

Home Grown in Illinois

Grade Level: 4-8

Lesson Overview

Most people would guess that Illinois farmers grow a lot of corn. But is corn the only farm commodity produced in Illinois? What's a commodity, anyway? In this lesson, students will review commodity cards to learn about the top farm commodities from this state. They will then research another farm product in order to create an informational page to share with others.

Student Objectives

1. Identify Illinois crops and commodities.
2. Research Illinois commodities.
3. Develop an informational sheet about an Illinois commodity.

Materials

- ✓ Commodity Research Guide worksheet
- ✓ Commodity Fact Sheets on corn, soybeans, wheat, beef cattle, dairy cattle, and swine
- ✓ internet and/or other research materials.

To create new commodity sheets the following items may be needed

- ✓ paper
- ✓ construction paper
- ✓ poster board
- ✓ markers
- ✓ colored pencils
- ✓ crayons
- ✓ magazines
- ✓ computers/tablets

Vocabulary

- **beef cattle** – cattle raised primarily for their meat.
- **by-product** – a secondary product, resulting from processing or manufacturing.
- **commodity** – any good exchanged in trade. Usually refers to raw materials and agricultural products traded principally on the basis of price.
- **corn** – tall annual cereal grass bearing kernels on large ears: widely cultivated in America in many varieties.
- **dairy cattle** – cattle raised mainly for their milk.
- **dairy products** - milk and products made from milk.

- **horseradish** – a cultivated plant of the mustard family, the pungent root of this plant is often ground and used as a condiment and in medicine.
- **popcorn** – corn with kernels that burst open to form a white starchy mass when heated.
- **poultry** – fowl, or birds, that have been domesticated or kept by humans.
- **pumpkins** – the usually round orange fruit of a vine of the gourd family widely used as food.
- **sheep** – any of numerous ruminant mammals, closely related to goats, raised for wool, meat and leather.
- **soybean** – a pea-sized legume seed that grows on bushy plants, 3 – 5 feet tall.
- **swine** – a domestic animal developed from the European wild boar and raised for meat and other products.
- **wheat** – a cereal grain that can be made into a fine white flour used mostly in breads, baked goods (as cakes and crackers), and pasta (as macaroni or spaghetti). Also used in animal feeds.

Background Information

Illinois has more than 72,000 farms. Illinois farmland covers nearly 27 million acres, which is about 75% of the state's total land area. Many commodities are grown and raised in Illinois. Illinois is a leading producer of corn, soybeans, horseradish, and pumpkins. Wheat is widely grown in some regions. Beef cattle and swine are among the top livestock raised in Illinois. Illinois' climate and varied soil types enable farmers to raise and grow many other agricultural commodities including popcorn, sweet corn, hay, oats, grapes, Christmas trees, apples, peaches, dairy cattle, goats, horses, poultry, and sheep. These commodities are processed to be used in many products people use every day.

Procedure

1. As an interest approach, have samples of the commodities listed and to be researched or use the commodity sheets provided. Ask the students what these items have in common? They are all Illinois commodities.
2. Review the commodity pages that are provided in this lesson with students; discussing what the commodity is, how it is used or consumed, when it is planted and harvested, how it is raised, nutritional information about the commodity and what it looks like throughout its life cycle. Present the following commodities to the students: corn, soybeans, wheat, dairy cattle, swine, and beef cattle.
3. Divide the class into groups to work as teams to create commodity information sheets for the following Illinois products: popcorn, horseradish, pumpkins, sheep, horses, and poultry (chickens or turkeys).

4. Commodity information sheets should include the following facts and information, using the Student Worksheet – Commodity Research Guide. Have the students use classroom resources of paper, construction paper, poster board, markers, colored pencils, crayons or magazines to create the Commodity Information Sheet on their commodity of choice.
 - What is the commodity?
 - What is the background or history of this commodity?
 - How is the commodity mainly used or consumed?
 - Where is the commodity mostly grown or raised?
 - Which states lead in the production of this commodity?
 - If a crop - What is the growing season for this commodity, include planting and harvesting?
 - If an animal - What are the growth factors and feeding requirements for this commodity?
 - What products come from this commodity?
 - What by-products come from this commodity?
 - How is this commodity processed?
 - What are some nutritional facts about this commodity?

Extension Activities

1. Once the Commodity Information Sheets are completed create a class book of all the pages created.
2. Use the commodity cards to decorate a school bulletin board.
3. Have the students convert their Commodity Information Sheets into a PowerPoint presentation.

