

4-H BEEF PROJECT

(UT/UC Production; NY version planned for 1998)

Performance Objectives of 4-H Beef Projects

To aid the development of young men and women into responsible American citizens by:

- * Teaching responsibility through working with animals that depend on the member to provide proper feed and care.
- * Teaching the value, use and management of money through its investment in animals, feed, equipment and receiving a return on its investment.
- * Teaching sportsmanship and cooperation through participation in shows and working with other members.

To help young people gain an appreciation for:

- * The place of livestock in agriculture and its contribution to people.
- * The complexity of the digestive system of a ruminant animal.
- * The importance of proper growth and development of breeding animals in setting the foundation for purebred and commercial herds of their own.

To help young people gain skills in:

- * Selecting the kind of animal that will make rapid, efficient gains and produce a high quality product.
- * Feeding animals for optimum growth and proper development.
- * Grooming and showing steers and heifers.
- * Keeping records.

4-H Materials in the Beef Project Include:

Unit 1 Exploring Beef Cattle
Unit 2 Breeds of Beef Cattle
Unit 3 Nutrition of the Beef Animal
Unit 4 Careers in Animal Science
Unit 5 Beef Cattle Marketing
Unit 6 Add 300 Backgrounding Manual
Grades 5-12 Beef Cattle Handbook
Grades 5-12 Intro Beef Heifers
Grades 5-12 Market Steer Handbook
Grades 5-12 Beef Heifer Record Book
Grades 5-12 Market Steer Record Book
Grades 5-12 Beef Backgrounding Tracks

Exploring Beef Cattle

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Learning Objectives

In this project, Exploring Beef Cattle . . . members will learn about:

- * the history of cattle.
- * the parts of cattle.
- * how beef cattle benefit people.
- * wholesale cuts of a beef carcass.
- * the other products we get from beef cattle.
- * the different types of beef production.
- * how to talk like a cattle producer.
- * the 4-H beef project.
- * the 4-H beef heifer project.
- * the 4-H market steer project.
- * careers in beef.

Requirements to Complete This Project

- * Enroll as a 4-H member in the beef project.
- * Read and study Unit 1.
- * Complete the exercises and activities at the end of this publication.
- * Finish the records and activities as indicated by either your 4-H agent or leader.
- * Visit a cattle operation--either a cow/calf or purebred operation.
- * Attend or visit an auction market in session.

Exploring Beef Cattle

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Welcome to the 4-H beef project. When you enrolled in this project, you became part of one of the largest livestock enterprises in the United States. There are approximately 1,400,000 cow-calf producers and 138,000 cattle feeders in the United States. The 4-H beef project is also one of the most popular livestock projects. Have you ever wondered about beef cattle and how they help us? By reading this publication and completing the exercises, you will learn:

- * about the history of cattle.
- * about the parts of cattle.
- * how beef cattle benefit people.
- * about wholesale cuts of meat.
- * about the other products we get from beef cattle.
- * about the different types of beef production.
- * how to talk like a cattle producer.
- * about the 4-H beef project.
- * about the 4-H beef heifer project.
- * about the 4-H market steer project.
- * about careers in beef.

History of Cattle

Cattle was one of the first livestock tamed by people. Cattle were first tamed in Asia about 5,000 to 6,000 years ago. The dog and pig were probably two animals domesticated earlier than cattle.

Cattle were used by people for food, for clothing, to pull loads and for religious sacrifices. Even today, cattle are considered to be either holy or sacred in some countries. Also in early times, people's wealth was measured by the number of cattle in their herds.

Cattle came from animals called "Urus". These animals lived in Asia, Europe and North Africa. The Urus were very large, long horned, powerful animals that were over six feet tall at the shoulders.

Most of the "modern-day" cattle belong to two different types--the "Bos taurus" and the "Bos indicus". The "Bos taurus" cattle originated in Europe while the "Bos indicus", sometimes called Zebu, probably came from India. The "Bos indicus" are better suited for the tropics, while the "Bos taurus" are better adapted to colder climates. These adaptations came about through thousands of years of natural selection under these conditions.

