

From Pasture to Plate: The Beef Production Story

For America's beef producers, our land and cattle are our livelihood and our legacy for future generations. From pasture to plate, everyone works together to ensure that our animals are treated well, and hamburgers and steaks across the world are safe, wholesome and delicious.

After all, the same beef enjoyed across the world is also what America's more than 800,000 beef producers will enjoy for dinner tonight.

Chapter 1: Birth on a Cow-Calf Operation

Calves are born on farms or ranches which are known as cow-calf operations because the focus is on maintaining a herd of cows and their calves. A cow-calf operation is the most common beef operation seen on country roads and those green pastures are where cattle spend the majority of their lives.

When it comes to cattle production, most operations are smaller than you might think; according to the United States Department of Agriculture (USDA), the typical herd averages just 40 head of cattle.

As many other beef producers do, George and Patty Irwin of Enumclaw, Wash., rise before dawn to care for their cattle and are up still working long after the sun has set.

"Like every other producer out there, we work seven days a week to keep this small ranch running. We are beef producers and active community members and it is essential that we raise healthy animals, protect the land we have invested our lives in and raise high quality cattle," said George Irwin. "Our farm-life revolves around caring for our cattle, pastures, barns and fence-lines. And we love it."

Stewards of the Land

Beef producers are dedicated to responsibly managing our country's natural resources to protect their future and the futures of families for generations to come. For cow-calf producers, grazing cattle is a good use of land that is not suitable for growing crops. In fact, grazing animals more than doubles the land area that can be used to produce food in this country and 85 percent of the land where cattle graze cannot be used to grow crops. Furthermore, in areas where erosion is an issue, foraging animals such as cattle can help stabilize the soil and assist in expanding the growth of grasses.

Beef producers ensure proper practices are used in every step of the beef production process to comply with the Environmental Protection Agency's Clean Water Act, established in 1972. The National Cattlemen's Beef Association's Environmental Stewardship Award Program (ESAP), established in 1991, provides an opportunity for the cattle industry to showcase the environmental stewardship and profitable business practices that exist together on progressive farms and ranches.

The Faris family of Mount Ayr, Iowa, 2005 ESAP winners, use multiple environmental practices to improve results on their 190-head cow-calf operation. The environmental practices they initiated led to calves increasing their weight by an average of 180 to 200 pounds before they were weaned



and sold. To achieve this result, the Faris family practiced rotational grazing, which involves periodically moving livestock to fresh pastures to allow regrowth; improved management of water resources; and they also re-established wildlife habitats.

Cattle Health Dedication

In addition to the careful environmental practices, there are many important health and well-being measures taken on a cow-calf operation. Both mother cows and their calves are given vitamin/mineral supplements, as well as vaccinations to prevent disease. Additionally, careful and judicious use of animal antibiotics is one important way beef producers and their veterinarians help an animal regain or maintain excellent health. The responsible use of antibiotics maintains the effectiveness of the medicine and ensures a safe product for consumers.

The Beef Quality Assurance (BQA) program has been training beef producers on the safe and appropriate use of antibiotics for more than two decades. Beef producers follow the *Producer Guidelines for Judicious Use of Antimicrobials*, which have been in place since 1987 and specifically outline the appropriate use of these products. It is updated continuously based on sound science and funded by The Beef Checkoff.

Cattle intended for certified organic or antibiotic-free programs are not treated with antibiotics. In the event an animal becomes ill, it will be removed from the program and be given the proper treatment to regain full health. USDA sets specific standards for all food carrying an organic label and before a product can be labeled organic, a government-approved certifier inspects the operation to ensure compliance with National Organic Program (NOP) standards.

Antibiotics used in beef cattle production must go through a rigorous scientific testing process before being approved by the Food and Drug Administration (FDA). This process assures that animals remain healthy and the food supply remains safe. USDA's Food Safety and Inspection Service (FSIS) conducts testing to ensure beef products entering the food supply meet the FDA standards in a number of areas. The testing protocol has been updated continuously by government scientists since its inception in 1967.

