The Calf And Yearling
In 4-H Dairying

The beginning

The goal

This bulletin was prepared by George Cleveland, dairy specialist, University of Idaho Agricultural Extension Service, in cooperation with dairy specialists of the extension services of Washington State University and Oregon State University, and 4-H club leaders of the three states.

Photographs by the Union Pacific Railroad are acknowledged.
Your 4-H dairy calf will provide you with a wonderful and worthwhile experience. You will gain new knowledge and skills through real life experiences and will realize the satisfaction and dignity of work. As you care for your calf daily, you will learn the true meaning of responsibility. The calf must depend on you just like you depend on your parents.

Good calves, well raised, become good cows. The calf or heifer you start with today may become the foundation animal of your future herd. You will learn how to select good dairy animals and how to give them good care. But before you can become a good dairyman you must love cattle and enjoy working with them.

This may be your first in a series of new 4-H projects. As you gain experience and complete each of your projects, you will be expected to do more work for each of your future projects. You may carry more than one dairy project as you continue in your 4-H dairy club work. Your 4-H dairy program will be as follows:

Unit I—THE CALF
Suggested for younger 4-H club members.
A 6-month record is recommended.

Unit II—THE YEARLING HEIFER
Preferably a continuation of Unit I. 4-H member may start with Unit II or III.

Unit III—THE COW
A continuation of your previous dairy projects.

Unit IV—4-H DAIRY SCIENCE
Member may study this unit with or without project animal.

Your 4-H dairy project will be fun, but will also demand a lot of hard work. There will be problems to solve, such as selecting your dairy animal, controlling disease, feeding, and fitting and caring for your animal. You will have all the fun of exhibiting and competing with other dairy project members at shows and other activities. But, remember, as you start your dairy project that the things we value most are those things that are hardest to get.

When you need help, don't be afraid to ask for it. Your 4-H leader, your father, your county extension agent, or a good dairyman will help you over the tough spots.

May the experience gained through your 4-H dairy project make you a better citizen and a better dairyman. Good luck!

Purpose

The purpose of your new 4-H dairy calf project is to:
1. Give you helpful suggestions for selecting a good calf,
2. Give you suggestions on a sound and practical feeding and management program for raising your new calf or heifer, and
3. Outline for you some of the chores that must be done to raise your dairy animal properly.

What You Must Do

1. Own a heifer calf and feed and care for her for the entire project year.
2. Keep accurate and complete records on:
   (a) amount and kind of feed used and its cost
   (b) gain in body weight
   (c) identity of your dairy animal
   (d) Registration papers (if purebred) and health records
   (e) other costs for equipment, etc.
3. Complete and turn in your 4-H Record Book to your leader when requested.
4. Exhibit your calf at a community, county, district, or state 4-H dairy show.
5. Take part in other dairy activities such as judging and demonstrations.
Choosing a Calf

You will get much more out of your dairy project if you own your calf. Regardless of where the calf comes from, be sure to purchase your calf on a strictly business basis with no "strings attached". If your parents lend you the money, be sure to repay them later.

To select your first dairy animal is an important job. Get the help of a good dairyman. He may be your father, a 4-H leader, county extension agent, or a good dairy cattle breeder.

The Breed

A good dairyman will be successful with any of the dairy breeds. The breed you choose is important, so think before you buy. Don't buy a certain breed just because you want to be different.

Unless you have a good reason for changing:

1. Stay with the breed that is now on your home farm.
2. Choose a breed that is popular in your community.
3. Select a breed that will fit in your barn (stall size is important).
4. Select a breed that you like.

Remember, if you buy good animals in any breed, that breed will be a good one for you.
Guernsey—A dairy breed developed on the Guernsey Island which is in the English Channel near France.

Color: Fawn and white with yellow skin and clear or buff muzzle.

Size: Cows—1100 pounds; Bulls—1700 pounds.

Milk: Very yellow in color and contains about 4.8% butterfat.

Horns: Medium size and amber color.

Guernseys are noted for gentle disposition.

Jersey—A dairy breed developed on the Island of Jersey, which is near the Guernsey Island.

Color: Fawn, cream, mouse gray, brown and black, with or without white markings. Tails, muzzles and tongues usually black.

Size: Cows—1000 pounds; Bulls—1500 pounds.

Milk: Yellow in color and contains about 5.1% butterfat.

Jersey cattle are noted for refinement and rich milk.

They are the smallest of the dairy breeds.

Holstein—A dairy breed developed in Holland.

Color: Black and white.

Size: Cows—1500 pounds; Bulls—2000 pounds.

Milk: Contains about 3.7 butterfat.

Horns: Inclining forward, incurving.

Holsteins are noted for large size and for producing large quantities of milk.
Brown Swiss—A breed developed in Switzerland and one of the oldest breeds of cattle known. Color: Light or dark brown or gray. Size: Cows—1400 pounds; Bulls—1900 pounds. Milk: Contains about 4.1% butterfat. Horns: Inclining forward and slightly up. They are noted for ruggedness and long life.

Milking Shorthorn—A breed developed in North-eastern England. Strong and vigorous. Good size and rugged. Color: Red, red and white, white or roan. (Roan is an intermixture of red and white hair.) Nose clean, flesh colored, with entire absence of dark pigmentation. Size: Cows—1400-1600 pounds; Bulls—2,000 pounds or more. Milk: Contains about 3.8% butterfat. Horned or Polled: There are both polled and horned branches of the breed. Milking Shorthorns are noted for being the dual purpose breed.