Cattle gradually spread all over the world as new countries were settled, and now cattle are raised throughout the world. Asia has the greatest number of cattle of any continent, followed by South and North America. India has more cattle than any other country, with the United States and Russia next in numbers. In about one-third of the world today, cattle are still used to pull wagons and do other work.

Cattle were brought to North America by Spanish and English settlers. Cattle were not natives of either North or South America. Columbus brought cattle to the New World on his second voyage in 1493. Spanish explorers took cattle and livestock with them when they explored the West. Some of these cattle escaped and became the ancestors of the "Texas Longhorns". English settlers brought cattle to Jamestown in 1611. As colonists continued to settle the East Coast of the United States, cattle were imported mostly from Great Britain with a few from the European Continent. As the settlers moved westward across the United States, cattle went with them. Some of these cattle mixed with the "Longhorns", which eventually led to improvement of the Spanish cattle.

Cattle increased in numbers in the U.S. before and during the Civil War. After the Civil War, people in the north and eastern part of the United States wanted to buy beef

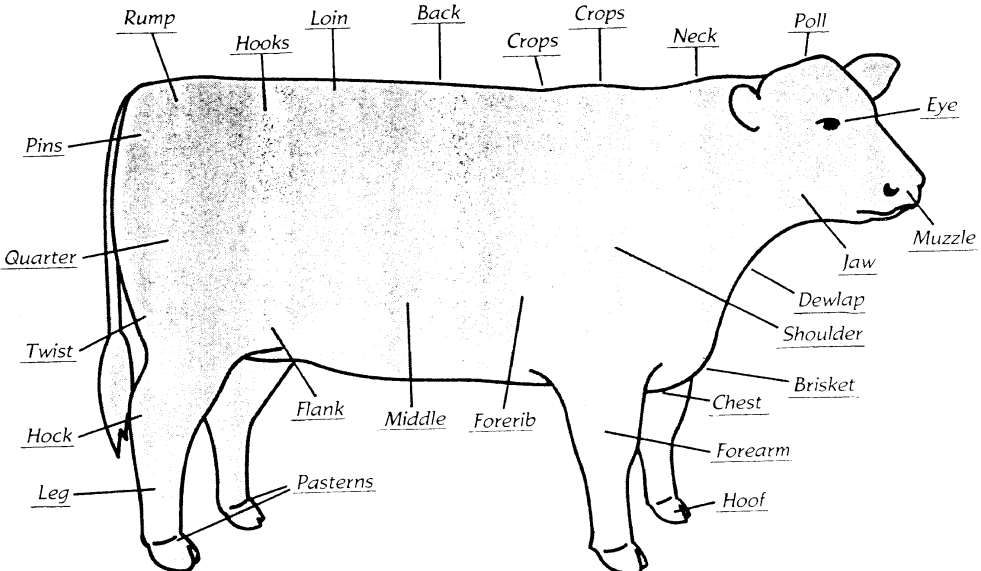
to eat. This led to the "trail drives" in which cattle were driven into towns, loaded on railroad cars and shipped to markets. The building of railroads into the West greatly reduced the number of trail drives.

The cattle business continued to grow until the late 1800's, when a "bust" occurred. A "bust" means that many ranchers went broke during this time. Several things such as drought, short pastures caused by overstocking and winter losses of cattle caused the bust.

Another reason for the decline in the western cattle business was a disease called "Texas fever". This disease caused a large number of cattle to die. The disease was spread by the bite of a tick. Homesteaders also settled in the West where they farmed and plowed the grassland, which reduced the available land for grazing.

Beef cattle production has since recovered and continues to grow. It is popular in all sections of the United States. Many people depend on beef cattle for income in the United States.

Let's Learn About the Parts of Cattle



Let's Learn How Beef Cattle Benefit People

Beef cattle are raised by farmers and ranchers as a source of money. Farmers and ranchers sell the cattle, and they eventually become food for humans.

