



Bull



Cow



Calf

# BEEF CATTLE

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## Background Information

The word "cattle" comes from the Old French word "chattel" which means possession. It is believed that cattle were first domesticated in Europe and Asia during the Stone Age. The first cattle to graze Nebraska's grasslands belonged to soldiers at Fort Atkinson, which was established in 1819. Nebraska is among the top states in the number of cattle fed and sold to market. Cattle occupy two-thirds of all the grazing land in Nebraska.

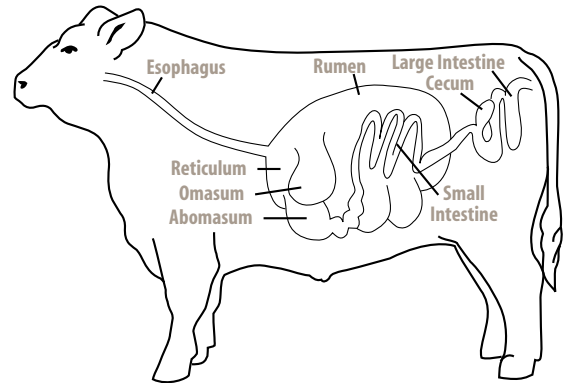
The United States and Australia are the top beef-producing countries in the world. There are many breeds of beef cattle. Hereford and Black Angus are among the most popular. Some cattle are crossbred, which combines the best traits of two or more breeds.

## Growth and Feeding

Female cattle are called heifers. After they have given birth they are called cows. Male cattle are either bulls or steers. Bull calves that have grown to full maturity are capable of producing offspring. Steers are male cattle that have been neutered, much like a dog or cat, and are not able to reproduce. They do not become as large or aggressive as bulls.

A cow is pregnant for about nine months. She usually gives birth to one offspring, which is called a calf, but sometimes a cow may have twins. When a cow gives birth, it is called calving. Cows nurse their calves until they are about seven months old. Some heifer calves are kept in the herd to produce the next generation of calves. A heifer may have her first calf when she is two years old. Heifers that are not being kept for breeding will be moved to a feedlot until they are market-ready. Steers are also kept in a feedlot until they go to market.

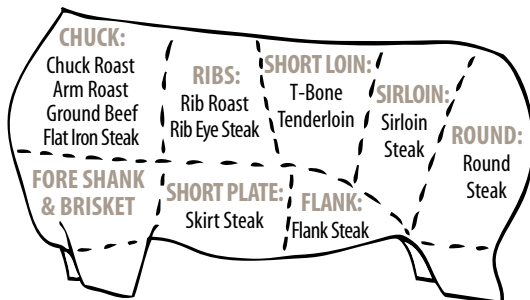
Cattle in the feedlot eat corn, alfalfa and silage. Their diets may also include crop by-products such as cotton seed hulls, corn stalks and sugar beet pulp. Even leftover bakery products can be ground and used as part of a balanced feed ration. Feedlot cattle are usually ready for market at 18 to 20 months of age and weigh between 1,100 and 1,400 pounds.



## Ruminant Digestive System

Ruminant animals have a stomach with four compartments. They swallow food in large pieces into the first stomach compartment, bring the food back into the mouth and chew it again. This is called "chewing the cud." The food is swallowed again and moves through the four stomach compartments. Because they are ruminant animals, cattle can digest grass, roughage, food by-products and other materials people can't eat. They convert these otherwise unusable grasses and other products into nutrients for humans. Camels, deer, sheep and llamas are also ruminant animals.

## Products



## Cuts of Beef

Cattle provide cuts of meat such as steaks, roasts and ground beef (hamburger). A market beef that weighs 1,100 pounds will yield about 475 pounds of beef for a grocery store's meat case. The remaining parts of the beef are used in by-products.

## Other Products

Meat from cattle is called beef. Cattle also produce a variety of by-products used in industrial, pharmaceutical and household items. Fats and gelatin are used to make soap, shampoo, cosmetics, desserts and many industrial products such as photographic film and light filters. The pancreas and liver are used for medicines for diseases such as anemia and hypoglycemia.

