

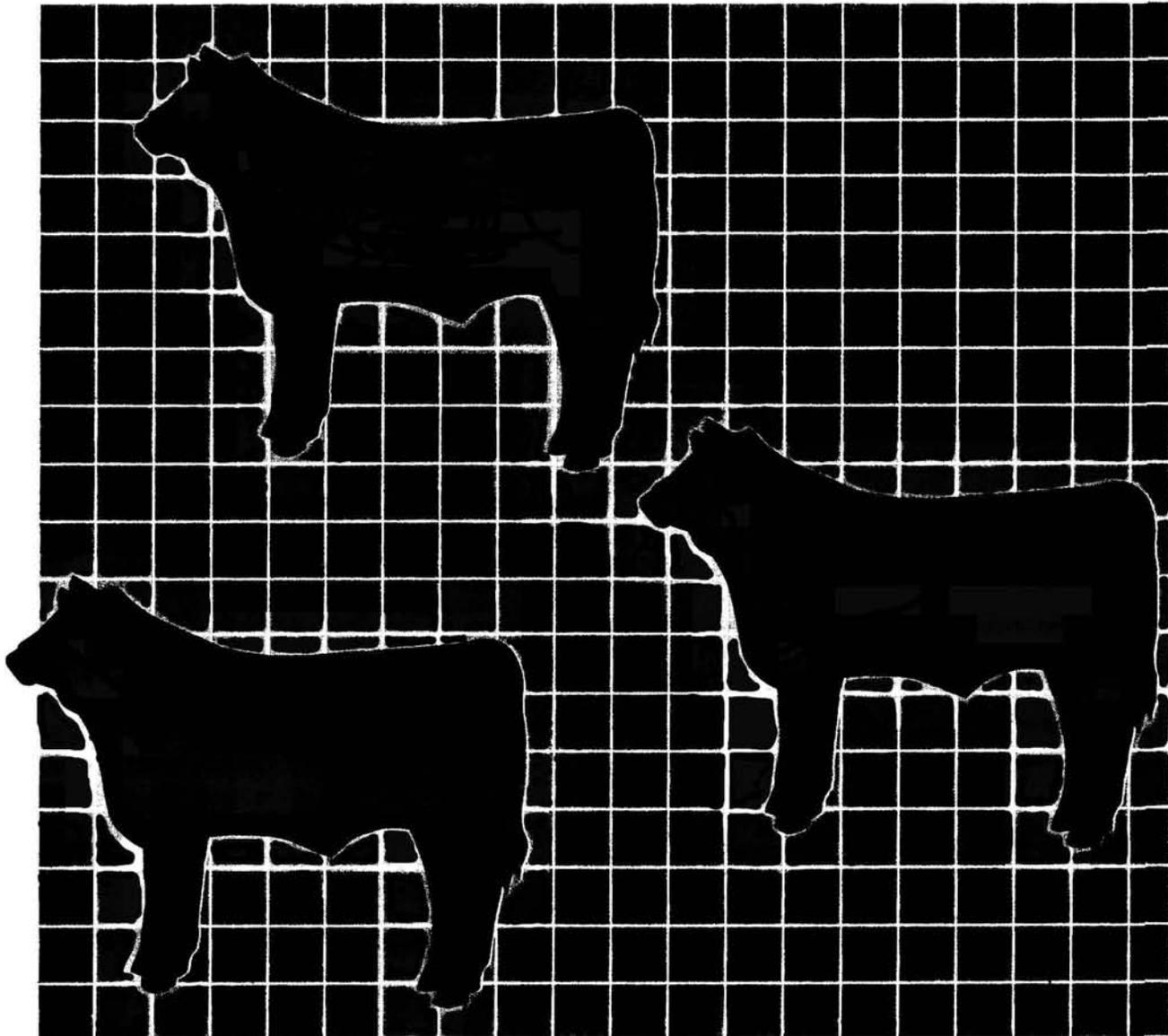
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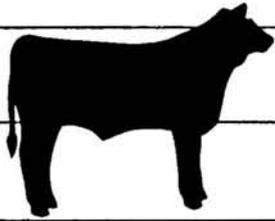
# Your 4-H

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# Market Beef Project

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# Your 4-H Market Beef Project