Cattle belong to a special group of animals called ruminants (room-i-nants). This group of animals has four stomach compartments. Some other ruminants are sheep, goats, buffalo, camels and deer.

Because of their four-compartment stomach, cattle and other ruminants are able to eat and digest feed that other livestock with simple stomachs (hogs and chickens) cannot eat. Cattle can eat grass, hay, silage and other roughage. This kind of feed is less expensive and lower in energy than grain or other concentrates.

Because beef cattle can eat large amounts of grass and other roughage and convert this material into meat, they play a very important role in both the production of food and other products. Beef cattle produce many products that are useful to people. You will learn more about these later.

Let's Learn About the Meat, Beef

The main purpose for raising beef cattle is the production of beef. Beef is the favorite meat in the United States and makes up about one-half of the meat eaten in this country. The average American eats approximately 100 pounds of beef each year.

Beef is a source of high quality protein. It is a better protein source than that found in plants. Beef is also an excellent source of B-vitamins.

Some of the cuts of beef that can be found in a supermarket include steaks, roasts, ground beef or hamburger and stew meat. The most popular beef eaten in the United States is ground beef or hamburger.

A properly fed and finished slaughter steer will produce a carcass that will weigh about 60 to 61 percent of its live weight. A beef carcass is that part of the animal that is left after the hide, head, feet and insides of the animal are removed. For example, a 1,000-pound steer should produce a carcass weighing from 600 to 610 pounds of USDA Quality Grade Select (dressing percentage equals approximately 60%).

Not all of the beef carcass will be made into cuts of beef. Most beef carcasses will produce about 25 percent of their weight in steaks, 25 percent in roasts, 25 percent in hamburger and 25 percent fat and bone. Therefore, a properly finished 1,000-pound steer will eventually produce 432 pounds of beef that could be sold through a supermarket. If all of the carcass could be sold as hamburgers, it would make 1,728.

The better wholesale cuts of beef are the rib, loin, rump and round of the carcass. These are called the "high-priced cuts". These cuts are more tender and have less waste of bone and fat than the low-priced cuts.

Learn the wholesale cuts of a beef carcass.

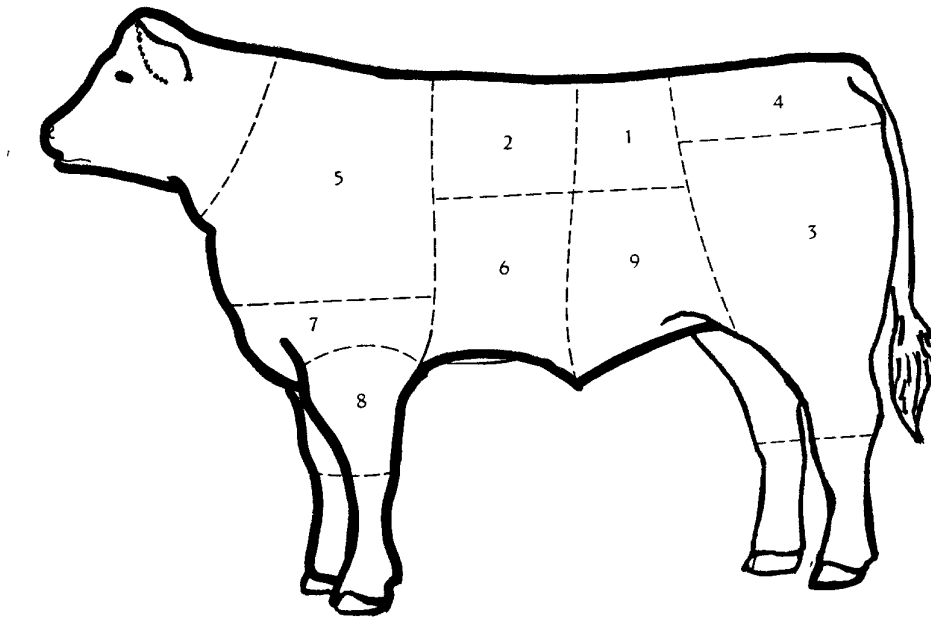
Some parts of the carcass produce better, more expensive cuts of beef than other parts of the carcass. The more desired cuts come from the rib loin, rump and round of carcass and are called "high-priced cuts".