Ayrshire—A dairy breed developed in Scotland. Color: Red of any shade, mahogany, brown, with white, or white alone, each color clearly defined. Size: Cows—1200 pounds; Bulls—1800 pounds. Milk: Contains about 4% butterfat, very white in color. Horns: Long and turned gracefully up and outward. Ayrshires are noted for good udders and style.
Age, Type and Production

The calf's age at the time you select it is very important. Very young calves are more likely to get sick and are more apt to die. It is also more difficult to predict good type in young calves. Usually it is best to select a calf over four months old. Animals of this age are easier to handle and less of a risk.

A junior calf is one that is born on or after January 1 of the present year.

A senior calf is one that is born between July 1, and December 31 of the previous calendar year.

Older calves that have good type may place higher in a show than younger calves of good type. Try to select a junior calf that was born in January or February and a senior calf that was born in July or August. Remember—it is better to select a younger calf of outstanding type than to select an older calf of average type.

While type is important, the wise 4-H member will select his calf for production too. The premium money you may win is a poor reason for selecting a calf. Your most important returns will come later when your calf is old enough to produce milk. Try to select a good type calf that has relatives with good production records. If you know something about her family, this will help you predict what kind of cow she will be.

As we stated before, it is hard to tell what a young calf will look like or produce when it grows up. Look at its dam (mother) and its sisters. Is the dam a high producer? Is she of good type? Is she from a good cow family? Are the daughters of the sire (father) high producers and good type? Are they the type of cows you want your calf to grow up to be? Select a calf whose dam and relatives have high production records and type.

Look for an alert heifer with good length of body. She should be clean cut about the neck, sharp over the withers, with a straight back and wide, strong loins. The rump should be level and square. The chest should be wide and the ribs wide, open and deep. The teats should be spaced widely, as viewed from the side. The rear legs should be straight and squarely set under the body. Avoid calves with coarse, open, flat-topped shoulders. A calf with a sagging low back will never place high. One with a drooping rump and low-set pin bones will never be a good type cow. Try to select a calf that is well balanced and well proportioned in all of her parts. Avoid the short-bodied, short-legged, or the extremely shallow-bodied heifer.

Purebred or Grade?

This will be one of the first questions for you to decide. A registered calf can be of great value to you as your herd grows. The difference in cost between a registered or grade calf is not great; but don't select a calf just because it has a registration certificate. Papers will not assure you that your calf will be the kind of cow you want. They will not guarantee high production, or good type. It will be better to have a good grade than a poor registered calf. Select for the type of dairy cows you want in your future herd.

Grade dairy heifers and cows may be exhibited and shown at most county 4-H shows.

Registered dairy animals (purebred) are required for exhibition at most state breed association dairy shows.

The following dairy breed associations encourage 4-H dairy members to exhibit in their open breed show and furnish free educational material to junior and senior exhibitors:

- The Holstein-Friesian Association of America
  Brattleboro, Vermont 05302

- The American Jersey Cattle Club
  1521 East Broad Street
  Columbus, Ohio 43205

- The American Guernsey Cattle Club
  Peterborough, New Hampshire 03458

- Ayrshire Breeders' Association
  Brandon, Vermont 05733

- The Brown Swiss Cattle Breeders' Association
  Beloit, Wisconsin 53512

- American Milking Shorthorn Society
  313 South Glenstone Ave.
  Springfield, Missouri 65802
Junior Membership

If you own a registered calf, check with your breed association for junior membership. There are many advantages in belonging to a breed association.

Registration and Transfer

It is very important that one of the first things you do is to register or transfer your new purebred dairy animal to your name. Be sure that color markings or the tattoo on the registry certificates are correct.

To register your animal, you may use pictures of both sides of your calf or color marking sketches for Ayrshire, Guernsey, and the Holstein breeds. The solid color breeds, such as the Jersey and Brown Swiss require a tattoo for permanent identification.

When you apply for registry certificates or transfer, see that the animal is recorded in your name. If you wait to register or transfer your calf, it may cost you more money.

To be eligible for exhibit at the State 4-H Show and many other shows, it must be registered in your name before June 1 of the year of the show. Remember, it may take a month or more to receive your registration papers from your breed association.

Where to Buy

If a calf on the home farm is of good stock, you will be wise to start with such a calf. There will be less danger of bringing disease into your herd. You will also know the production records and type of dam and relatives better.

When you buy a calf from outside your farm herd, be sure the seller is reliable. Buy from a good dairyman you know, if possible. Good calves can generally be found in your community. If possible, keep purchased calves in a pen away from the rest of your dairy cattle for 30 days to observe closely for any signs of illness or disease. This will help prevent the spread of any disease your calf may have.

Health

Your calf should be from a healthy herd free from brucellosis (Bang's disease), tuberculosis (TB), or other diseases. Your calf should be vaccinated for Bang's disease. If this has not been done when you buy your calf, have it vaccinated between four and nine months of age. Calves are vaccinated to help protect them from "catching" Bang's disease. When a cow or heifer has Bang's disease, it may not be able to have a calf and must be slaughtered (State law). When people drink "raw" milk (not pasteurized) from cows with this disease they may become sick. All milk sold for human consumption should be pasteurized.

Some milk consumed on the farm is not pasteurized and may not be safe for you or your family to drink. Protect yourself and your animals.
Feeding Your Calf

Selecting a calf from your home herd gives you
the advantage of taking care of it from the start.
The calf needs some special care at the time it is
born. Check with your 4-H leader or County
Extension Agent for complete information on
how to feed your dairy calf. Following are some
recommended feeding practices that you should
pay special attention to:

First Milk

The first milk, called colostrum, is yellow, thick
and sticky. Colostrum cannot be sold, but it is
very important to the new born calf. It is full of
vitamins, proteins, and other substances (nutri-
ents) that are important to growth and to help
protect the new calf from disease and infection.
Before the calf nurses the first time the udder
and teats should be washed with soap and warm
water and wiped off with a cloth dipped in a san-
itizing solution.