Hide, hooves and hair are used in products such as sports equipment, leather goods and paint brushes. A football, frequently called a "pigskin," is actually made from cow hide. The hide and hair from a beef animal weighs 100 pounds. In fact, it takes 3,000 cows to supply the National Football League with enough leather for a year's supply of footballs. Ninety-nine percent of every beef animal is used for meat or other products.





Bull



Cow



Calf

# DAIRY CATTLE

*Man Rubin*

# DAIRY CATTLE

## Background Information

Dairy cattle were first brought to North America in 1624 to the Plymouth Colony, in what is now Massachusetts. Wisconsin and California lead the United States in milk production. The states that are more suitable for dairy production produce large quantities of irrigated alfalfa. This is the primary forage eaten by dairy cows.

## Growth and Feeding

After her calf is born, a cow begins producing milk. This is called "freshening." A cow can only freshen after she has given birth to a calf.

The first milk the cow gives is called colostrum, which contains nutrients and antibodies that the calf needs to stay healthy. The calf is weaned immediately after birth and fed the mother's milk with a large nursing bottle.

Cows are milked by machine, usually twice a day, every 12 hours. If they are milked at 3 p.m., they must also be milked at 3 a.m. Cows are milked for 305 days or about 10 months. Then the cow's body needs to rest and store nutrients before she has her next calf. After the calf is born, the cow will resume giving milk.

The average dairy cow in Nebraska produces 17,950 pounds of milk in 305 days. That's nearly 2,215 gallons of milk. Milk is stored in refrigerated tanks at the dairy farm until it is picked up by a refrigerated tank truck and taken to a dairy processing plant. There the milk is homogenized, pasteurized and put into containers. Different refrigerated trucks deliver the packaged milk to stores.

## Dairy Cattle Nutrition

Most heifers are bred to freshen at two years of age. After they give birth, they join the dairy herd and produce milk. The male calves can be sold to feedlots where they are fed until they are taken to market for their meat. They can also be sold to veal producers where they are fed to approximately 475-500 pounds and then taken to market.

Dairy cattle are ruminant animals with four compartments in their stomachs; their digestive tract is the same as beef cattle. Dairy cows weigh 1,300 to 1,500 pounds and are fed a total mixed ration. This ration has everything a cow needs for a nutritious diet. They eat grains such as ground corn, grain sorghum, oats and soybean meal.

Dairy cows also are fed forages, such as high-quality alfalfa and whole corn plants (silage). A single cow can consume up to 20 lbs. of grain and 75 lbs. of hay each day. Water is another important nutrient for dairy cows; every day they need to consume about 29 gallons of water or the equivalent of a full bathtub.

Many dairy producers use computers in their feeding operations. The computer reads the cow's identification and gives her a proper mix of grains, vitamins and minerals. This is determined by her age and how much milk she produces.

Ninety-nine percent of all dairy cattle in the U.S. today are of the Holstein breed, which are large-bodied with a distinctive black-and-white coat. This breed gives a large quantity of milk. The smaller-bodied breeds—Guernsey, Jersey and Brown Swiss—give a high-protein milk.

## Products



99 percent of all U.S. households purchase milk. The average American consumes almost 25 gallons of milk a year...that's 400 glasses.

Milk and other dairy products provide 72% of the calcium in the United States' food supply plus energy, protein and vitamins. Chocolate milk is made by adding sweetener and chocolate or cocoa to white milk. Cheese, butter, ice cream, yogurt and sour cream are also made from milk.

25 gallons of milk can make 9 gallons of ice cream, 25 pounds of cheese or 11 pounds of butter.



