

# Introduction to 4-H Beef Heifer Project

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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.

## Things You Should Learn

1. How to choose a heifer.
2. How to feed and properly develop a heifer from weaning to calving.
3. How to recognize the important traits of a beef heifer.
4. How to treat your heifer for external and internal parasites.
5. How to vaccinate your heifer.
6. How to keep records.
6. How to groom and show a heifer.

## Things You Should Do

1. Own, feed, grow, and develop one or more heifers.
2. Learn all you can about beef cattle by studying this book as well as others.
3. Keep and complete the records on your heifer project.
4. Take part in beef cattle judging schools.
5. Attend regularly and participate in both your 4-H Club and 4-H Beef Project group meetings.
6. Give at least one talk about your project.
7. Give a demonstration about what you have learned.

# Introduction to 4-H Beef Heifer Project

Complied by:  
James B. Neel  
(pa97038@utkvm1.utk.edu)  
Professor and Leader  
Extension Animal Science  
Agricultural Extension Service  
University of Tennessee  
Knoxville, Tennessee

Reviewed by:  
John R. Dunbar  
(jwoltjen@ucdavis.edu)  
Extension Animal Specialist  
Cooperative Extension Service  
Division of Agricultural and Natural Sciences  
University of California  
Davis, California

## Introduction To The 4-H Beef Heifer Project

Welcome to the 4-H Beef Heifer Project. The 4-H Beef Heifer Project will open the door to many learning and fun-filled experiences. Since beef cattle can be grown on most farms, mother and dad will quickly realize the advantages of the 4-H Beef Heifer Project and how your project can fit in very well with your everyday life. Before you enroll in this project, you should talk to both your mother and dad and have their permission and cooperation. You might like to have either your 4-H Extension agent or 4-H project leader talk about the 4-H Beef Heifer Project with your parents. In order to take part in the 4-H Beef Heifer Project, you will need to have an adequate building, shed, or stall, a feed trough and hay rack, feed storage area, adequate pasture or exercise lot, a source of clean, fresh water, and a small amount of equipment.

This publication is designed as a guide for your 4-H Beef Heifer Project. You will learn about selecting, growing, and developing a beef heifer from weaning to calving as a two-year-old.

One of the more popular activities of the 4-H Beef Heifer Project is showing your heifer at the county, district or state shows. Showing your heifer allows you to meet other boys and girls and learn about competition. You will soon learn that everyone cannot be a winner. Whether you win a ribbon or trophy is not nearly as important as what you learn and apply to your project work over the years.

## Purposes

The 4-H Beef Heifer Project is designed to provide experience in selecting, growing, developing, breeding, and managing breeding animals. This project normally begins with choosing a heifer calf nine months old or less, and feeding, developing and maintaining ownership of the animal. You may eventually wish to start a herd of your own. The Beef Heifer Project is a long-term project, because you may not make any income from your efforts for several years.

## Selection

The type of heifer you select to start your project will have a big influence on your success. If you start with a good producing heifer, your future herd will be a good one. Selection of a beef heifer for a project animal should be based on the financial situation of your family, available project animals, and the farm situation. A breed that is right for your farm should be chosen.

The breed should also be popular and practical in your area. If the heifer is to be shown, you will need to know the age classification which is standard in county, district, and state shows.

Probably the best time to select a project heifer is in the fall when most breeders are weaning their calves. Most beef producers will not wean their calves until they are seven to eight months old. A heifer chosen at this time gives you the chance to learn about feeding, managing, and developing a brood cow from a weaned calf. There will also be a larger number of heifers to choose from.

When selecting a heifer, visit several outstanding purebred breeders, and learn what kind of heifers they have and how much they cost. Most breed associations hold their yearly sales from January through March and usually sell heifers that would be good for the project.