The germs in the dirt on the udder aren’t good
for the calf’s new digestive system which is be-
ing tried out for the first time. The stall should
be kept clean and well bedded, and the udder
washed often as long as the calf is nursing.

Many dairymen prefer to put the calf in a clean
pen before it has nursed, and to teach it to drink
at once. By this method you can control the intake
of milk from the first feeding. The fresh colos-
trum must be fed if this is done. It should be
milked carefully into a thoroughly clean pail. It
is usually much easier to teach the baby calf to
drink than a calf that has been nursing its
mother.

The extra colostrum may be frozen in the
home freezer and fed as long as it lasts. The sav-
ing of milk will probably pay for the trouble, and
the extra colostrum is good for the calf. If this is
done:

1. Use clean containers for freezing.
2. Freeze in small containers so you thaw a
small amount at a time.
3. Feed first-day colostrum until gone, then
second-day, then third to avoid changing
feed.

Teaching the Calf to Drink

It is best to remove the calf from the cow at
night. By the next morning when you are ready
to feed the calf, the calf should be hungry and
will take to the milk more readily. Calves may
be fed from open pails, nipple pails or calf feed-
ers.

Put some fresh warm milk from the calf’s
mother in a clean pail. Back the calf into a cor-
er. Straddle its neck and put two fingers into
the calf’s mouth. Now gently push the calf’s head
into the pail of milk. Spread your fingers so the
milk will go into the calf’s mouth as she sucks.
After several swallows by the calf, slowly remove
your fingers. Repeat as often as necessary. Con-
tinue to feed the mother’s milk until the milk is
good enough for household use. This will gener-
ally be 5 to 7 days or until the milk is colos-
trum-free.

Regardless of the method used, be sure all
containers are kept very clean to prevent dis-

Weighing the Milk

Weigh or measure the feed accurately to pre-
vent over-feeding and also keep an accurate
record of the amount you feed your calf.

How Much to Feed

A good rule to follow is to feed one pound of
milk daily for each 8 to 10 pounds the calf weighs.
A calf that weighs 90 pounds should receive
about 4½ pounds of milk in the morning and
about the same amount at night.
Feed at the same time each day. Overfeeding may cause scours. If this happens, cut the amount of milk in half immediately and then bring back gradually to recommended amount.

Don’t over-feed milk. As the calf grows, not more than 16 pounds total milk should be fed per day.

Whole Milk

It is important to feed your calf whole milk until she is about 3 weeks old. (Always feed warm milk at temperatures of 90 to 100° F.) You may wish to continue to feed your calves whole milk until weaning time. This method may increase the cost of raising your calf, especially in herds which sell Grade A milk. Calves raised on whole milk usually grow well and have a smooth glossy hair coat.

Skim Milk

Skim milk, if available, may gradually replace the whole milk in about three weeks. Skim milk or dried skim milk may be fed up to six months. Mix thoroughly one pound of dry skim milk with nine pounds of warm water. Then feed this mixture in the same way you would feed fresh milk.

Milk Replacers

You can buy many good milk replacers at feed stores. Most of these contain large amounts of milk solids, some vitamins, minerals and antibiotics. Milk replacers may be cheaper than whole milk when you can buy 20 to 25 pounds of replacer for the value of 100 pounds of milk. Follow the directions on the bag when feeding milk replacers.

What is a Concentrate?

Concentrates are feeds that are low in fiber and high in energy. Some examples—grains (corn, barley, oats, wheat, commercial grain mixes, etc.), linseed meal, soybean oil meal and other high grade by-products from plants and animals. Soybean oil meal and linseed meal are also very high in proteins. They are usually called protein supplements, and used to raise the protein level of dairy feed.

Grain or Starters

Teach your calf to eat grain as soon as possible. Place a small amount in her mouth after each feeding of milk, or place a small amount in the feed box to encourage your calf to eat grain. About one-half pint or one-fourth pound of grain is all that a small calf will eat each day. Increase the amount gradually until your calf is eating about 2 to 3 pounds of grain at 3 months of age and about 3 to 5 pounds of grain at 6 months of age (depending on the breed and condition of calf.)

Good calf starters (calf meal or pellets) contain extra protein, vitamins, minerals and antibiotics. Prepared calf starters may be purchased from most feed dealers and should be fed according to recommendations.

A Good Dairy Calf Ration

Coarse Ground or Rolled
Corn or Barley ........................................50 lbs.
Coarse Ground or Rolled Oats ..................40 lbs.
Linseed or Soy Bean oil meal ..................10 lbs.
Total .................................................100 lbs.

Trace mineral salt .................................... 1 lb.
Steamed bone meal or dicalcium phosphate 1 lb.

Table 1 includes a good program to follow in feeding your calf.

Table 1 Calf Feeding Program
Age Ration
Birth to 3 days ...................... Feed colostrum or nursing dam
4 days to 3 weeks ...................... Whole milk or replacer—grain mix as listed above or calf starter.
3 weeks to 8 weeks ...................... Whole milk or skim milk or replacer—with a grain mix as listed above or starter with access to good roughage.
8 weeks to 4 months ................... 2 to 5 pounds of the calf ration listed above with access to good roughage.
4 months to 6 months ................... 3-5 pounds of the calf ration listed above with access to good roughage.
6 months to 12 months ................... 3-5 pounds of calf ration listed above with access to good roughage.