Tom

Hen

Poult

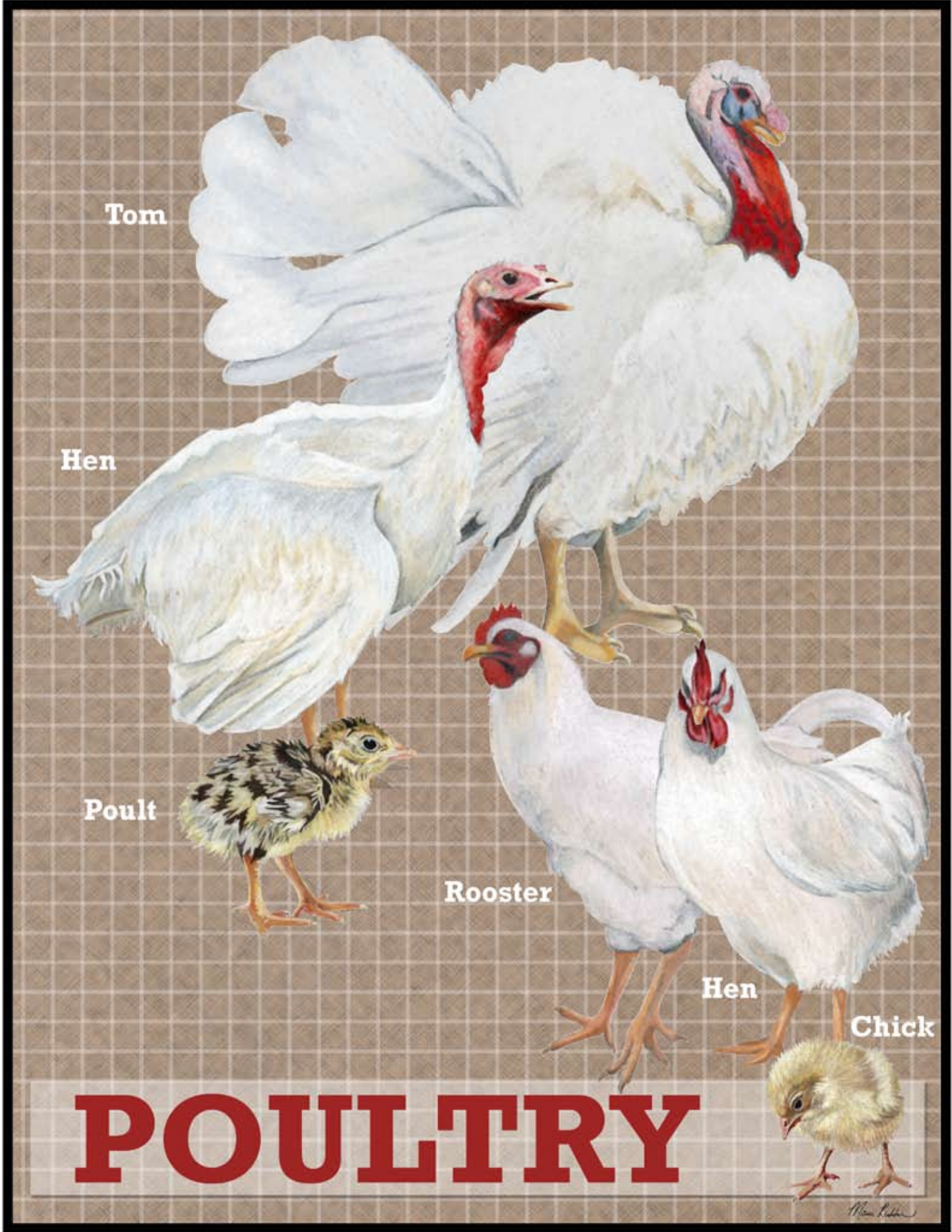
Rooster

Hen

Chick

# POULTRY

*Alan Miller*



# POULTRY

## Background Information

Poultry are birds raised for their meat or eggs. The species includes chickens, turkeys, ducks and geese. Most of the poultry produced throughout the United States are either chickens or turkeys. The only major meat animal native to North America is the turkey. Minnesota, North Carolina and Arkansas are among the top turkey-producing states in the United States. Midwestern states produce most of the eggs we eat and the southern states produce broiler chickens for meat production.

## Chickens

A male chicken is called a rooster and a female chicken is a hen. Their offspring are called chicks. Broilers are either male or female chickens that are raised for meat. They hatch in three weeks from fertile eggs in hatcheries. They are fed until they are six to seven weeks old and have a market weight of four to five pounds. Some chickens, called roasters, are fed for 10 to 12 weeks and weigh eight to nine pounds before they are ready for market.

Broilers and roasters are raised in modern, large buildings called broiler houses. They have water and feed such as processed corn, grain sorghum and soybeans available at all times.