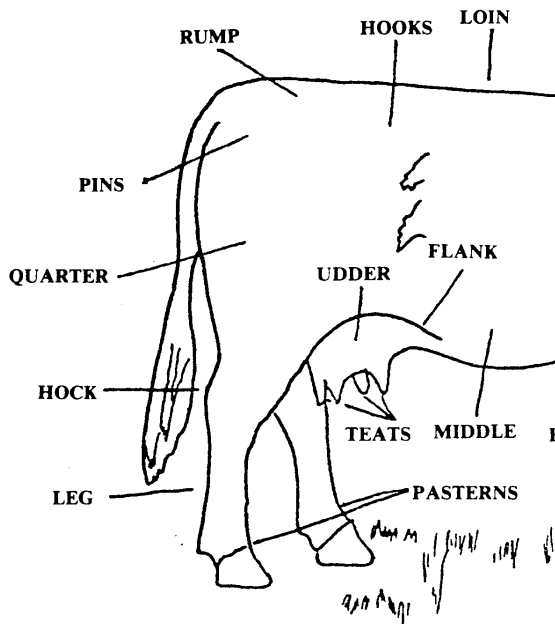
Registration -- If you want to show your heifer, she must be registered. Study the pedigree of the heifer you have selected. Some lines of cattle are not only more popular, but are also more productive than others. If you do not know about pedigrees,

get either your local beef project leader, your parents, or Extension agent to help you.

Check the tattoo of the heifer with the registration certificate. Be sure that ownership is transferred to you. Your final choice should be based on (1) growth rate, (2) reproductive efficiency, (3) conformation, and (4) skeletal correctness.

Growth Rate -- Growth rate is a highly heritable trait and is related to feed efficiency (pounds gained per pound of food). Because of this, emphasis should be placed on growth. If the breeder belongs to the Tennessee Beef Cattle Improvement Program or a breed association improvement program, records will be available which provide information on the overall performance of the herd. From these records you should be able to tell how the growth rate of a particular heifer compares with others in the herd. Use weaning ratios, when selecting heifers above 100. If possible, look at the sire and dam. From this you can get a good idea of whether or not the heifer will develop into a desirable breeding animal. Also compare calves by the same sire with the heifer you're considering. A sign of a good herd is not that it produces one or two top calves each year, but exactly how many top calves it does produce. Chances are that if your heifer comes from a good herd, she will develop into a good cow. Weight for days of age is the best way to tell how much a calf will grow in the future. The following average weights are intended as guides in choosing heifers of the English and Continental breeds:

British Continental  
7 months 450-500 lb. 500-550 lb.  
12 months 600-700 lb. 650-750 lb.  
15 months 650-800 lb. 700-850 lb.



Reproductive Efficiency -- Reproductive efficiency is more important than anything else if you want to make money in the beef cattle business. A heifer should be selected on a herd with a high calf crop percentage (as close to 100% as possible). Ask to see the calving dates of the heifer's dam. If the dam has a record of late calving compared to other cows in the herd, be cautious about choosing the heifer.

A feminine appearance usually means reproductive efficiency. Pick heifers that are lean and trim and look like females. Avoid coarse, masculine looking heifers. Check the heifer's dam to see if she looks feminine.

Conformation and Skeletal Soundness -- You should carefully look at the heifer for conformation and structural soundness. A

**FIGURE 1** heifer with good conformation has just enough muscle but not too much. See Figure 2 for examples of conformation. Do not select a heifer that is as heavily muscled as steers or bulls. Heifers should possess smoother muscling than steers or bulls.

Know the difference between muscle and fat. A fat heifer may look good, but could have future problems in breeding and producing milk.

Select heifers that are average or above average in frame size, with volume, spring and depth of rib, and roomy middle. These qualities are important for reproduction and ability to turn forage into beef.

Skeletal (bone or frame) correctness or soundness is needed for efficient beef production. Strong feet and legs are necessary (Figures 3 and 4 show examples). Beef cattle are kept to use forages that

would otherwise be wasted. To do this they must often travel long distances over rough territory. When the bone structure is weak, stress or pressure on certain muscles and tendons of the body can cause breakdown of the muscles, joints or tendons. This means that bone weakness can shorten the productive life of a cow. Heifers with strong feet and legs are better able to graze many acres and are more likely to have heavier calves. They will stay in the herd longer than heifers with weak bone structure. Some of the common skeletal problems are shown on the following pages.

## **Growth and Development Of the Heifer**

A definite feeding and management program should be planned to take a heifer from weaning to breeding to calving at two years of age. Proper growth and development are important. Fattening the calf up too much will hurt future reproduction and milk production.