High-Priced Cuts

1. Loin
2. Rib
3. Round
4. Rump

Low-Priced Cuts

5. Chuck
6. Plate
7. Brisket
8. Shank
9. Flank



Let's Learn About the Other Products We Get from Beef Cattle

Slightly less than half of the beef animal is beef. The other half is used to make many valuable products. Several of these can be used by people: hides to produce clothes, gloves and shoes; many oils and greases to be used with machines and tools; drugs to benefit people; and other materials that can be used to make cosmetics, soap, china and other products.

Let's Learn About the Different Types of Beef Production

Beef production can be divided into three parts. These are (1) commercial cow-calf production, (2) backgrounding or stocker cattle, and (3) slaughter production or finishing cattle. All of these types of beef production can be carried out on the same farm or ranch. However, in most instances, each production phase is carried out separately. Generally, these production phases are carried out in different locations of the country.

Commercial cow-calf production involves the breeding of cows and the production of weaned calves. Calves are allowed to run with their dams on pasture until they are weaned. Cow-calf production is usually in areas of the country where large amounts of forage are available. Calves are normally weaned when they are 210 to 270 days old. In most instances, the calves are sold. Commercial cow-calf production is popular in that less labor, management and care are required than with other beef production phases.

"Backgrounding" or stocker cattle production involves the feeding and management of weaned calves and growing them up to about 700 to 750 pounds. Backgrounding can be done on the same farm where calves are raised, or there may be special operations where only backgrounding is done. The main purpose of backgrounding is to make the calves gain as much weight as possible on either pasture, hay or silage.

Slaughter cattle or finished cattle production involves placing either feeder cattle or yearlings on high-energy feeds, such as corn, and feeding them to slaughter weight and finish. Cattle finishing is done in areas of the country where large amounts of grain are available. Cattle finishing has been popular in the Midwest or "corn belt" for a number of years. Recently, cattle finishing has grown in the western part of the country. This is the only time that grain is fed to cattle. Grain feeding improves the quality of the beef in that it makes the meat taste better.

Let's Learn About Beef Production

Beef cattle production is one of the most important agricultural enterprises.

Commercial cow-calf production is the most popular beef operation. These cows produce calves which are weaned at about nine months old. Most of the calves are sold and purchased by farmers in the Midwest and western part of the country for backgrounding and finishing.

Beef Cattle Terms

As a beginner in the 4-H beef project, you may not know the meaning of some words that are used by older 4-H'ers and beef cattle producers in talking about their cattle. The following definitions should help you have a better understanding of some of these terms.

Backgrounding: The growing of calves after they are weaned until they are ready to go into a feedlot for finishing. During backgrounding, calves gain approximately 300 pounds. The calves' feed during this time should be either pasture, silage or hay.

Breed: A group of cattle with similar external characteristics (color markings, size, body and shape, horns, etc.) that are passed on from generation to generation.

Breeder: The owner of the dam of a calf at the time she was mated.

Bulls: Male cattle of any age.

Calves: Young cattle under one-year-old.

Carcass: What is left after the head, hide, feet and internal organs have been removed from the animal.

Castrate: The surgical removal of the testicles of a young male calf.

Choice Grade: Slaughter grade of beef cattle which is desired most by people. It tells us that the beef should be tender, juicy, taste good and have little waste fat.

Concentrates: Feeds low in fiber and high in feed value. Examples are grain and most protein supplements.

Cows: Female cattle that have had one or

more calves.

Crossbred: A beef animal that has two purebred parents or grade parents of different breeds.