Layers are hens which produce eggs for food. Eggs produced by a laying hen (or layers) do not contain an embryo. From hatching until five months of age, young layer chicks are called pullets. Pullet farms raise chicks until they begin laying eggs at about six months of age. Then the hens are moved to a laying hen facility where they produce eggs for one to two years.

A hen lays about 300 eggs in one year. Then some hens go through a period of rest called molting which lasts about two months. After molting, a hen will lay eggs again for about nine months, but will produce fewer eggs.

Hens are kept in laying cages to keep them and their eggs clean. The cages usually are tipped slightly so the

eggs roll onto a moving belt that automatically collects the eggs. Grains such as processed corn, milo, soybeans and oats are fed to layer hens, but they also are fed extra calcium to make the egg shells strong. Hens are taken out of production when they are nearly two years old.

## Turkeys

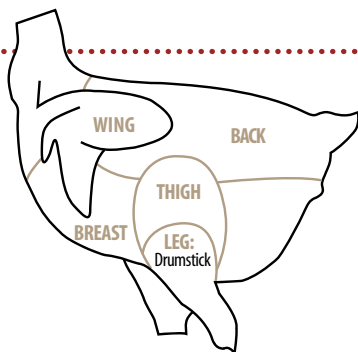
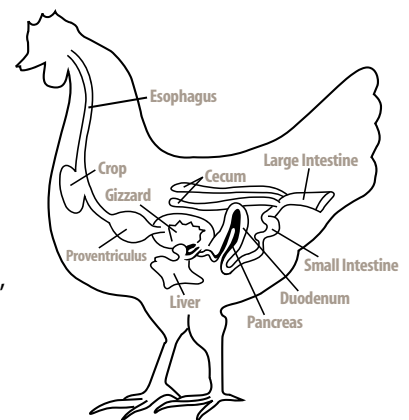
A male turkey is called a tom and a female turkey is a hen. Turkey hens that are used to produce fertile eggs begin laying eggs at about seven to eight months of age; it takes 28 days for a turkey egg to hatch. Young turkeys are called poults.

Newborn toms and hens are separated and placed in brooder houses for six to eight weeks, where they have food and water provided at all times. Then they are moved to outdoor pens in warm weather or to grower houses where they are fed until they go to market.

Often brooder and grower houses can hold about 10,000 birds at one time. Toms are ready for market when they are between 20 to 24 weeks of age and weigh 24 to 26 pounds. Hens are ready for market when they reach 16 to 18 weeks and weigh 10 to 14 pounds. Like broiler chickens, turkeys are fed grains such as processed corn and soybeans.

## Digestive Tract

Chickens and turkeys do not have teeth; they use their beaks to pick up food. They swallow pieces of grain and store it in the crop. The grain then goes through the proventriculus (stomach), and into the gizzard where it is ground into small pieces. Next it moves through the small and large intestine where nutrients are absorbed. The waste is then excreted.