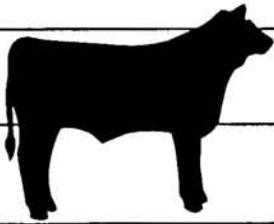
## Contents

<b>Introduction .....</b>	<b>1</b>	Fats .....	13	Showing the Calf .....	25
What You Can Learn .....	1	Minerals .....	13	After the Show .....	26
Project and Member Objectives .....	1	Vitamins .....	13	Sportsmanship .....	26
Records to Keep .....	1	<b>Feeds for Calves .....</b>	<b>14</b>	Suggested Guidelines for Fitting and Showing Beef Cattle .....	27
<b>Selecting Calves for Your Project .....</b>	<b>2</b>	Energy Feeds or Concentrates .....	14	<b>Beef Quality Assurance .....</b>	<b>28</b>
Grade .....	2	Protein Supplements .....	15	Quality Time After Time .....	28
Conformation .....	2	Feed Additives .....	15	What Is a Residue? .....	28
When to Buy .....	3	<b>Feeding Your Calf .....</b>	<b>16</b>	Why the Concern? .....	28
What Kind of Calf to Buy .....	3	Nutrient Requirements .....	16	How You Can Prevent Residue Problems in Your Animals .....	28
Disposition .....	5	Set Your Goals .....	16	Points to Remember .....	29
Sources of Feeder Calves .....	5	Starting Your Calf .....	16	<b>Marketing .....</b>	<b>30</b>
Feeder Cattle Prices .....	5	Selecting a Ration .....	17	Determining Cattle Quality .....	30
Where to Get the Money .....	5	Basic Grain Rations .....	17	Production Traits .....	30
<b>Early Care and Management . 6</b>		Two-Phase Feeding Systems .....	18	Carcass Traits .....	30
Stress .....	6	What Energy Level to Feed .....	18	Selling Your Steer .....	31
Trucking the Calf Home .....	6	Grain Preparation .....	19	Beef Products .....	32
Castration .....	6	Normal Feed Consumption .....	19	<b>Other Activities .....</b>	<b>33</b>
Dehorning .....	6	Mineral Mixes .....	19	Information Development .....	33
General Health .....	6	If Your Calf Goes Off Feed .....	19	Other 4-H Projects .....	33
<b>Common Diseases/Ailments: Prevention and Control .....</b>	<b>7</b>	<b>Exhibiting Your Calf .....</b>	<b>20</b>	Demonstrations and Illustrated Talks .....	33
Infectious Diseases .....	7	Halter Breaking and Training .....	20	Public Speaking .....	33
Noninfectious Diseases .....	9	Training to Lead .....	20	Judging .....	33
<b>Facilities and Equipment .... 12</b>		Hoof Trimming and Foot Care .....	21	Fitting and Showing .....	33
Housing .....	12	Hair Care .....	21	4-H Camp .....	33
Feed Lot .....	12	Clipping and Blocking the Hair .....	22	4-H Trips and Tours .....	34
Feeders .....	12	Preparing to Leave for the Show .....	23	Careers in Animal Science .....	34
Waterers .....	12	Transporting Cattle .....	23	<b>References .....</b>	<b>35</b>
<b>Feed Nutrients .....</b>	<b>13</b>	Leaving for the Show .....	24	<b>American Beef Cattle Breed Associations .....</b>	<b>35</b>
Water .....	13	Arriving at the Show .....	24	<b>Glossary .....</b>	<b>36</b>
Proteins .....	13	Exercise and Tie-Outs at the Show .....	24		
Carbohydrates .....	13	Show Day .....	24		
		Exhibitor Attire .....	25		

## Credits

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# Introduction

Congratulations on enrolling in the 4-H market beef project. You're a member of a very exciting and interesting 4-H project area and you'll have the opportunity to learn about one of Michigan's important industries—beef production. You'll also help produce the most popular meat on the American table—beef.

## What You Can Learn

In this 4-H market beef project you can learn to:

- Select feeder calves for your project.
- Select proper feed for your calves.
- Combine these feeds into a balanced diet.
- Figure costs and returns from your project.
- Tell when your calves are sick.
- Tell when your calves are healthy.
- Prepare your calves for exhibition.
- Handle your calves in a show ring.
- Determine if your calves will be acceptable to the packer.