Dam: Mother of a calf.

Dehorn: To remove horns of cattle.

Fiber: That part of a feed not easily digested by cattle.

Finish: The degree or amount of fat on a market steer.

Forage: A feed high in fiber and relatively low in nutrients. The term "roughage" has similar meaning. Examples are hay, pasture and silage.

Grade: A beef cattle of unknown breed or breed combinations.

Heifers: Female cattle not more than two years old that have not had calves.

Purebred: A beef animal whose parents are of the same breed. Not all purebreds are registered.

Registered: An animal that is offspring of registered parents, is recorded in a herd book of a recognized breed association and has a certificate that says the animal meets registration requirements.

Roughage: Feeds high in fiber and low in nutrients. The term "forage" has similar meaning.

Ration: The feed an animal eats in a 24 hour period, that provides optimum nutrients to the animal.

Sire: The father of a calf.

Steers: Male cattle castrated when very young.

Wean: To take a calf from its mother so it can no longer nurse. Calves are usually weaned at seven to nine months of age.

The 4-H Beef Project

As a 4-H member in the beef project, you may choose to participate in either the 4-H Beef Heifer Project or the 4-H Market Steer Project. These are two of the more popular projects of 4-H members. A 4-H member can carry out both of these projects at the same time.

A 4-H member in the beef project will also have the opportunity to take part in livestock judging~ training, and eventually contests between other 4-H members, 4-H beef project groups, youth beef conferences and beef cattle shows. Not only will you learn a lot about beef cattle, you will also make friendships that will last a lifetime and have lots of fun.

You will also have the opportunity to earn college scholarships. Many 4-H'ers have received these awards as part of their being named national 4-H beef winners. In order to win one of these awards, you will need to keep a record of all things you do in the beef project.

Beef projects are popular with 4-H members because of the number and importance of beef cattle in the state.

Let's Learn About the 4-H Beef Heifer Project

The 4-H beef heifer project is one of the most popular livestock projects. The 4-H beef heifer project provides opportunities for the 4-H'er to learn how to select, feed, care for, manage, develop and show a beef heifer.

4-H members enrolling in the heifer project for the first time should start with a weaning age heifer and care for and manage the heifer so she will grow properly and be successfully shown at county, district and state shows. There are fairs at which a heifer can be shown. To show the heifer, she must be "registered". The heifer should be managed and bred to calve at about two years of age.

After you have been in the 4-H beef heifer project for a year or two and have gained experience, you might want to add other heifers to your project. You might like to build a beef cow herd. The beef heifer project is a long-term effort but can grow and become a valuable investment. Many boys and girls attend college from the income received from a heifer project started when they were young 4-H club members.

If you decide to expand your beef heifer project and establish a beef cow herd, you will learn about genetics, nutrition, reproduction and marketing.

Let's Learn About the 4-H Market Steer Project

The 4-H market steer project is also an interesting, popular and fun-filled project. This project can be carried out by 4-H'ers who do not have the space and other resources to be involved in the beef heifer project. This project can be either carried on with the beef heifer project or can be the only project the 4-H member chooses.

The 4-H market steer project also provides opportunities to learn about selecting, feeding, caring for, managing and properly finishing and showing a beef steer. In addition, you will learn about carcass qualities and marketing your steer.

4-H members participating in the Market Steer Project for the first time should select a weaning steer that weighs 500 to 550 pounds in the fall and "background" the steer until he weighs 750 to 800 pounds. Then the steer should be fed a concentrate ration for 100 to 150 days until he reaches proper weight and "finish". A market steer should weigh 1,000 to 1,200 pounds and grade "choice" by show time.

4-H market steer shows are held each spring and summer. In addition, many other 4-H steer shows are held during county fairs in the fall.

It would be a good idea to have two steers in your project. Feeding one steer does not make good use of facilities and equipment. Also, a calf does better when it is fed with another one. Besides, you can show two steers in most county, district and state market steer shows.