What is a Roughage?

A roughage is a feed high in fiber (bulk) and low in energy. Hay, grass or corn silage, straw, and corn fodder are considered roughages. A calf needs roughage to help develop its digestive system.
Hay for Your Calf

Tender, leafy hays made from alfalfa, clover, grasses (or mixture of these) are very nutritious for your calf. They contain needed vitamins and minerals. Give your calf hay as early as she will begin to nibble at it, but don’t offer too much at a time. Give fresh hay at least once a day. Roughages supply nutrients at lower cost.

Silage

Silage is bulky and contains a large amount of water. Since the calf has a small stomach, it cannot handle large amounts of this roughage and still get all the energy it needs. After about 4 months of age you may feed your calf 3 to 5 pounds of silage per day along with hay. This amount may be gradually increased as the heifer grows.

Pasture

Pasture, like silage, contains a large amount of water. A calf on succulent pasture will eat lots of feed, but mostly water, and may get “pot-bellied” and lacking in skeletal growth. If you pasture a calf younger than one year old, make sure she also has plenty of hay and some grain.

Water and Salt

Clean, fresh water and trace mineral salt should be available to the calf at all times. Water is necessary for calves even before they are weaned from milk.

To prevent the calf from drinking too much water at one time and possibly cause scours, have the water in a different container and a different location from the milk feeding.

Trace mineral salts are fed to make sure your calf receives all the minerals it needs for normal growth.

After Six Months

When your heifer is 6 months old, she can handle a lot of hay and some pasture; 3 to 5 pounds of grain should be plenty to keep her growing if you use a growing ration, such as the one suggested.

Don’t overfeed your heifer. A fat dairy heifer is undesirable. Feed only enough grain to keep her in good growing condition.

Keep a Record of Growth

If you don’t have scales for weighing your heifer, a weighing tape will estimate her weight quite accurately. Possibly you can get one free from feed companies or bull studs that use them for advertising.

To estimate weight, place tape around the animal’s body at heart girth or directly behind the front legs. Make sure she is standing squarely on her feet. Have the tape fit firmly but not tightly. Then read the weight directly from the tape.

If a weighing tape is not available, you may use a tape measure or a string to determine the distance around the calf’s heart girth. Then compare this measurement, or one made with a weighing tape, with the growth chart on the next page to see if your heifer is up to normal.
## Heart-Girth Measurement (Inches)

<table>
<thead>
<tr>
<th>Under 6 Months</th>
<th>7 to 12 Months</th>
<th>13 to 18 Months</th>
<th>19 to 24 Months</th>
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<td>1  2  3  4  5  6</td>
<td>7  8  9  10  11  12</td>
<td>13  14  15  16  17  18</td>
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- **Holstein and Brown Swiss**
- **Ayrshire**
- **Guernsey**
- **Jersey**

### Dairy Cattle Growth Chart

- **Weight (Pounds)**
  - 1241
  - 1153
  - 1069
  - 987
  - 908
  - 835
  - 766
  - 700
  - 637
  - 579
  - 526
  - 478
  - 434
  - 394
  - 354
  - 314
  - 275
  - 240
  - 208
  - 180
  - 158
  - 138
  - 118
  - 101
  - 89
  - 80
**CHORES TO DO**

**Identifying Your Calf**

Every calf must be permanently identified to be certain there is no mixup of calves. This should be done when the calf is very young so you still can remember who the sire and dam are. Be sure to record all dates and identification of the calf along with the sire and dam names and numbers in your 4-H record book.

There are three ways to identify your calf:

1. Make a sketch or take a snapshot of both sides of your calf.
2. Tattoo your calf. This gives a good permanent identification if carefully and properly done. Make sure the ear is clean and that the tattoo is put in a place where it is easy to read.
3. Eartag—These tags are permanent for identification if they are properly placed close to the head and securely fastened.

**Housing and Calf Health**

Keep your calf’s pen clean, dry, draft-free, well lighted and well ventilated. When possible, keep your calf in a pen by herself. This helps to prevent the spread of disease from other calves. Also, young calves housed together may suck each other and cause udder problems later on. It is especially important to keep the calf in an individual pen until about a week after weaning.

**Build an Equipment Chest**

One of the important chores for a 4-H club member to do as soon as he enrolls and has selected his calf is to construct a small homemade chest which can be used to keep all of his cleaning and grooming equipment, so that it is always available when needed. This same chest can be used as a show box and taken to the fairs so that the equipment will not be lost while at the fairs. The chest should be large enough to hold the following items:

1. Health certificate and registration papers.
2. At least 2 brushes—one brush for washing and cleaning the calf and a softer brush for grooming the calf.
3. Soap.
4. halters.
5. Tail comb and rubber currycomb.
6. Rasp.
7. One or two clean cloths.
8. Wire hoof brush.

In addition to the necessary items in the chest, you will also need feeding and watering equipment, a fork and some type of a broom to keep your exhibit space clean.

**Dehorning**

Horns serve no useful purpose. They may be removed very easily with chemical or electric dehorners when your calf is young. Dehorning is a good protective measure. Ask your 4-H leader or father for help with this job.

There are several types of good electric dehorners. Most of these have a thermostat to regulate the heat. Make sure to leave the heat on long enough to burn a copper-colored ring all around the horn.
Caustic potash and other commercial products also do a good job. If you use caustic potash, follow these steps: (1) Clip hair around horn button. (2) Scrape with disinfected knife until the horn button is red, and apply vaseline around edges to keep caustic from burning other areas. (3) Apply a stick of caustic potash or dehorning compound until entire surface is in contact with it. Do not allow caustic to run down side of face. Regardless of method used, be sure to seek the assistance and advice of some adult.