These are only a few of the many things you can learn. Working with your leader, you may want to make your own list of the things you want to learn from this project.

## Project and Member Objectives

The objective of the 4-H market beef project is to encourage integrity, sportsmanship, cooperation and an ability to communicate through activities such as demonstrations, talks, judging events, tours and exhibits.

Knowing correct procedures for running and participating in a business meeting will be important to you all of your life. Your 4-H beef cattle club is an excellent place to learn and practice these skills.

Here are some objectives you should keep in mind for your market beef project:

- To acquire an understanding of scientific production and management practices by keeping records and owning and caring for livestock.
- To acquire skills in executing production and management decisions.
- To gain business experience and develop knowledge of the values and principles of purchasing, marketing, record-keeping and securing credit.
- To learn and use efficient procedures and methods in marketing livestock and their products.
- To develop an understanding and appreciation of the livestock/meat industry and its role in the agricultural and commercial economy of the country.
- To explore the livestock industry as a career.

The market beef project consists of feeding cattle to a market weight of approximately 1100 to 1300 pounds for steers and about 75 pounds less for heifers.

Don't expect to make a big profit on your project. Your profit or loss will depend on the cost of the calves when you start the project, the cost of the feed used, other costs (such as veterinarian and

equipment bills) and the price you receive for your calves when you sell them.

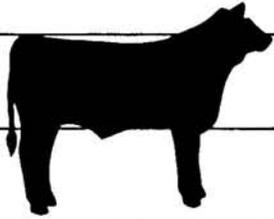
If you market your calves at your county or area fair or show, generous people in your community may pay more for your animals than their true market value. This increases your chance for a profit. However, it's important that you know the difference between the regular livestock market price or value of your calves and the price you receive at your fair or show sale. Your 4-H leader can help you get this information.

If your calves bring more than the regular market price, you should realize that this difference is a reward for your having participated in the project and for having carried out the practices you learned.

## Records to Keep

The reasons for keeping records on your market beef projects are to:

- Help you learn more about animals; their rate of growth, the feed they require and their habits.
- Help you plan future projects.
- Determine if you made or lost money and how much.
- Improve your management practices.
- Give you a record of your project activities.



# Selecting Calves for Your Project

Select animals that will produce the end product that is your goal for the project. Purchase calves at or near market price.

## Grade

The quality of calves you buy will depend on several factors, including:

- The amount of money you have to spend for each calf.
- What you plan to learn from your project.
- Your age and experience.

The USDA Feeder Cattle Grades were revised in 1979 to better describe the types of feeder cattle being produced and increase accuracy in predicting feedlot performance potential. The factors used to grade feeder cattle are thriftiness, thickness of muscling and frame size.

Thriftiness refers to the health of an animal and its ability to gain weight and fatten normally.

Unthrifty cattle, regardless of frame size and muscle thickness, are graded Inferior.

Thickness of muscling refers to the development of the muscle system in relation to skeletal size. At a constant fat thickness, thicker cattle have a high ratio of muscle to bone and a more desirable yield grade. Feeder cattle are classified by thickness as No. 1, No. 2 or No. 3 (see figure 1).

Frame size refers to the animal's height and length in relation to its age. It indicates the animal's potential to grow and its probable mature size. Grade classification for frame size is Large, Medium and Small (see figure 2).

Each thrifty feeder calf is given a frame classification and a muscle classification. These two factors are then combined to give the calf one of ten feeder grades. The USDA grades of feeder cattle are as follows:

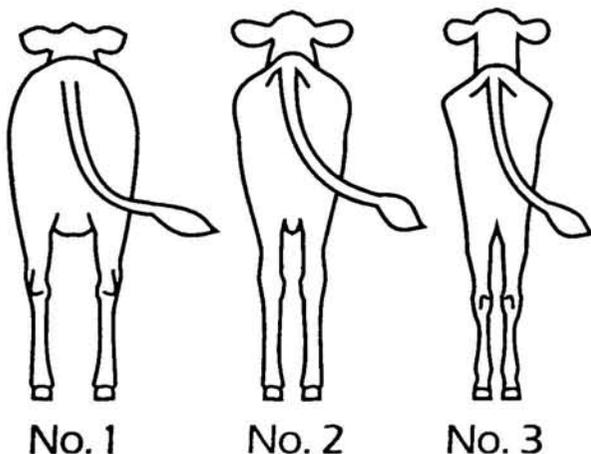
- Large Frame, No. 1
- Medium Frame, No. 1
- Small Frame, No. 1
- Large Frame, No. 2
- Medium Frame, No. 2
- Small Frame, No. 2
- Large Frame, No. 3
- Medium Frame, No. 3
- Small Frame, No. 3
- Inferior