Let's Learn About Career Opportunities in Beef

You can learn many things in the 4-H beef project that could lead to interesting careers. Some of these include: farm manager, beef cattle herdsman, writer for beef magazines and newspapers, teachers, beef cattle researchers, cattle buyers, veterinarians, marketing, nutritionists, beef processors, feed sales and service and many others. You will learn more about careers as you continue to participate in the 4-H beef project.

What Have You Learned About Beef Cattle and the 4-H Beef Project?

After you have read this publication, you should be able to answer the following questions and complete the exercises. If you need help, ask your parents, 4-H leader or Extension agent.

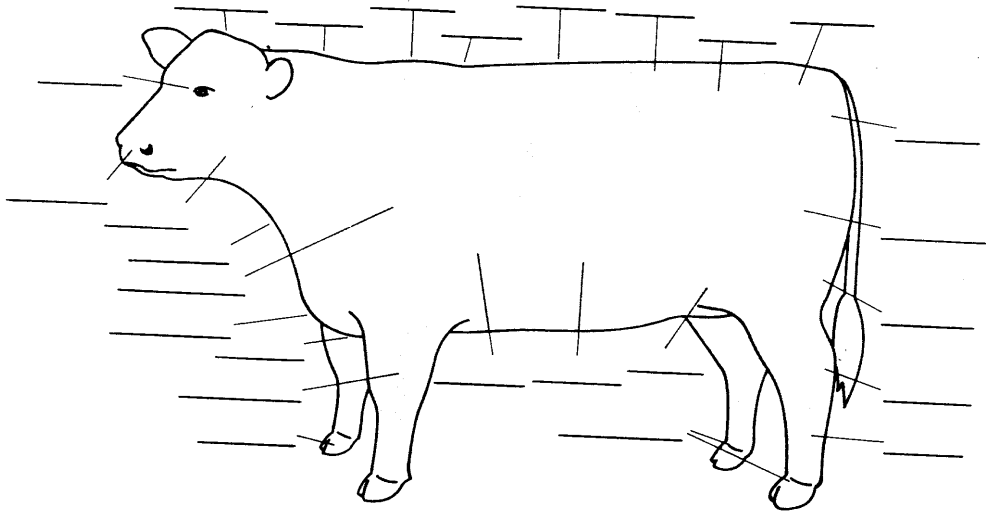
1. What are the two projects you can choose in the 4-H beef project?
2. On what continent did cattle originate?
3. Cattle were brought to the New World by _____ and _____ settlers.
4. What year did Columbus first bring cattle to the New World?
5. Cattle's early ancestors were very large and were called _____.
6. Cattle were first domesticated in _____ and _____ years ago.
7. Cattle were first used by people for _____ and for _____ purposes.
8. Modern day cattle belong to two different species. These are the Bos _____ and the Bos _____.
9. Name the three continents that have the greatest number of cattle:
10. What three counties have more cattle than any others?
11. The "Texas Longhorns" came from cattle that _____ explorers brought with them when they explored the West.
12. One of the reasons for the "bust" in the cattle business in the West was a disease called _____. This disease was spread by the bite of a _____.
13. Beef cattle are raised by farmers as a source of _____.
14. Cattle belong to a special group of animals called _____.
15. Ruminants have _____ compartments in their stomach.
16. Name three roughage that cattle can eat.