Remove Extra Teats

Examine the young calf for extra teats. If she has more than four teats, the extras should be removed. This should be done as soon as you are sure which are the four main teats. If there is any doubt as to which are the extra ones, leave them until later. The extra ones may be clipped off with sharp, disinfected scissors. Paint the cuts with iodine after the teats are removed. There is little pain and almost no bleeding. Extra teats, if not removed, may leak milk or be in the way for milking when she becomes a cow. Ask the assistance of your 4-H leader, father or veterinarian.

Calf Scours

There are two general types of calf scours.

1. Common scours.
2. Infectious white scours.

The two types of scours are hard to distinguish between so the same precaution and treatments should be used.

The causes of most cases of scours are poor nutrition, overfeeding, dirty feed pails and equipment, feeding milk that is cold, feeding sour milk, irregular feeding, feeding too much milk too high in butterfat content and damp, drafty and dirty calf pens.

Prevention of calf scours is much better than the cure. Adopt good management practices that will help correct the causes listed above. Be sure to isolate sick calves and disinfect quarters. Reduce the amount of milk. Proper use of the proper antibiotic may help. You should consult your veterinarian if trouble continues. He will help you determine the proper antibiotic and other treatments.

As an added precaution against scours be sure all new born calves get colostrum milk as soon as possible after birth.

Internal Parasites

Internal parasites may be harmful to your dairy calf. They are worms or other organisms that live inside the animal. Because they feed on the animal's tissues, they may affect the rate of growth and the health of your calf. Check with your County Extension Agent for information on the newest recommended practices for control.

Ringworm

Scrub scabs with warm soapy water and stiff brush to open infected areas. After areas are clean, apply tincture of iodine or heavy oil daily until they disappear. Other treatments will also work. Disinfect stanchion and pen to prevent spread.
Warts

Warts are quite common in some herds and they may become a serious problem. At times warts will disappear without treatment; other times they respond very slowly to treatment. When warts first start and are small daily applications of castor oil or olive oil may help. If warts are the long-hanging type, they may be clipped off with sterile scissors or tied tightly with a fine thread at the base of the wart. This will cause the wart to drop off. Where warts affect the health of your heifer or the milking of your cow, it would be well to consult your veterinarian.

Insects

Lice—Check your calf around the ears, neck, backbone, and tailhead for lice. If you find lice, dust the calf from head to tail with a good louse powder containing 1 1/2 percent rotenone. Repeat ten days later to kill those which hatched since the last application.

Flies—Clean, dry calf pens will help to control flies. Clean the pens at least once a week to keep flies from hatching in the manure. Check with your leader to find out the newest recommended materials for killing flies.

Grubs—If your animals are infested, dust with 2% rotenone over back and rub gently into the openings made by the grubs. Be sure to treat at the proper time for your area.

Grooming and Training Tips

Start grooming your calf from “the inside out”. For the calf to be in good condition and look her best at show time, you must do a proper job of feeding and managing from the very start. Care for your calf regularly.

It’s a good idea to get your calf to drink water out of a bucket. Find out how much water the calf will drink per day and give it one-half that amount twice a day. This will prevent calves from drinking large amounts of water one time and none the next. The calf is more likely to accept the change in water at the show if you handle it in this manner.

Start training your calf by haltering her and brushing her at least six weeks to two months before fair time. Be sure to teach your calf to lead by using a halter that fits. The nose strap should be about halfway between her eyes and her muzzle. Protect your calf during hot sunny days by keeping her blanketed or in a shady place. This helps improve the quality of the hair and hide and makes grooming much easier. Brush for a short time every day.
ten. This removes beneficial natural oils from the hair and skin. After washing, if the heifer is blanketed, kept in a clean stall and brushed daily, it should not be necessary to wash her again except to wash off dirty spots.

Practice leading your animal daily. She should walk slowly straight ahead with her feet squarely under her.

You should remember that you are not fitting and showing your animal to fool the judge but to show your animal to the best advantage. The job you do fitting and showing is a reflection of the pride you have for your animal. A good job also indicates the effort you have devoted to getting her ready to show.

Grooming and training your calf can be a rewarding and enjoyable experience. You should be very proud if the job is well done.

**Showing Tips**

1. Be courteous at all times.

2. Be alert and follow instructions. Lead so you can watch your animal and the judge at all times.

3. Be sure, you, like your animal, are well groomed.

4. Find out, if possible, when your class will be judged and be ready to go when the class is called.

5. The judge may wish to know when your animal was born, or if she is bred, or the date she calved. Give a prompt, correct answer if the judge asks you any questions regarding your animal.

6. Show your animal to look her best but teach her to stand still while the judge is giving her his close inspection. After your animal is placed in line keep her standing quietly. Don't continue to lead her out of line and then back in again.

7. Be confident while showing, but don't grandstand.

8. While leading, leave space between you and the animal in front. Don't crowd or bump your competitor.

9. Walk your animal slowly and straight but not too slow.

10. Be a modest winner and a gracious loser.
Caring for the yearling heifer can be one of the most interesting and rewarding experiences of your 4-H dairy career. During this project you can watch your heifer grow from a young animal to a cow. Important decisions will be made as you go along.