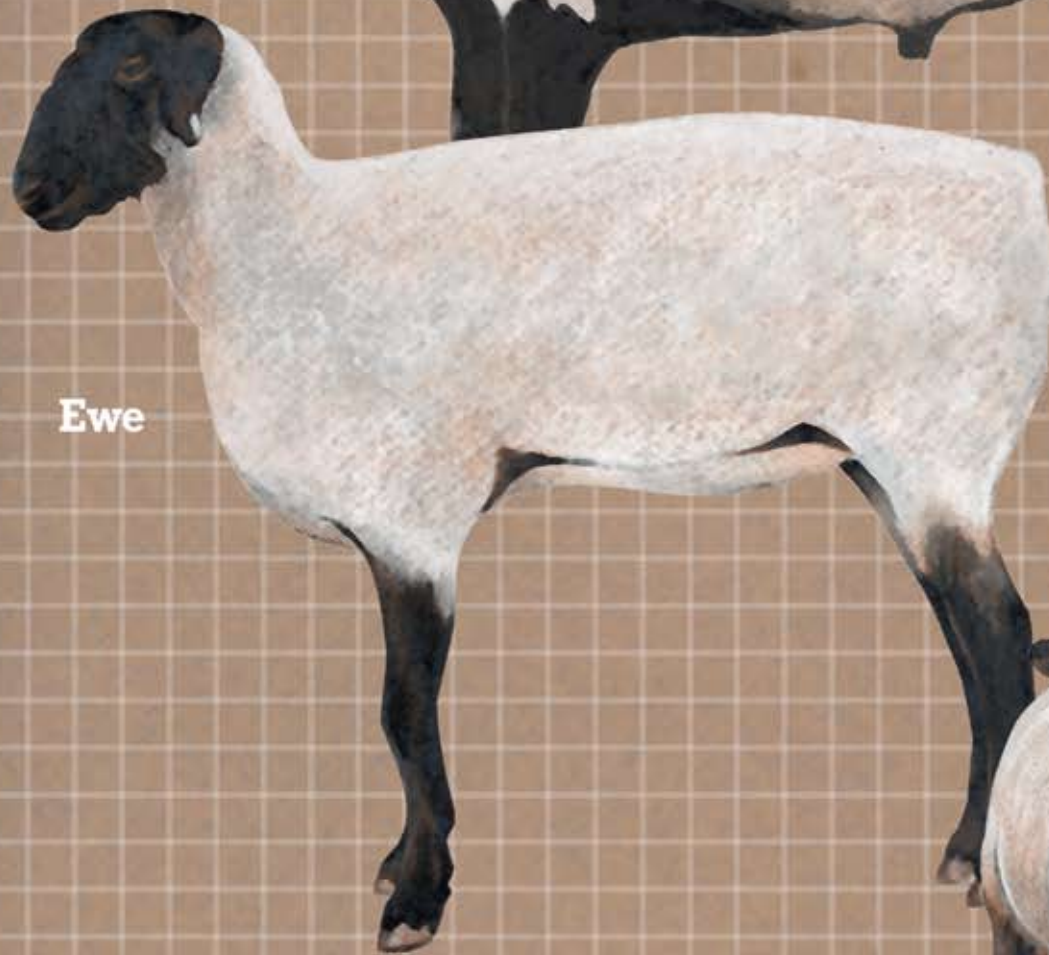
## Products

Broiler and roaster chickens provide food such as drumsticks, wings, chicken breasts and chicken nuggets. Eggs from laying hens are used as ingredients in such foods as cakes and cookies, or they can be scrambled, fried or hard-cooked. Turkeys provide such food as sandwich meat, drumsticks and turkey breast. Along with providing meat, ducks and geese provide down used to make bedding and clothing.





Ram



Ewe



Lamb

# SHEEP

# SHEEP

## Background Information

Sheep have played an important role in human history. They were among the first species to be domesticated and provided both meat for food and wool for clothing. Sheep skin hides were also used for clothing and shelter. The weaving and felting of wool were among the first arts to be developed.

The Spanish who founded old Santa Fe, New Mexico, are thought to have brought the multicolored sheep, from which the flocks belonging to the Native American Navajos are descended. The first British sheep were brought to Virginia in 1609 by the London Company.

Common breeds of sheep are Rambouillet, Columbia, Corriedale and Dorset, all white-faced breeds, and Suffolk and Hampshire, the black-faced breeds.

## Growth and Feeding

Female sheep are called ewes and male sheep are rams. The offspring of a ewe and a ram is a lamb. Ewes are usually bred in the fall and give birth in the late winter and early spring. When a ewe gives birth, it is called lambing. Ewes are pregnant for about five months before they give birth. They usually give birth to one or two lambs, but sometimes they give birth to three or four lambs at a time. Lambs nurse their mothers for two to three months and then they are weaned. Lambs are sold to market at approximately four to seven months of age and weigh between 115 and 140 pounds.

Like cattle, sheep are ruminants which means they have four compartments in their stomachs. Sheep do not have

any upper front teeth. When eating forages such as grass and alfalfa, they close the lower teeth against the dental pad of the upper jaw. Ewe lambs and wethers (neutered males) that are raised for meat are also fed grains such as corn, oats and grain sorghum.