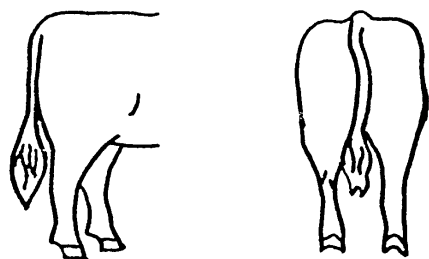
Home grown feeds should be used to feed the heifer. Protein and mineral supplements may be the only feed you need to purchase.

Heifers born during the late winter and early spring are normally selected in the fall following weaning and should weigh about 450-500 pounds. These heifers should be fed to gain between 1.0 to 1.5 pounds per day through the winter and early spring until either March 1 or April 1, depending on the breeding date. The following rations should bring about these gains.

1. Full-feed legume-grass hay (approximately 10-12 pounds per day) plus 1.0% of body weight of ground whole ear corn.
2. Thirty-five to 40 pounds corn silage plus 2.0 pounds of 32% protein supplement or its equivalent.
3. Twenty-five pounds of corn silage plus hay free choice and 1.0 pound of 32% protein supplement.

Heifers wintered on these rations should weigh about 650-800 pounds, depending on breed, and be about 15 months old and ready for breeding around April 1. Breeding heifers to calve as two-year-olds present some problems, but the increase in lifetime production, as well as lower feed costs are more than enough advantages to outweigh problems.

You should breed your heifer to the best possible bull from her breed. Most beef breed associations have special programs for junior members to breed their heifers artificially. The breeder that you bought your heifer from may give you breeding privileges. If your dad is a purebred breeder, you may select one of his sires to breed your heifer. You should make arrangements to breed your heifer 45 to 60 days before the actual



CORRECT

CORRECT



SICKLED-HOCKED



COW-HOCKED



POST-LEGGED



BOW-LEGGED

FIGURE 3  
EXAMPLES OF CORRECT AND INCORRECT  
LEG SET



REAR LEG — CORRECT  
PASTERN SET



REAR LEG — WEAK  
IN PASTERN



FRONT LEG — CORRECT  
PASTERN SET AND  
STRAIGHT FRONT LEG



STRAIGHT FRONT LEG  
AND DOWN IN PASTERN

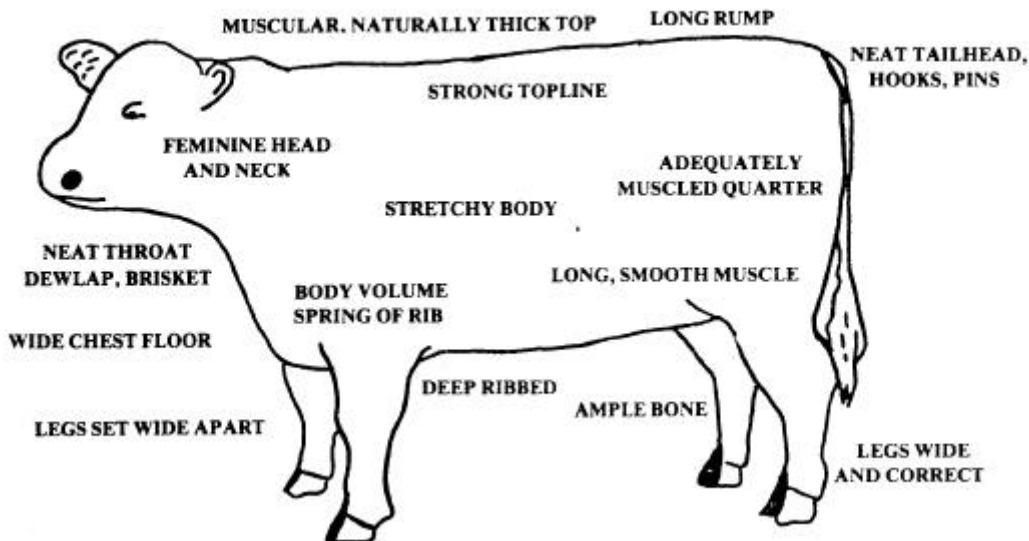


FRONT LEG  
BUCK-KNEE



REAR LEG — BACK  
AT THE KNEE (post-legged)

FIGURE 4  
EXAMPLES OF CORRECT AND WEAK  
PASTERN AND KNEES



breeding date.