Chapter 2: Weaning and a New Home

Between six and ten months of age, calves are weaned from their mothers and they progress to the next stage of the production process. A majority of cow-calf operators market their weaned calves at livestock auction markets where the calves are bought by cattle producers called stockers and backgrounders. There are approximately 815 fixed auction facilities throughout America, according to the USDA's Grain Inspectors, Packers and Stockyards Administration (GIPSA).

Cattle producers, specifically stockers, purchase newly weaned animals which weigh 300 pounds to 600 pounds, and put them in pastures where the calves continue to graze. The weaned steers and heifers are on grass pasture for four to five months so they can continue growing and achieve optimal weight for the next step in the production process.

Like stocking operations, backgrounders use grazing or hay as the primary feed, but also get the cattle used to eating grain and eating and drinking out of troughs. Backgrounding operations tend to purchase heavier newly weaned calves weighing 600 pounds to 700 pounds. Cattle stay at the backgrounding operation for two to three months before moving to a feedlot.



While all cattle spend the majority of their lives on grass pastures before going to a feedlot, some cattle stay on pasture their entire lives. Grass-finished beef has a distinctive taste when compared to other beef. Most cattle go to market weighing between 1,000 pounds and 1,250 pounds. It may take longer for grass-finished animals to reach market weight which leads to increased production costs.

The commitment to preserving natural resources and animal health and well-being continue on stocking and backgrounding operations. As with the cow-calf producer, the responsible use of natural resources remains vital for success. In addition these producers work with a veterinarian to provide animals with preventative health programs including vaccinations. If animals get sick, the veterinarian suggests the proper antibiotics to treat or prevent illness.

Chapter 3: From Grass-Fed to Grain-Fed

Once cattle reach 12 to 18 months of age, they are taken to a feedlot operation. At the feedlot, cattle are typically separated into herds of 100 to 125 animals and live in corrals that provide an average of 125 to 250 square feet of space per animal.

Cattle usually spend four to six months in a feedlot where they are fed a scientifically formulated diet that averages 70 percent to 90 percent concentrate. Concentrates may be grain such as corn or barley, or they can be high energy, high fiber co-products that result from processing grains for human use. For example, soybean hulls are a co-product that is left after soy oil is removed from soybeans. Cattle have constant access to clean water while in feedlots.

Feedlot operators such as Steve Gabel at Magnum Feedyard in Wiggins, Colo. are especially vigilant when it comes to property management. "Odor, water quality, air quality and responsible use of my land are all factors I monitor on a daily basis," says Gabel. "In addition to constantly watching the health and well-being of my cattle and consulting regularly with our veterinarian, I am responsible for maintaining the environment and abiding by strict regulations."

Just as children may catch an illness in daycare or school, cattle from different farms and ranches can become ill at feedlots. To make the transition as easy as possible for cattle, they are allowed plenty of room to move around in pens and there are employees whose only job is to watch for sick animals. Additionally, cattle are given vitamin/mineral supplements, vaccinations and treatment to maintain their health and well-being.

Like many other feedlot operators, Magnum Feedyard administers growth promotants to his cattle that contain hormones. "Using growth promotants helps my cattle build more muscle, which enables me to deliver a more consistent and leaner beef product to consumers," says Gabel. "A growth promotant is typically administered through a small pellet that is implanted under the skin on the back of the animal's ear. The pellet releases tiny amounts of hormone and safely dissolves once the treatment is complete."

Growth promoting products are approved by FDA based on rigorous scientific testing procedures similar to those used for human medications. Using growth promotants in cattle production has been declared generally recognized as safe (GRAS) by scientific organizations worldwide, including FDA, the World Health Organization, the European Commission Agriculture Division and the Codex Committee on Veterinary Residues.



While grass-finished cattle remain on pasture, certified organic beef cattle may be finished in feedlots. Organic cattle may be provided certain vitamin/mineral supplements as long as they continue to receive 100 percent organic feed. Organically grown feeds are in limited supply which increases production costs. Organic cattle are not given hormones to promote growth or antibiotics for any reason, as outlined in USDA organic standards.

Beef producers have adopted production practices to provide consumers with the choices of beef – grain-fed, grass-finished, certified organic, etc. – they desire. It's important to remember that all beef starts with one of the more than 800,000 American producers whose livelihoods depend on producing a safe, wholesome and nutritious product tailored to the needs of consumers.

