminant animals include cattle, sheep, and goats. To explain ruminant animals in a little more detail, one of the four compartments of a ruminant stomach is called the rumen (hence the name). The rumen works like a fermentation vat to break down high-cellulose plant products, which are not as digestible by other mammals, into components that can then be passed into other stomach compartments and ultimately be absorbed. Ruminant animals chew their food several times through a process of regurgitation and rumination that is more familiarly called "chewing their cud." This is necessary because ruminants chew forages only enough to swallow when grazing. The pathway and components of this four chambered stomach include: rumen, reticulum, omasum, and abomasum. The last compartment, the abomasum, most closely resembles a monogastric stomach, and is also called the "true stomach."

Ruminant animals utilize a special niche as farm animals. They can utilize pasture lands that are not suitable for row crops.

Beef producers strive to prevent diseases and parasites in their herd by working with a veterinarian when administering needed medical care, and providing proper nutrition and housing. Parasites, like flies and lice, are sometimes a problem with cattle, and treatment is important for continued good health.

According to USDA National Agricultural Statistics Service, Indiana Field Office, in 2016 Indiana beef producers produced 30,800 head of beef at a total live weight of 34,056,000 pounds at slaughter.

For more information on beef, see Purdue University's "The Beef Center," at <http://www.ansc.purdue.edu/SP/TBC/>. Also access information from Indiana Beef Cattle Association and Indiana Beef Council at <https://www.indianabeef.org/>. Some information was sourced from "Beef Resource Handbook," 4-H 117R, by The Ohio State University, and "A Stomach at Work," publication 4H1659, by Michigan State University.

*Bill Horan, Purdue Extension Educator, Wells County, contributed to this article*