## Conformation

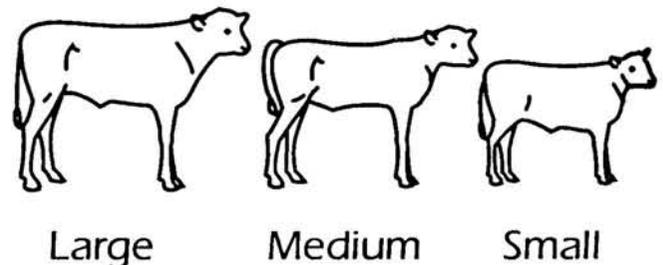
Conformation is the muscular development of your calf. To pick a good feeder calf, learn the parts of the animal and the value of each part (see figure 3).

When choosing your calf, look for a calf that has plenty of length, good skeletal structure, trimness and good muscling (see figure 4). Often a calf will appear more gangly than it will when it matures. If possible, pick a calf with records of performance (a record

**Figure 1. Feeder cattle grading: thickness.**



**Figure 2. Feeder cattle grading: frame size.**



of its growth up to weaning time). A calf with good weight for age will gain faster at less cost per unit of gain. Be sure to look for healthy, thrifty calves.

### When to Buy

Buy calves in the fall or early winter, when the calves are approximately 6 to 9 months old. This is the time of the year when there is the greatest selection. Try to select calves that were born in March, April or May of the current year for showing at the county fair next year.

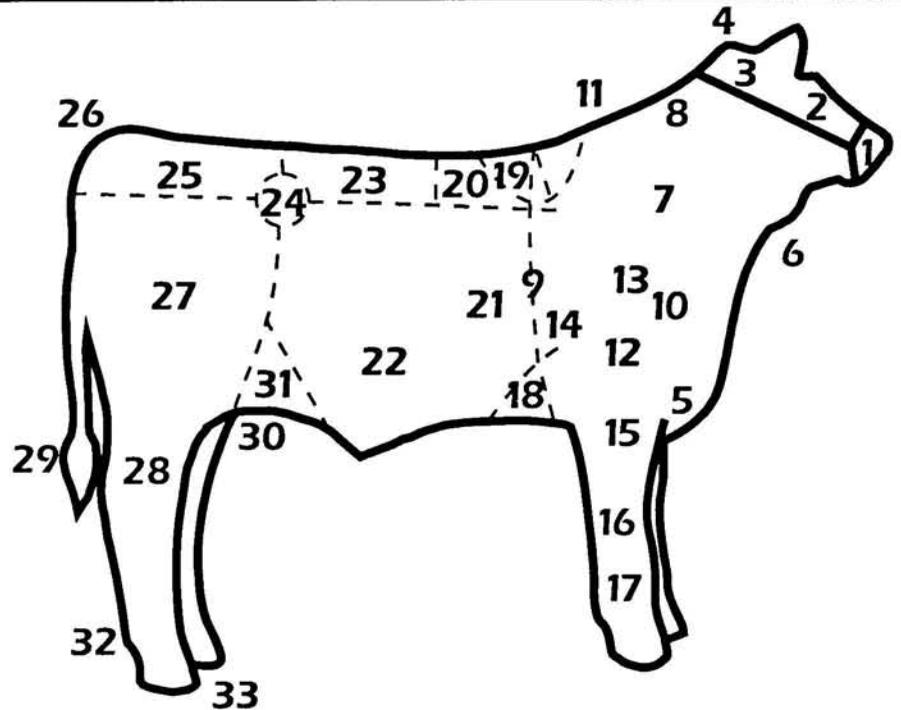
### What Kind of Calf to Buy

It's usually best to avoid the two extremes in type, that is, the extremely small-framed early-maturing type and the extremely large-framed, late-maturing type (see table 1 on page 4). The extremely small-framed, early-maturing calves will stop growing too soon and become fat at too light a weight. Extremely large-framed, late-maturing calves will undergo skeletal growth too long and won't accumulate enough finish to grade Choice until they become extremely heavy. As a rule, calves should grade Choice when they weigh from 1100 to 1300 pounds.