Chapter 4: Ensuring Humane Treatment and Food Safety

Once cattle have reached 18 to 22 months of age or weigh between 1,000 pounds and 1,250 pounds, they are considered finished and are taken to a packing plant to be slaughtered and processed. All kinds of beef go through the same slaughtering and processing steps, but are appropriately labeled to ensure consumers have accurate information when purchasing beef.

Today, the slaughtering process continues to evolve based on the latest scientific research to ensure both humane treatment and food safety. Temple Grandin, Ph.D., Colorado State University Department of Animal Sciences professor and world renowned animal behaviorist, has worked closely with beef packing plants to develop best practices for proper animal handling.

Cattle arrive at the packing plant and are unloaded in a quiet and orderly manner. There is little movement or noise because stress at this period in the production process can negatively affect animal and worker safety as well as the final meat quality. Once in the plant, trained technicians use a mechanical device to quickly and effectively render the animal unconscious in order to make the process as humane as possible.

The Humane Slaughter Act of 1978 dictates strict animal handling and slaughter standards for packing plants. Those standards are monitored by thousands of federal meat inspectors nationwide. Packing plants are under continuous federal inspection, with FSIS personnel present in plants during operation to ensure compliance with all regulations.

The world's safest beef

America's beef producers' number one priority is beef safety and this commitment extends throughout the beef production chain from pasture to processing. Packing plants employ a series of intervention steps designed to reduce incidence of foodborne pathogens. The beef industry has collectively invested approximately \$400 million in beef safety research in the past decade.

FSIS has approved a number of new technologies for use on beef carcasses including high-temperature steam vacuuming, pasteurizing carcasses with hot water or steam and applying chemical decontaminates. For instance, one such intervention is a lactic acid wash, which is similar to using mouthwash to eliminate potential bacteria.

From the ranch to the dinner table, the beef industry has taken the necessary steps to reduce the incidence of foodborne pathogens in beef and have made great strides. According to USDA, the incidence of *E. coli* O157:H7 in ground beef has declined more than



80 percent between 2000 and 2005 and every step of the beef chain remains committed to fighting the battle again foodborne pathogens.

Assigning a USDA Quality Grade

USDA inspectors oversee all slaughter, food safety interventions and quality grading at packing plants. To assign a quality grade to each beef carcass, inspectors evaluate marbling (distribution of internal flecks of fat, which contribute to tenderness and taste) and animal age. USDA quality grades include Prime (highest quality, sold mostly to restaurants), Choice and Select.

Before the carcass leaves the packing plant, workers skillfully cut the carcass into large sections called subprimals. Subprimals, such as the rib or loin areas, can be shipped to retail outlets or to wholesalers and fabricators where further breakdown will continue to supply ready-to-cook beef cuts to retailers and foodservice operators.

Chapter 5: Welcome to the Dinner Table

Ultimately, consumers dictate the actions of the beef production chain by determining what kinds of beef they want and the price they pay. Supermarkets and restaurants train employees to take diligent steps to assure food safety and great taste so consumers have the ultimate beef eating experience.

Beef is a naturally nutrient-rich food with eight times more vitamin B₁₂, six times more zinc and two and a half times more iron than a skinless chicken breast. Beef helps consumers get more nutrition for their calories, but beef producers listen to consumers and make changes throughout the production chain in response to consumer demand. For example, beef cattle are now much leaner than just a decade ago and consequently, there are 29 cuts of beef that meet government guidelines for lean. These include popular cuts such as the tenderloin, T-Bone steak and 95% lean ground beef.

Beef producers throughout the United States are proud to offer a variety of beef choices that meet the changing lifestyles and nutritional needs of consumers. They have adapted production practices to provide consumers with the grain-fed, grass-finished, certified organic or other beef products they desire.

Although each segment of the beef production chain requires different tools and skills, ranchers, farmers, processors, restaurant owners and other dedicated people work together to bring a high quality, safe, wholesome, nutritious and delicious product to dinner tables around the world.

"As a cow-calf producer, we recognize that our family is just the first link this important food chain," said Patty Irwin. "And we take pride in knowing that what starts on our farm ends up in kitchens and restaurants around the world. Producing safe and wholesome beef from farm to fork is our responsibility and our livelihood."