## Sheep Dogs

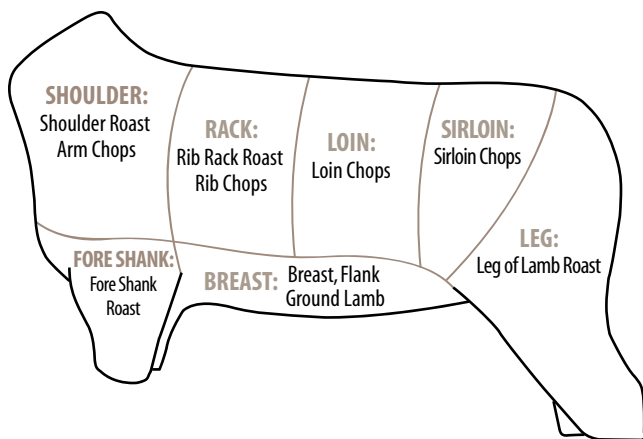
Dogs often play an important role in sheep production. There are two kinds of sheep dogs: guarding dogs and working dogs. Breeds such as Great Pyrenees, Komondors, or Anatolians guard the sheep herd from other animals that prey on them, such as coyotes. The dogs stay with the sheep at all times and scare wild animals away.

Working dogs, like Border Collies and Australian Shepherds, are born with herding instincts and herd sheep from one place to another. These dogs are also very intelligent and eager to work.

## Shearing

The body of a sheep is covered with wool. Certain breeds of sheep have higher quality wool. Once a year the wool is removed by shearing. After shearing, the wool is carded to untangle and straighten the fibers and remove any remaining dirt. The wool is now a long, soft untwisted strand of fiber ready to be spun into yarn. The yarn is weaved or knitted into fabric. Wool is a natural renewable product that is easily dyed any color. It is used to make sweaters, coats, scarves and rugs, etc. An average fleece from one sheep will provide enough fabric for one wool suit.

## Products



## Cuts of Lamb

Lamb is the meat from young sheep that are under one year of age. Lamb chops, rack of lamb and leg of lamb are some of the more important cuts of lamb.

## Other Products

Lanolin is an oil extracted from sheep's wool and used in cosmetics and lubricants. Wool that is needle-punched and/or bonded is used as mulch to plant seeds; to clean up oil spills and grease around machinery; for insulation in homes and buildings; and as an inter-liner in winter clothing. Other by-products from sheep include piano keys, candles, shampoo, fertilizer, chewing gum, and medicines such as rattlesnake antivenin.







Boar



Gilt



Piglet

# SWINE

# SWINE

## Background Information

Swine are also called hogs. They were among the first animals to be domesticated, possibly as early as 7000 B.C. Pork, the meat from swine, was widely consumed throughout the ancient world and the Roman Empire.

Swine were first introduced to North America in 1539 when Hernando de Soto brought 13 to the Florida mainland. Most of the swine in the United States are produced in the Midwestern states, including Nebraska, Iowa, Minnesota and Illinois. Worldwide, China is the country that produces the most hogs.

## Growth and Feeding

A female is called a gilt. After she has borne a litter she is called a sow. A neutered male is a barrow and the adult male is a boar. The offspring of a male boar and a female sow are called piglets, or just pigs.

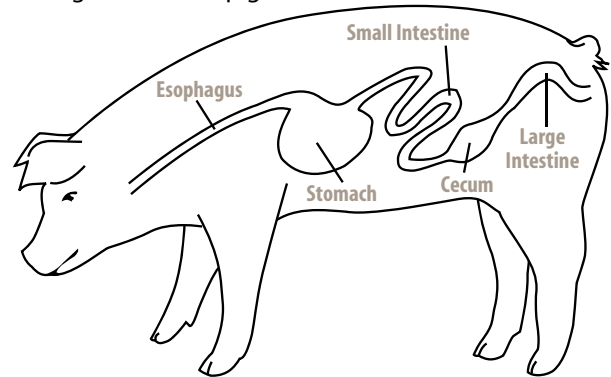
There are eight major swine breeds. These are Berkshire, Chester White, Landrace, Yorkshire, Hampshire, Duroc, Poland China and Spotted. However, many swine are crossbreeds, which incorporate the best traits of two or more breeds.