Additional Resources

- <http://www.agintheclassroom.org/TeacherResources/TeacherResources.shtml>
Illinois Agriculture in the Classroom has interactive Ag Mags, Ag Readers, and a calendar with more information on the various commodities in this lesson.

Standards

Illinois English Language Arts Standards

CCRA.W.7 Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

CCRA.W.2 Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

CCRA.R.1 Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

Illinois Social Science Standards

SS.EC. 2.4. Describe how goods and services are produced using human, natural, and capital resources.

SS.EC.1.5. Analyze why and how individuals, businesses, and nations around the world specialize and trade.

The **M**ultidisciplinary **A**gricultural **I**ntegrated **C**urriculum (mAGic) was created in 2004 under the leadership of the Illinois State Board of Education (ISBE) and the Facilitating Coordination in Agricultural Education Project (FCAE). Funding was made available through the FCAE grant budget from the agricultural education line item of the ISBE budget. This revision, as printed, was developed in January 2021.



These mAGic lessons are designed to bring agriculture to life in your classroom. They address the Illinois Learning Standards in math, science, English language arts and social studies.

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Name _____

Commodity Research Guide Worksheet

1. What is the commodity?
2. What is the background or history of this commodity?
3. How is the commodity mainly used or consumed?
4. Where is the commodity mostly grown or raised?
5. Which states lead in the production of this commodity?
6. If a crop - What is the growing season for this commodity, include planting and harvesting?
7. If an animal - What are the growth factors and feeding requirements for this commodity?

8. What products come from this commodity?

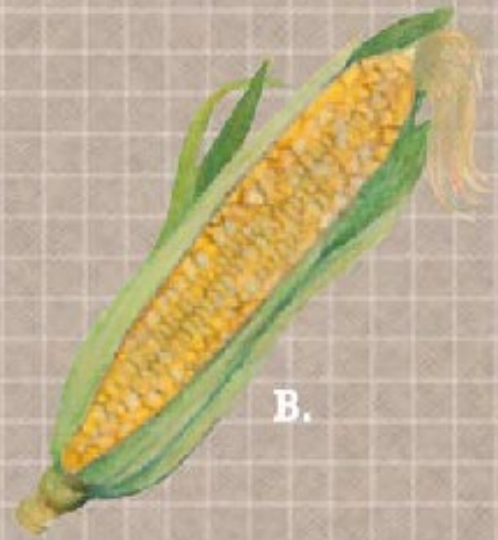
9. What by-products come from this commodity?

10. How is this commodity processed?

11. What are some nutritional facts about this commodity?



A.



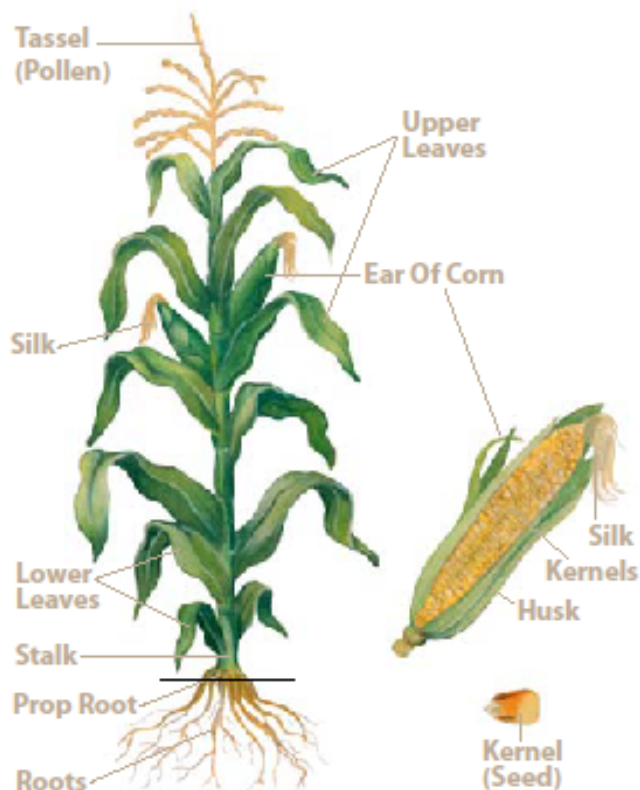
B.



C.

CORN

CORN



On The Front

A. Corn Plant

Corn is an annual plant that grows seven to ten feet tall. Strong roots called prop roots help support the cornstalk. A tassel grows at the top of each jointed cornstalk and contains hundreds of small flowers that produce pollen. Long, swordlike leaves grow outward from the stalk and end in a pointed tip.