The easiest animals in the herd to care for are the yearling heifers, but this is also the age at which they are most likely to be neglected. It's very important to keep yearlings growing rapidly. The well-grown heifer can be bred to freshen at an earlier age, and will give quicker returns. Don't let the heifer stop growing until she has reached full size as a mature cow. With yearlings, the emphasis is on roughages—hay, silage, and pasture. These are the most economical feeds on the farm.

The requirements for this project are similar to your calf project; that is, you own and care for one or more yearling heifers. If you have done your job well with your calf project, you will have a good start with your heifer project. However, if changes are necessary, see your county agent in charge of 4-H and your local leader for approval. Club members 12-15 years of age may wish to start with this project unit and take the calf unit after their heifer freshens.

The Yearling Project Unit
You may wish to continue this project unit for a number of years. As your project grows and new yearlings develop, you may carry this unit along with the cow and dairy science projects. You will be expected to become more acquainted with dairying and 4-H club work each year you carry this project.

Some members may wish to develop a bred heifer project. The heifers may be sold to dairymen for herd replacement.

Breed—Type—Purebred or Grade

The questions concerning breed—type and purebred or grade have been discussed earlier in this bulletin. If you wish to "refresh" your memory, read that section again.

Feeding the Yearling

Keep your heifer growing rapidly. The well grown heifer can be bred younger and will give earlier returns.

Roughages

Good quality hay, silage and pasture will be the most economical feeds for your heifer. A yearling heifer has plenty of room for the bulky feeds and should have all she wants. Good quality alfalfa or grass—clover hay will supply the protein, energy, and vitamins for good growth. In addition, a plentiful supply of water, trace mineralized salt and steamed bone meal or dicalcium phosphate should be available to the heifer at all times. When poor quality hay or silage is fed, a 12 to 14% protein grain ration should be fed as an extra source of energy.

Good quality silage may be substituted for a large portion of hay in the heifer's diet. Some dairymen feed silage free choice and limit hay to 4 or 5 pounds per heifer per day.

Pasture

Pasture will supply most of the feed your heifer needs during the summer. But be sure it is good pasture. Too often heifers are turned out to the wood lots or back pasture and forgotten. Unless there is plenty of good quality forage, your heifer may lose instead of gaining weight. The best pastures contain a mixture of grass and legumes. Plenty of fresh water as well as shade should be available at all times. Also, a sheltered box should be kept filled with trace mineralized salt and steamed bone meal or dicalcium phosphate. A rack kept filled with hay will be insurance that your heifer won't go hungry.

If you plan to show your heifer at the county show, it may be wise to keep her in the barn lot
during the summer. By keeping her in the barn lot you will be able to:

1. Keep her hair and hide in better condition.
2. Give her special attention and care.
3. Do a better and easier job of fitting and training her.
4. Keep her on the type of feed that she will receive at the shows. (Switching from fresh grass to hay may decrease the amount of feed your heifer will eat at the show.)

Grain

Yearling heifers will usually make satisfactory gains on roughages alone from about 12 months of age until just before freshening, providing the roughages (pasture, hay and silage) are excellent quality and supplied in adequate amounts. Even with good pasture or silage some hay should be fed. Check heifer’s growth rate. If her condition is not good, feed 3 to 5 pounds of a good home-grown grain per day.

If your roughage is of good quality, an adequate grain ration for the heifer would be:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground or Rolled Barley</td>
<td>327</td>
</tr>
<tr>
<td>Ground or Rolled Oats</td>
<td>327</td>
</tr>
<tr>
<td>Bran or Molasses Beet Pulp</td>
<td>327</td>
</tr>
<tr>
<td>Iodized or Trace Mineral Salt</td>
<td>10</td>
</tr>
<tr>
<td>Bonemeal or Dicalcium Phosphate</td>
<td>10</td>
</tr>
</tbody>
</table>

If quality of the roughage is poor, your heifer ration may be:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground or Rolled Barley</td>
<td>350</td>
</tr>
<tr>
<td>Ground or Rolled Oats</td>
<td>150</td>
</tr>
<tr>
<td>Bran or Molasses Beet Pulp</td>
<td>360</td>
</tr>
<tr>
<td>Cottonseed or Linseed or Soybean Meal</td>
<td>120</td>
</tr>
<tr>
<td>Iodized or Trace Mineral Salt</td>
<td>10</td>
</tr>
<tr>
<td>Bonemeal or Dicalcium Phosphate</td>
<td>10</td>
</tr>
</tbody>
</table>

Home grown grains may be substituted, depending on the price of the grain. If your regular dairy ration is about the same as either of the above rations, use it.

Feed 3 to 5 pounds per day of one of the above grain mixtures to keep the heifer growing well.

Remember that your heifer needs and deserves the proper amounts of the best feed you can give her. You can’t expect her to do well on the stems left by the dairy herd or a pasture that has been thoroughly grazed by the dairy herd. Learn to feed your dairy heifer just right. Overfeeding as well as underfeeding is poor management.

Shelter

A yearling heifer doesn’t need pampering. A shed open to the south and kept dry is sufficient. They may get a long coat of hair and look rough during the winter, but if well fed they will grow nicely and be rugged and healthy. Keep the shed well bedded and dry.

Health and Parasites

Growth and health go together. Check your heifer frequently for symptoms of disease and insect or parasite infestation. Follow recommendations and suggestions of your veterinarian.

Breeding the Heifer

When your heifer reaches breeding age, you will enter a new and important phase of your dairy project. New experiences and decisions will be yours. A good start here will mean much to your future herd and success. Records well kept will be very valuable to you as your dairy program grows.