When sows give birth it is called farrowing. After three months, three weeks and three days, or 114 days, a sow gives birth to eight to 12 piglets called a litter. It isn't unusual for a sow to raise five or more litters in her lifetime. Piglets are born with eight needle-sharp teeth which are sometimes clipped to prevent injury to the sow and other piglets. Their curly tails are often shortened to prevent tail biting. Pigs do not have sweat glands so a mist of water must be provided in the hot summer months to keep them cool.

Piglets weigh about three pounds when born and are 29.4 centimeters in length (approximately 11½ inches). They are weaned from the sow between two and three weeks of age.

Pigs are fed a diet primarily consisting of ground corn, which provides many essential nutrients. Soybean meal is added to the diet to provide protein to build muscle. Vitamins and minerals are also included in their diet. It takes approximately 920 pounds of feed to raise a hog for market. This same hog would drink about one-and-a-half to two gallons of water a day.

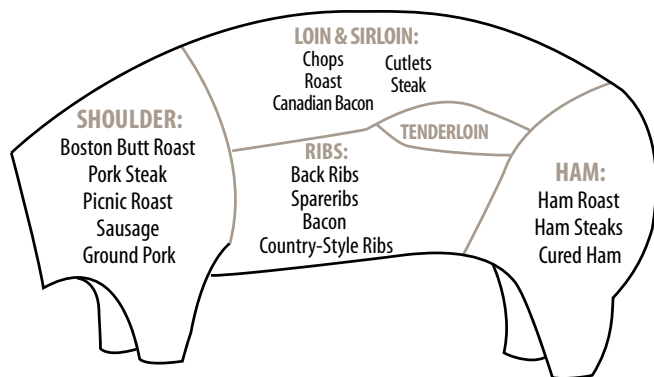
Swine are sold at market when they weigh from 250 to 280 pounds and are about five to six months of age. Some gilts are usually kept in the herd for breeding to produce the next generation of pigs.



## Simple Digestive System

Swine have a digestive system similar to humans. This is different from ruminant animals such as cattle that can eat forages or grasses. Pigs can only digest feed such as corn and soybean meal which is ground into small particles.

## Products



## Cuts of Pork

Pork is the meat that comes from a pig. People eat many different pork products, such as bacon, sausage, pork chops and ham. A 265-pound market hog will yield about 160 pounds of pork for a grocery store's meat case. Pork is the most widely eaten meat in the world.

## Other Products

In addition to meat, swine provide other products as well. These include insulin for the regulation of diabetes; valves for human heart surgery; suede for shoes and clothing; and gelatin for many food and non-food uses. Swine products are used in insulation, rubber, antifreeze, certain plastics, floor waxes, crayons, chalk, adhesives and fertilizer.



# VOCABULARY

**alfalfa:** a legume (plant) used for forage or hay in livestock feeding.

**antibodies:** a protein produced by an animal which destroys or inhibits the growth or action of another microorganism.

**avian:** pertaining to poultry and/or fowl.

**barrow:** a neutered male pig.

**beef cattle:** breeds of cattle suitable for meat production.

**boar:** a male pig, any age.

**bovine:** pertaining to cattle.

**brand:** an owner's identification mark applied to a specific area of an animal's body.

**breed:** a group of animals with common ancestry, possessing certain inherited characteristics which distinguish them from other groups of animals.

**breeding:** the pairing of a male and a female of the same species to produce offspring.

**broiler:** a chicken of either sex about seven weeks of age.

**bull:** a male bovine of any age.

**by-product:** a substance produced during the making of another product.

**calf:** the offspring of a cow.

**calving:** to give birth to a calf.

**colostrum:** the first milk produced by a female mammal after giving birth. It contains high levels of antibodies, protein and energy.

**cow:** a mature female bovine that has produced an offspring.

**crossbred:** an animal which is the combination of the best traits of two or more animal breeds.

**cud:** food that is brought up from the first compartment of the stomach to the mouth of a ruminant to be re-chewed.

**dairy cows:** breeds of cows suitable for milk production.

**dairy processing plant:** where raw milk is taken to be processed and put into containers or made into cheese, butter or ice cream.