After breeding, the heifer should be put out to pasture and feed to gain 1.25 to 1.50 pounds per day up until about 60 days before the district and Expo shows. At this time the heifer's feed should be increased until she is gaining 1.5 to 2.0 pounds per day. This will add some extra "bloom" and conditioning which will give the heifer increased "eye appeal" at the shows. Be careful and do not allow her to get fat. If a heifer gains over 2.0 pounds per day during this period, she will probably get too fat which may hurt her future productivity. The amount of extra feed needed to put this extra gain and bloom on the heifer will vary, depending on the available pasture and the condition of the heifer. A dry lot ration that can be fed to put on the gain could be made up of five to six pounds of grass-legume hay, eight to 10 pounds of cracked corn, two to three pounds of crimped oats, and 1.5 pounds of 32% protein supplement.

A heifer can use more pasture in the ration than steers; this intake might need to be reduced as show time approaches so she will look trim. Probably the best guide for a growth and development program of a heifer is a set of scales. Most county livestock associations own scales and would be glad to allow 4-H members to use them. After the shows, the heifer should be placed on pasture and the concentrates should gradually be removed from her ration. The heifer should gain about 0.5 to 1.0 pound per day until the wintering period.

During the wintering period, the pregnant heifer could be either fed 16-18 pounds of grass legume hay plus 1.0 pound of 32% protein supplement. Approximately 30-45 days before calving, the pregnant heifer

should receive an extra 2.0 pounds of ground corn per day to insure rebreeding.

The heifer always needs a supply of fresh clean water. Minerals and salt should also be provided on a free-choice basis. Use a small box with two compartments--one for salt and the other for a mineral mixture of one part trace- mineralized salt and two parts of either dicalcium phosphate or steamed bone meal. If the salt and mineral box is outside, it should be protected from the rain.

## **Shelter**

Housing for a beef heifer does not need to be expensive or elaborate, but it should be comfortable. A roomy shed with a dirt floor close to a dry, well-drained lot would be ideal. Provide 35 to 40 square feet of shelter per heifer. A lot one-half acre in size should give plenty of room and grazing for one heifer. The dirt floor should be covered with straw or some other highly absorbent material or sand in the summer. Wet and soiled bedding should be cleaned out at least once daily.

During the summer, the shed needs cross ventilation. Sunlight should be kept out of the stall because too much is harmful to the heifer's hair. The heifer should be kept in the shed during the day. Cool air stimulates hair growth. Shut the heifer out of the shed every night during the summer unless there is a cold rain.

## **Make Sure Your Heifer is Healthy**

Make sure that the heifer you select is healthy and comes from a healthy herd. Brucellosis (Bang's disease) is a disease that can cause big trouble. Check to see if the herd is free of Bang's disease before purchasing the heifer. The animal should also have been vaccinated against Bang's disease during calf-hood. The heifer should be vaccinated for clostridial diseases, such as blackleg and malignant edema, IBR, PI3, and possibly shipping fever, upon arrival at the farm. Flies, lice, and grubs are the most common external parasites that affect beef heifers. Flies can be controlled by sanitation, residual sprays, backrubbers, and dust bags. Lice and grubs can be controlled by any of the systemic insecticides before November 1. Internal parasites should be controlled through the use of any of the recommended methods.

## **Records**

Record keeping is an important part of both the 4-H Beef Heifer Project and the cattle business. County, district, state, and national 4-H awards are based on project and activity records. Because of this, you should accurately record information about your project and activities.

Activity records should include information about your beef heifer project, other 4-H projects and activities and school and community activities. These records give an account of your accomplishments over the years so they can be judged. These records provide a basis to recognize and reward outstanding members.

Successful cattlemen keep many records. They keep records that will help them improve the performance of their herd. These performance records include birth date, weaning weight, growth rate, fertility, feed efficiency, and carcass traits.

Records you might want to keep are birth date and weight, weaning date and weight, date of purchase and weight of animal when bought, sale date and sale weight.