17. Cattle are very important in the production of food for people. Cattle eat grass and other roughage and convert it into _____.
18. What is the favorite meat of Americans?
19. The average American eats _____ pounds of _____ per year.
20. List reasons why beef is a good food for people.
21. What is the most popular beef eaten in the United States?
22. What is a carcass?
23. Name the "high priced cuts" of a beef carcass.
24. Name the three phases of beef production.
25. Backgrounding is growing of weaned calves up _____ to _____ pounds.
26. Most of the cattle finishing is done in the _____ and _____.
27. Feeds that are fed to calves during the backgrounding phase are either _____ or _____.
28. Grain is fed to cattle to make beef _____.
29. What type of beef production is popular?
30. Beef cattle are raised on _____ farms.
31. There are approximately _____ million beef cows and ranks _____ in the nation in beef cow numbers.
32. The income from the sale of beef cattle amounts to about \$ _____ each year.
33. The mother of a calf is called the _____ while the father is called the _____.
34. Feed that cattle eat can be grouped into two classes: _____ are high in fiber and low in energy while _____ are high in energy and low in fiber.
35. To remove the horns of cattle is called _____. To remove the testicles of a male calf is called _____.
36. List the things you will learn in the 4-H beef heifer project.

37. A market steer should weigh _____ to _____ pounds and grade _____ by show time.

38. Name five by-products from a beef animal:

Can you name the parts of a cattle's body?



Let's Learn More About Beef

1. Attend a beef show at either your county fair, state fair, district show, or at the Junior Livestock Exposition. List the breeds of cattle you see at the shows.
2. Beef cattle provides meat for people. Visit a food store and list the many different cuts of beef for sale.
3. While you are at the food store, compare the price per pound of hamburger or ground beef with the price per pound of steak.
4. How important is beef in your family's diet? How many times per week does your family eat beef? What type of beef does your family eat the most often?
5. Make a list of feeds that cattle eat in your local area.
6. Check around your house to see what useful things you have that are made from cattle by-products. Review the list of things made from cattle by-products before you start your search. List at least five items.
7. Can you name the parts of a cattle's body?
8. Can you name the wholesale cuts of a beef carcass?
Name the high-priced cuts?
Name the low-priced cuts.

Other Ways to Learn More

1. Join either the 4-H beef project group or 4-H livestock group in your county or community.
You should have several opportunities to learn about beef cattle. List four things you did as a member of the project group:
2. Give a talk on your beef project. What did you talk about?
3. Visit a beef cattle show. Watch how the judge places the cattle. Listen to the judge tell why he or she placed the cattle. List four things that the judge thought were important in making the placings:
4. If possible, attend a purebred cattle sale. How were the cattle sold? Check the kinds of cattle sold.
 - a. Calves
 - b. Cows
 - c. Heifers
 - d. Bulls
5. Visit the livestock auction market in your county. How are cattle sold? List the kinds of cattle sold:
6. Magazines and books are also very important sources of information about beef cattle. List either five magazines or books that you have read this past year that contained information about beef cattle.
7. List as many different careers or jobs that are beef cattle related that people have in your county. You may need to get help from either your parents, leaders or Extension agent in answering this question.
8. Present a demonstration on your 4-H beef project to either your local 4-H club or 4-H beef project group. What did you demonstrate about beef project?

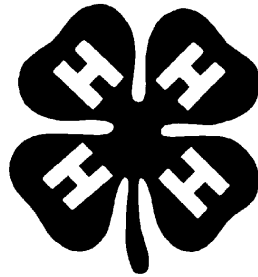
Project Story

Write a short story about your 4-H beef project. Tell why you chose beef as a 4-H project, things you learned about beef this year and what your plans for the future.

THE 4-H PLEDGE

I pledge:

my Head to clearer thinking,
my Heart to greater loyalty,
my Hands to larger service,
my Health to better living,
for my club, my community,
my country, and my world.



THE 4-H CREED

I believe in 4-H Club Work for the opportunity it will
give me to become a useful citizen.

I believe in the training of my HEAD for the power it
will give me to think, to plan, and to reason.

I believe in the training of my HEART for the nobleness
it will give me to become kind, sympathetic,
and true.

I believe in the training of my HANDS for the dignity
it will give me to be helpful, useful, and skillful.

I believe in the training of my HEALTH for the strength
it will give me to enjoy life, to resist
disease, and to work efficiently.

I believe in my country, my state, my community, and in
my responsibility for their development.

In all these things I believe, and I am willing to
dedicate my efforts to their fulfillment.