A well grown and healthy heifer may be bred at 14 to 19 months of age. If she is undersized or stunted, it may be well to delay breeding. To freshen at 24 months your heifer should be settled at 15 months. Most heifers will calve about nine months and ten days after breeding. The following chart suggests the age and weight to breed your heifer.
<table>
<thead>
<tr>
<th>Breed</th>
<th>Age (Months)</th>
<th>Min. Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jersey</td>
<td>13-17</td>
<td>575</td>
</tr>
<tr>
<td>Guernsey</td>
<td>14-18</td>
<td>650</td>
</tr>
<tr>
<td>Ayrshire</td>
<td>15-19</td>
<td>700</td>
</tr>
<tr>
<td>Brown Swiss</td>
<td>15-19</td>
<td>875</td>
</tr>
<tr>
<td>Holstein</td>
<td>15-19</td>
<td>875</td>
</tr>
<tr>
<td>Milking Shorthorn</td>
<td>15-19</td>
<td>850</td>
</tr>
</tbody>
</table>

When possible, breed your heifer to freshen during base building months of your milk market. Your heifer can only be bred during certain times called heat periods which come about three weeks apart. (Keep a record of every heat period on a breeding chart.)

When you want to breed your heifer you can watch for the next heat period in about 19 to 23 days. By keeping good records, you won’t be likely to miss the period at which you want to breed her. Be sure to keep a record of:

1. Name and Reg. or Eartag No. of heifer
2. Date bred
3. Name and Reg. No. of bull to which the heifer was bred
4. Breed
5. Age of heifer when bred
6. Weight of heifer

Breed your heifer to the best bull available. The calf will be worth more if sired by a good bull of the same breed as your heifer. Remember, one-half of the inheritance of your heifer comes from her sire.

Select bulls with good type and production records. Ask your dad, County Extension Agent, local leader or experienced dairyman for assistance in selecting the bull. Artificial insemination to outstanding sires is available in most areas and there are a number of purebred breeders who own good purebred sires. Be sure to keep all records and breeding information on your heifer.

Care of the Bred Heifer

Do a good job of caring for your heifer before and at calving time. She is not yet full grown and will need enough feed for her own growth and the calf she is carrying. A heifer in good condition at calving time will tend to hold up better in production during the first year of milking. A heifer should receive grain before calving to improve her body condition and become conditioned to eating grain.

Care at Calving

During the summer, about a week before calving, the heifer should be put in a small, well-shaded pasture, if the weather permits. When the weather is not favorable or when the herd is being kept in dry lot, place your heifer in a box stall. Her stall should be kept clean and well bedded.

The heifer should be left alone at calving unless there is some evidence of trouble. An experienced person should be near to give help if needed. A normal calf should be born in about a half hour. If it is not born in an hour or so, or if the position of the calf is not normal, you should call a veterinarian. The calf is normally born with its front feet first and the head lying between the forelegs. Afterbirths should be removed from the stall as soon as possible.
Care After Calving

As soon as the calf is born, give the heifer a pailful of lukewarm water to which some salt may be added.

When the calf is born, the first step is to see that the calf breathes normally. The next step is to disinfect the navel with tincture of iodine to guard against infection. It is well to wash the cow’s udder and help the calf get started with its first meal.

Following calving, for a period of a couple of days, the heifer will need good quality hay and a small amount of grain with plenty of fresh water. As soon as swelling leaves the udder, you may safely start to feed her a regular grain mix. It is good practice to milk the heifer at least twice a day while the calf is nursing. Milking helps prevent congestion in the udder and will detect a quarter the calf may have missed. This also will help to keep the udder balanced.

The first milk is called colostrum. Milk from your heifer should not be marketed until it is free of colostrum. This will be about five to seven days after calving.

Fitting and Showing Your Heifer

The county show offers a good opportunity for you to compare your heifer and your work with other club members. You may pick up some pointers on fitting and showing from Extension bulletins.

Study the Dairy Cow

It is important you learn the parts of a cow and the desirable as well as undesirable characteristics. This will be of great help to you in selecting animals, culling animals from your herd and in judging dairy cattle. Even though your heifer is not yet a mature animal, you should be aware of the desirable qualities as well as the undesirable qualities of all parts of her body.

Another page of this 4-H bulletin shows a “Dairy Cow Unified Score Card”. You will note that one part of this score card is a picture of a dairy cow listing all of her various parts that you should be able to name. Study this picture carefully, and then make a blank outline of a cow to see how many parts you can identify and name correctly.

When you have mastered all the parts of the cow, then carefully study the rest of the score card. Note the four main breakdowns and the value given to each.

These are:
1. General Appearance
2. Dairy Character
3. Body Capacity
4. Mammary System

Study the description of each part. Have a discussion with other dairy club members and your leader as to why each part should be as described. What is Dairy Character, Body Capacity, etc.? Learn to use the proper terms when discussing the dairy cow.

One section of the score card deals with defects. It is important that we understand the bad points of the cow as well as her good ones. Can you give at least two reasons why each defect is undesirable?