B. Ear of Corn with Kernels

Ears of corn grow where the leaves join the stalk. A plant normally has one or two ears. Special leaves, called husks, protect each ear. An ear consists of a comcob covered with rows of kernels. An ear may have 12, 14, 16 or more rows of kernels.

C. Single Kernel or Seed

Each corn kernel has what looks like a silk thread that runs from the kernel up the row, and sticks out of the husk at the end of the ear. This thread is called the corn silk. Each silk needs to be pollinated to produce a kernel of corn.

Corn

Most of the corn grown in the United States is produced in the Corn Belt, which includes Illinois, Indiana, Iowa, Minnesota, Missouri, Nebraska, Ohio and South Dakota. Producers in the United States feed the largest part of the corn crop to cattle, hogs, sheep and poultry. The rest is used for processed food or industrial products such as ethanol, cornstarch and plastics. The U.S. exports corn to such countries as Japan and Mexico.

The different types of corn include dent corn, sweet corn, popcorn and food grade corn. Dent corn is commonly called "field corn" because it is fed to livestock. Sweet corn, popcorn and food grade corn are used for human food.

Field Corn

Producers use hybrid seeds to grow crops each year. Hybrid corn is made by crossing two or more corn plants to produce a reliable corn seed. Corn is planted in the early spring using a corn planter. The machine drops the kernels into rows and then presses the soil around each kernel. A producer may cultivate the corn when it is still small. This is similar to hoeing a garden. It helps get rid of the weeds that compete with the corn plants for water and nutrients.

The Growing Factor

Today's producer grows a bushel of corn with only six minutes of labor using tractors and special equipment. Native Americans, by hand-planting, hand-hoeing and hand-picking, required 20 hours of labor to produce the same amount.

Before a producer plants the corn seeds, fertilizer is placed in the soil that helps feed the corn plant. Rain is extremely important because the corn plant needs water to grow. If rain is not adequate, ground or surface water can be applied. This is called irrigation.

Sometime between late September and November the corn will be dry enough to be picked or harvested. Corn is harvested by a large combine. The machine removes the ear of corn and separates the kernels from the corn cob. Parts of the corn plant are left in the field to protect the soil for the next year.

Products

The corn kernels are transported to processing plants to be used in food and industrial products. Corn can be found in more than 3,500 products in a grocery store. Fructose, a liquid sweetener from corn, is used to sweeten soda pop, candy, cake and cookie mixes, to name just a few items.

Ethanol is a renewable fuel made from corn and blended with gasoline for use in cars, small engines, trucks and buses. It reduces pollution emissions and reduces U.S. dependence on foreign oil. Distillers grain is a co-product of ethanol production that is used to feed livestock. Corn, ethanol and distillers grain are important products to producers and consumers.

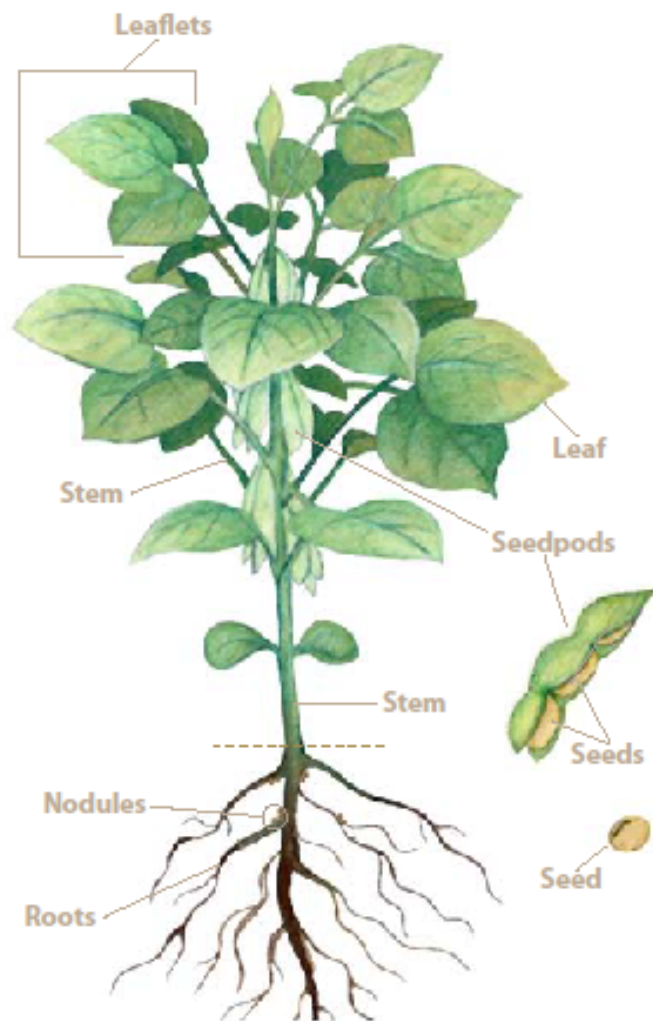
Poly(lactic acid) (PLA) is derived from the starch of the corn kernel. It is reducing dependence on foreign oil and is being used in the production of packaging materials, plastic cups, plates, table service, golf tees and other plastic products. PLA is used in fibers for clothing and carpet. These products from PLA are friendly to the environment and biodegradable when composted.