You might like to keep up with the weight gain of your heifer and the type and amount of feed fed. You should also keep a record of the vaccinations and other herd health practices such as treatment for diseases.

Please ask your Extension agent for a copy of the 4-H Beef Heifer Project Record Book. Complete this record each year you are in the Beef Heifer Project.

## **QUESTIONS ON YOUR HEIFER PROJECT**

1. What is a heifer?
2. How much grain should heifers be fed each day from weaning to breeding?
3. How much should heifers weigh when bred the first time?
4. How old should your heifer be when she calves for the first time?
5. How much should your heifer gain from weaning to breeding?
6. What is a good mineral mix to use to feed your heifer?
7. List four examples of home grown feeds.
8. Name two external parasites that may be on your heifer.
9. When is the best time of the year to select your heifer?
10. What is a "sire"?

11. What affects profit in beef production more than any other item?

12. Why should you either not select a fat heifer or feed your heifer too much so that she gets fat?

#### Subjects for 4-H Club Talks

1. What my 4-H Beef Heifer Project means to me.
2. Why I like a particular breed of beef cattle.
3. My first heifer.
4. Eat more beef.
5. My first beef show.

#### Subjects for 4-H Demonstrations

1. How to select a beef heifer.
2. How to vaccinate beef cattle.
3. How to feed beef heifers.
4. Where do steaks come from?
5. How to keep records.

## **BEEF CATTLE TERMS YOU SHOULD KNOW**

**Average Daily Gain (ADG)** The total pounds of gain divided by the number of days needed to make the gain.

**Bull** Male cattle of any age.

**Bloom** The general appearance of a healthy, clean, lustrous hair coat.

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

**Brucellosis** An infectious, contagious disease that can cause abortions and reproductive failure in cattle, sheep and goats. It is commonly called Bang's disease. It also causes undulant fever in humans.

**Calves** Young cattle of either sex, less than one year of age.

**Clostridial diseases** These are acute infectious diseases which usually kill cattle. Unvaccinated cattle six to 24 months of age are most susceptible. There are four types of bacteria that cause these diseases. *Clostridium chauvei* causes blackleg; *Clostridium Movyi* causes black disease; *Clostridium Septecium* causes malignant edema; and *clostridium sordelli* causes a severe muscle disease.

**Conformation** The general build of an animal influenced by muscling or structural shape.

**Cow** Female cattle that have produced one or more calves.

**Dam** The mother of a calf.

**External** Outside of the heifer's body.

**Feed Efficiency** The number of pounds gained per pound of rations fed.

**Forage** Feed for livestock, often made up of coarsely chopped stalks and leaves of corn mixed with hay, straw, and other plants.

**Heifer** Female cattle that have not calved.

**Heritability** That part of a cow's performance that is influenced by the genes she received from her parents. The higher the heritability of a trait, the greater the rate of genetic improvement will be for that trait.

**Internal** Inside the heifer's body.

**Pedigree** A paper that gives the name of the animal and his parents and grandparents.

**Purebred** An animal whose parents are of the same breed and are recorded with the breed registry.

**Ration** The amount of feed an animal eats in a day.

**Registered** An animal whose name, along with the names and numbers of its sire and dam, have been recorded by its breed association.

**Reproductive Efficiency** A measure of a beef cow herd's ability to have calves. It takes into consideration rebreeding on schedule and number of calves weaned compared to number of cows that were in the herd during the breeding season.

**Ruminants** Animals such as sheep, cattle, and goats which have stomachs divided into four parts and chew cuds.

**Sire** The father of a calf

**Skeletal** The supporting structure of the heifer, made up of bones and cartilage. **Systemic** Involving or affecting the system.

**Tattoo** Colored numbers or letters inside the ear for permanent identification.

**Weaning** Separating calves from their mothers at about seven to nine months of age.

**Weaning Ratio** A percentage figure for each calf, designed to help compare the adjusted 205-day weight of each calf to others in its group. A ratio of 90 means a calf is 10 percent below average, while a ratio of 110 would be 10 percent above average.

**Vaccination** An injection of medicines which help prevent beef cattle from catching specific diseases. For example, cattle are often vaccinated for Blackleg, Brucellosis, Leptospirosis, IBR, and PI3.