Judging Dairy Cattle

Take part in your club and county dairy judging contests. Judging dairy cattle will give you a valuable opportunity to learn more about the dairy cow. While judging cows will not always tell us a lot about her producing ability, it will tell us a lot about her usefulness and lasting ability. This is a very important economic aspect of the dairy cow. Remember, it takes a couple of years to raise a cow from a calf and if she only lasts a short time, you will not receive the greatest financial returns from her. Most cows reach the peak of production at about six years. Judging and selection is a tool to help us select cattle that will remain in the herd for useful production for many years.
Order of observation

1. GENERAL APPEARANCE

   (Attractive individuality with, femininity, vigor, stretch, scale, harmonious blending of all parts, and impressive style and carriage. All parts of a cow should be considered in evaluating a cow’s general appearance)

   **BREED CHARACTERISTICS** — (see reverse side)

   **BREED** — clean cut, proportionate to body; broad muzzle with large, open nostrils; strong jaws; large, bright eyes; forehead, broad and moderately dished; bridge of nose straight; ears medium size and alertly carried

   **SHOULDER BLADES** — set smoothly and tightly against the body

   **BACK** — straight and strong; loin, broad and nearly level

   **RUMP** — long, wide and nearly level from HOOK BONES to PIN BONES; clean cut and free from patchiness; THURLS, high and wide apart; TAIL HEAD, set level with backline and free from coarse- ness; TAIL, slender

   **LEGS AND FEET** — bone flat and strong, pasterns short and strong, hocks cleanly moulded. FEET, short, compact and well rounded with deep heel and level sole. FORE LEGS, medium in length, straight, wide apart, and squarely placed. HIND LEGS, nearly perpendicular from hock to pastern, from the side view, and straight from the rear view

2. DAIRY CHARACTER

   (Evidence of milking ability, angularity, and general openness, without weakness; freedom from coarseness, giving due regard to period of lactation)

   **NECK** — long, lean, and blending smoothly into shoulders; clean cut throat, dewlap, and brisket

   **WITHERS,** sharp. **RIBS,** wide apart, rib bones wide, flat, and long. **FLANKS,** deep and refined. **THIGHS,** incurving to flat, and wide apart from the rear view, providing ample room for the udder and its rear attachment. **SKIN,** loose, and pliable

3. BODY CAPACITY

   (Relatively large in proportion to size of animal, providing ample capacity, strength, and vigor)

   **BARREL** — strongly supported, long and deep; ribs highly and widely sprung; depth and width of barrel tending to increase toward rear

   **HEART GIRTH** — large and deep, with well sprung fore ribs blending into the shoulders; full crops; full at elbows; wide chest floor

4. MAMMARY SYSTEM

   (A strongly attached, well balanced, capacious udder of fine texture indicating heavy production and a long period of usefulness)

   **UDDER** — symmetrical, moderately long, wide and deep, strongly attached, showing moderate cleavage between halves, no quartering on sides; soft, pliable, and well collapsed after milking; quarters evenly balanced

   **FORE UDDER** — moderate length, uniform width from front to rear and strongly attached

   **REAR UDDER** — high, wide, slightly rounded, fairly uniform width from top to floor, and strongly attached

   **TEATS** — uniform size, of medium length and diameter, cylindrical, squarely placed under each quarter, plumb, and well spaced from side and rear views

   **MAMMARY VEINS** — large, long, tortuous, branching

   "Because of the natural undeveloped mammary system in heifer calves and yearlings, less emphasis is placed on mammary system and more on general appearance, dairy character, and body capacity. A slight to serious discrimination applies to overdereved, lathy udders in heifer calves and yearlings."

**Subscores are not used in breed type classification.**

**TOTAL** 

| Perfect Score | 100 |
Safety Tips For 4-H Dairying

Be constantly safety conscious. Practice safety every day in your 4-H Dairy Project. Most livestock accidents occur with children under 14 years of age.

All ages of dairy animals at times become frightened, may get mad, or in some cases may become playful. Therefore, they must be handled with care. Over-confidence and carelessness are the main causes of injury by farm animals.

1. Handle all ages of dairy bulls with care. All dairy bulls over 6-months old should have a ring in their nose when you are handling or showing them.

2. Be very careful around any dairy animal that has just calved. She may become vicious and hurt you while trying to protect her newborn. She may be a pet at other times.

3. When transporting your animals make sure your equipment is in good shape.

4. When leading animals, lead with a hand close to the halter so the animal is under control at all times.

5. Handle your dairy animals quietly and gently at all times.

6. Speak to your animal when you walk into the stall along side of her.

7. Keep all fences, gates and equipment in good repair and be sure all baling wire and strings are picked up and disposed of.

8. Human beings are susceptible to many animal diseases. Use caution around sick animals and properly dispose of dead animals.
Careers in dairying are many. Any boy or girl with the interest and desire may find a bright future in dairying as well as other agricultural enterprises. It is said that of all the workers employed in the U.S. today, about 40 percent work somewhere in agriculture. Nearly 8 million work on farms, 7 million produce for and service farmers, and 11 million process and distribute farm products. In addition, one-half million scientists directly or indirectly serve agriculture. These figures may change but there is a demand for about 15,000 men and women trained in agriculture each year. Only about 7,000 are graduated from college each year.

You, as a young 4-H member, should already be planning your future career. Some careers that would be of interest and available to 4-H Dairy Club members are:

1. Dairy Farming

2. Dairy Research
   a. Dairy production
   b. Processing
   c. Marketing
   d. New dairy equipment and its use

3. Industry
   a. Food processing
   b. Pesticides and Herbicides
   c. Feed manufacturing
   d. Dairy processing

4. Business
   a. Agriculture Banking
   b. Farm management
   c. Grading and packaging
   d. Marketing

5. Education
   a. Agricultural Extension
   b. Vocational Agriculture
   c. College instructor
   d. Government agencies

6. Communications
   a. Farm reporting
   b. Market reporting
   c. Radio
   d. T.V.

7. Service
   a. Inspection and Regulation
   b. Plant and Animal Quarantine
   c. Foreign service
   d. Agricultural consultant
   e. Veterinary