SOYBEANS

Alfred Russel Wallace

SOYBEANS



On The Front

A. Soybean Plant

The soybean plant is called a legume. Legume plants have the ability to use soil bacteria to pull nitrogen from the air and use it for its growth. This is important for growing healthy crops and maintaining soil quality.

B. Soybean Seedpod

Soybeans grow in pods similar to peas. During the summer, the soybean plant flowers and produces 60 to 80 pods. Soybean pods range in color from very light yellow to shades of gray, brown or black.

C. Soybean Seed

Two to four pea-sized beans grow in each soybean pod. The seeds may be yellow, green, brown, black or speckled.

Soybeans

More soybeans are grown in the United States than anywhere else in the world. Soybeans were used primarily to feed livestock until the early 1900s, when scientist George Washington Carver discovered that soybeans provided valuable protein and oil.

The soybean provides many nutrients to both people and animals. It is especially high in protein. Many countries use soybeans as their main source of protein instead of meat, eggs or cheese.

Planting

Farmers plant soybeans in the spring when the soil temperature is above 55°. The soybean plant has nodules that are attached to the root system and contain nitrogen for the next crop. This makes the soybean a valuable plant in crop rotation.

As the soybean plant grows, it branches out in all directions and produces many leaves. The bushy plant grows from two to three-and-a-half feet high. The stems, leaves and pods are covered with short, fine hairs. Small white or purple flowers grow where the leaf joins the stem. At the end of the growing season, the leaves will turn yellow and drop to the ground. Soybeans are harvested in the fall with a combine.

Processing

Soybean oil is a popular vegetable oil in the United States. When crushed and pressed, soybeans produce an oil that is used in margarine, cooking oils, salad dressings, mayonnaise and many prepared foods. Soybean oil contains no cholesterol and is low in saturated fat so it is popular with health-conscious people.

Soybean oil also is used to make paints, varnishes, soaps, cosmetics, plastics and crayons. Soybean oil is even used to make ink for printing newspapers and magazines. Soy biodiesel is another product made from soybean oil. This fuel is used in cars, trucks and buses, which reduces pollution and increases engine performance. Soy biodiesel is a renewable resource and lessens U.S. dependence on foreign oil which is not a renewable resource.

After soybean oil is removed in processing, the remaining flakes are processed into food products or protein meal for animal feed. Soybean meal is an important protein source for livestock and poultry.



WHEAT

Alfred Russel Wallace

WHEAT



On The Front

A. Wheat Plant

Wheat is an annual grass plant that grows two to three feet tall. The plants have long and narrow green leaves that turn golden as harvest nears.

B. Wheat Head and Kernels

The wheat head contains kernels or seeds and is located at the top of the plant. Kernels are the only part of the wheat plant used for human food. Each wheat head contains 50 to 75 kernels.

C. Wheat Kernels

Wheat kernels are very small. A bushel of wheat weighs about 60 pounds and contains about one million kernels. If wheat averages 35 bushels per acre, a baker can make 1,960 loaves of bread. An acre is about the size of a football field.

Wheat

Wheat is used mostly for human food. History shows that the first people to eat wheat probably did so 17,000 years ago by chewing kernels of the wild grain.

There are two major types of wheat planted in the United States. They are winter wheat and spring wheat. Winter wheat is planted in September and harvested the following summer. Spring wheat is planted in April or May and is harvested in August or September.

Two types of winter wheat are used primarily to make breads and hard rolls. These are called Hard Red winter wheat and Hard White winter wheat. The Hard White winter wheat has the same qualities and functionality as Hard Red winter wheat, but white in color. Millers and bakers are able to make a whole wheat product that looks and tastes like an enriched white flour product.