**digestive tract:** a part of the digestive system, where food is converted into energy.

**domesticated:** adapting to life in association with and to the use of humans.

**down:** very fine soft feathers.

**embryo:** a fertilized egg.

**ewe:** a female sheep of any age.

**farrowing:** to give birth to piglets.

**felting:** the process of making a type of cloth from wool by using agitation (matting and pressing the fibers) in combination with moisture. Heat can also be used to speed up this process.

**fertile:** the ability to reproduce.

**fleece:** the outer covering of wool from a sheep.

**flock:** a group of animals that live, travel or feed together.

**forages:** plants used for feed by animals (e.g., alfalfa, hay, corn silage or other hay crops).

**freshening:** the ability of cows to give milk after calving.

**gestation period:** period of pregnancy: in beef and dairy cows, the average period is 281 days; in sheep, the average is 147 days; in swine the average is 114 days.

**gilt:** a female hog that has not borne a litter of piglets.

**heifer:** a young female of the cattle species that has not borne a calf.

**hen:** a mature female chicken or turkey.

**homogenized:** the process during which the particles of fat in the milk are broken up so that the cream (fat) does not separate and rise to the top.

**incubation:** the process of keeping eggs under controlled conditions of heat and moisture to permit the fertile eggs to hatch. Chicks require 21 days and turkeys 28 days to hatch.

**lactation period:** the length of time a female gives milk following the birth of an offspring; usually with reference to dairy cows and milk goats.



# VOCABULARY

**lambing:** to give birth to a lamb or lambs.

**lanolin:** an oil extracted from sheep's wool and used in cosmetics and lubricants.

**layer:** a female chicken producing eggs regularly.

**legume:** a plant, such as the soybean, that has the ability to use soil bacteria to pull nitrogen from the air and use it for its growth.

**litter:** a number of offspring born at the same time from one sow. (Cats and dogs also have litters.)

**livestock:** domestic farm animals raised for production. Examples include dairy, beef, sheep, goats, swine and poultry.

**milk:** a liquid produced by female mammals after they give birth; used to feed their young or as food for humans.

**milk replacer:** a substance which resembles the nutritional make-up of milk and is used to supplement young animals' diets.

**molting:** the shedding of feathers by chickens, accompanied by a reduction or ceasing of egg production for a short period of time.

**monogastric:** having only one stomach or stomach compartment (like humans and swine).

**needle-punched wool:** an unwoven product that results from mechanically pushing barbed needles through a wool batting; the fibers interlock until a fabric structure is attained, similar to felting.

**offspring:** the young of an animal.

**ovine:** pertaining to sheep.

**parturition:** the act or process of giving birth.

**pasteurized:** a process of heating milk to kill disease-producing bacteria; this helps to prevent spoiling without destroying the vitamins or changing the taste.

**piglet:** a young pig.

**porcine:** pertaining to swine.

**poult:** a young turkey.

**poultry:** chickens, ducks, geese, turkeys and other domesticated birds raised for eggs or meat.

**pullet:** a female chicken up to six months of age.

**ram:** a male sheep of any age.

**ration:** the amount of food supplied to an animal for a specific period, usually for a day.

**roaster:** a young meat bird, 10 to 12 weeks old weighing eight to nine pounds, used for pan roasting.

**rooster:** a male chicken of any age.

**roughage:** feeds high in fiber and low in total digestible nutrients such as hay and silage.

**ruminant:** an animal having a stomach with four compartments. Its digestive process is more complex than that of animals having a true (or monogastric) stomach.

**shearing:** removal of the wool from a sheep.

**sheep:** an ovine species that produces both meat and wool.

**shepherd:** a person who takes care of sheep (also called a sheepherder).

**silage:** an entire plant (stalk, leaves and grain), coarsely chopped, stored and fermented, and used for livestock feed. Moisture content is approximately 65%. Three pounds of silage is nutritionally equivalent to one pound of hay.

**silos:** a pit or a tall, airtight, cylindrical structure in which silage is stored.

**sire:** the male parent of an animal.

**sow:** a mature female hog.

**species:** a group of animals closely related with similar form and function.

**steer:** a neutered male of the cattle species.

**swine:** another name for hogs.

**tom:** a male turkey.

**wean:** to remove a young animal from its mother that has been nursing.

**weaving:** a process in which yarn is interlaced to make fabric.

**wether:** a neutered male sheep.