It makes little difference what breed or combination of breeds you buy as long as the calf is the right type. It's important to select a calf that is:

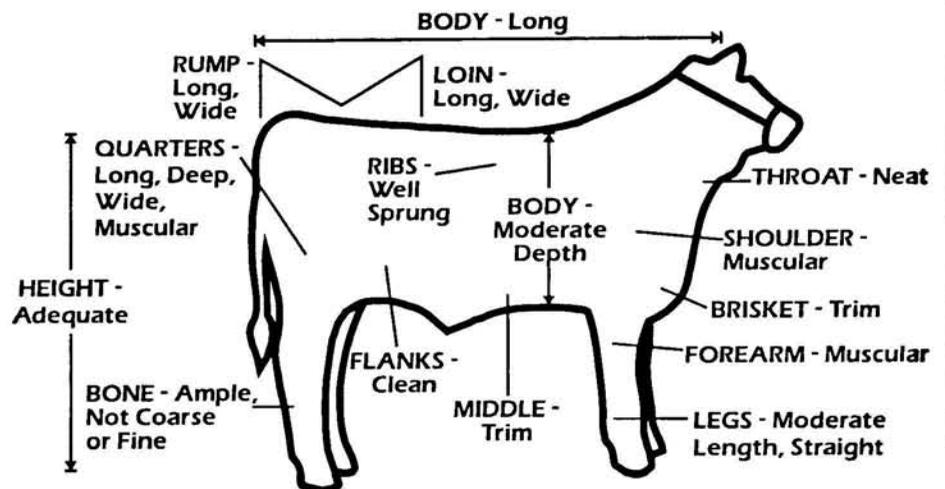
- Large framed enough to ensure that the calf will grow, gain and grade Choice at a desirable weight, but not so extreme that it will fail to finish in the correct weight range.
- Thick and heavily muscled in the quarter, but not so extreme as to indicate double muscling (an

Figure 3. Parts of a steer.



- |                          |                     |                |
|--------------------------|---------------------|----------------|
| 1. Muzzle                | 12. Shoulder        | 23. Loin       |
| 2. Face                  | 13. Shoulder vein   | 24. Hook bone  |
| 3. Forehead              | 14. Elbow           | 25. Rump       |
| 4. Poll                  | 15. Arm             | 26. Tailhead   |
| 5. Brisket               | 16. Knee            | 27. Round      |
| 6. Dewlap                | 17. Shank           | 28. Hock       |
| 7. Neck                  | 18. Fore flank      | 29. Switch     |
| 8. Crest                 | 19. Crops           | 30. Cod        |
| 9. Forerib (heart girth) | 20. Back            | 31. Hind Flank |
| 10. Point of shoulder    | 21. Ribs            | 32. Dew claw   |
| 11. Top of shoulder      | 22. Paunch or belly | 33. Hoof       |

Figure 4. Points to look for when choosing a calf.