Planting

The soil must be prepared before winter wheat is planted in the fall. First, a disk is used to turn and loosen the soil and to destroy any young weed plants. Pulled behind a tractor, a disk has a set of metal "plates" that dig deep into the soil. An implement called a harrow is used to smooth out the soil for planting.

Wheat is planted by a machine called a grain drill. First, a shovel cuts a trench into the soil so the seeds can fall into the ground. A "notched wheel" feeds the seeds into a tube and drops the seeds one at a time into the trench. Loose soil is pressed over the seeds. Now the seeds are ready to grow.

Growing Cycle

The seed begins to grow when there is enough moisture in the soil. The first signs of growth are tiny root hairs that stretch down into the soil. Eventually, a small shoot pushes upward through the soil.

Tissue within the wheat seed provides the plant with its first nourishment. As the plant grows, it uses the sun to make food in its leaves. Its roots get food from the soil. Winter wheat grows four to eight inches tall in the fall, but stops its growth when winter arrives.

In the spring, the wheat plant grows many leaves and sends up three to 12 stems called tillers. A group of flowers called a spike develop at the top of each tiller and mature into the wheat head. Kernels within the head grow and turn golden before harvest.

Harvest

The wheat must be dry before it can be harvested. A machine called a combine is used to cut, separate and clean the grain with one pass through the wheat field. The producer takes the grain to the nearby elevator. From the elevator, the wheat will be sold to be processed into food for humans or livestock feed.

Wheat is ground into flour at a mill. Most products such as bread, rolls, cookies, pastries and bagels are made from wheat flour. Bran from wheat is added to breakfast cereals for fiber. Other products made from wheat include spaghetti, muffins, crackers, tortillas and macaroni. Wheat products have carbohydrates, protein, minerals and vitamins.



Bull



Cow



Calf

BEEF CATTLE

Wm. Linn

BEEF CATTLE

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.

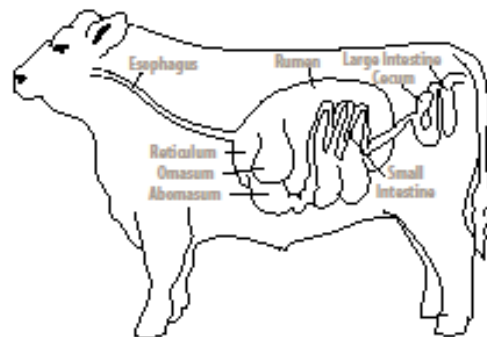
The United States and Australia are the top beef-producing countries in the world. There are many breeds of beef cattle. Hereford and Black Angus are among the most popular. Some cattle are crossbred, which combines the best traits of two or more breeds.

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.

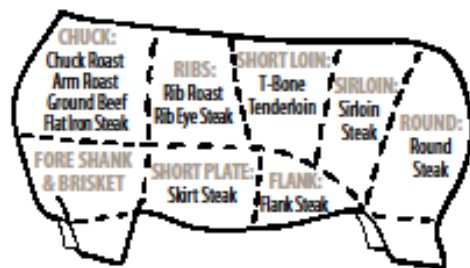
Cattle in the feedlot eat corn, alfalfa and silage. Their diets may also include crop by-products such as cotton seed hulls, corn stalks and sugar beet pulp. Even leftover bakery products can be ground and used as part of a balanced feed ration. Feedlot cattle are usually ready for market at 18 to 20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

This card was developed by the Nebraska Foundation for Agricultural Awareness and with assistance from the Nebraska Beef Council. The printing was funded by a grant from USDA-Agriculture in the Classroom Consortium.



Bull



Cow



Calf

DAIRY CATTLE

Handwritten signature

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.



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 11 $\frac{1}{2}$ 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.

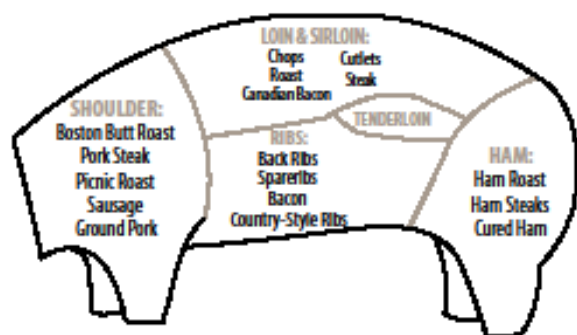
Swine are sold at market when they weigh from 250 to 280 pounds and are about five to six months of age. Some gilts are usually kept in the herd for breeding to produce the next generation of pigs.



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.