**Table 1. Performance and Carcass Cutout of Various Types of Steers Fed a High Energy Ration**

Item	Small-framed British	Large-framed British	Large-framed Exotic	Extremely Large-framed Exotic
<b>Minimum starting weight</b> (Nov. 20), pound:	400	450	500	550
<b>Final weight, pound:</b>				
For Aug. 1 show	925	1050	1150	1200
For Sept. 1 show	—	1100	1200	1275
For Dec. 1 show	—	—	1325	1400
<b>Average daily gain, pound:</b>				
For Aug. 1 show	2.10	2.35	2.55	1.60
For Sept. 1 show	—	2.25	2.50	2.55
For Dec. 1 show	—	—	2.20	2.25
<b>Days on feed:</b>				
For Aug. 1 show	253	253	253	253
For Sept. 1 show	—	284	284	284
For Dec. 1 show	—	—	375	375
<b>Feed per pound gain, pound:</b>				
For Aug. 1 show	8.0	8.0	8.0	8.0
For Sept. 1 show	—	8.2	8.2	8.2
For Dec. 1 show	—	—	8.8	8.8
<b>Total feed consumed, pound:</b>				
For Aug. 1 show	4200	4800	5200	5400
For Sept. 1 show	—	5330	5740	6150
For Dec. 1 show	—	—	7620	7920
<b>Carcass quality grade:</b>				
For Aug. 1 show	Low Choice	Low Choice	High Select	High Select
For Sept. 1 show	—	Average Choice	Low Choice	High Select
For Dec. 1 show	—	—	Average Choice	Low Choice
<b>Fat thickness, inches:</b>				
For Aug. 1 show	0.50	0.50	0.35	0.30
For Sept. 1 show	—	0.60	0.40	0.35
For Dec. 1 show	—	—	0.55	0.50
<b>Rib eye area, square inches:</b>				
For Aug. 1 show	10.00	10.50	12.00	12.50
For Sept. 1 show	—	11.00	12.50	13.00
For Dec. 1 show	—	—	13.25	14.00
<b>Carcass yield grade:</b>				
For Aug. 1 show	3.4	3.5	2.9	2.8
For Sept. 1 show	—	3.7	3.0	2.9
For Dec. 1 show	—	—	3.6	3.4

extremely muscled condition that isn't a desirable trait in the U.S. beef industry).

- Trim in the brisket, middle and underline, but not so shallow-bodied that the calf may not grow and gain weight rapidly.

- Straight in the topline and long and reasonably level in the rump.

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## Disposition

Try to pick a quiet, gentle calf. Never pick a wild calf even if the calf is very high quality because it will be hard to train and often won't gain weight rapidly.

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## Sources of Feeder Calves

You can obtain feeder calves from several sources, including:

- Your own or your parent's herd
- A neighbor's or friend's purebred or commercial herd
- Special feeder cattle sales
- Regular feeder cattle sales at weekly auctions
- Breed association feeder cattle sales
- Annual Northern Michigan and Upper Peninsula Cooperative Feeder Cattle Sales
- Local purebred and commercial breeders

If you feed calves you've raised at home, weigh them when they start on feed and figure their value using current market price. You'll need this information for your livestock record book.

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## Feeder Cattle Prices

Good project animals can be bought at or near top market prices. You'll probably sell your calf at or near market price at the end of the project, so don't pay much more than market price at the beginning of the project.

Remember, one of the purposes of feeding the calf is to make a profit. Don't pay a high price for a calf with the idea that this alone will assure you of winning a grand championship. It takes good feeding, a lot of hard work, the right kind of calf and good showmanship, to have a grand champion.

A calf at a sale may cost more than one found by searching individual farms and ranches, but actually may not be any more expensive when the time and expense of driving and looking for calves is considered. Beginning members should be very careful not to spend a lot of money for a calf. When you become more experienced in feeding calves, you can justify spending more for a high-quality calf.

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## Where to Get the Money

Your money problems are the same as those of any other cattle feeder: "Where will I get the money to buy and raise my feeder cattle?" and "How much money will I need?"

There are probably three sources of money available to you:

- Your savings account
- Borrowing from your parents
- Borrowing from your bank or lending institution

If you borrow the money from your parents, pay them interest as if you were borrowing from a bank. Keep the transaction on a businesslike basis.

Borrowing from your local bank will give you good business training. Have your parents go with you. Your banker will need to know three things:

- How much money will you need?

- How long will you need the money?

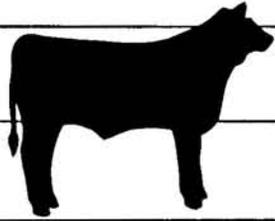
- How will you repay your loan if your calf dies or your project loses money?

If you need to borrow money to buy the feed for a project calf, you need to know how much feed your calf will eat. If your 500-pound calf will be sold at 1150 pounds, it will need to gain 650 pounds. You can estimate that it will take 8 pounds of feed for each pound of gain. Therefore, the total feed required should be about 5200 pounds (or 8 pounds x 650 pounds of gain).

If you estimate that a quarter of the total weight of feed is roughage (hay) and three quarters is concentrate (grain), you'll need 1300 pounds of roughage and 3900 pounds of concentrate. If hay is \$50 a ton (2.5 cents a pound) and your concentrate mixture costs \$130 a ton (or 6.5 cents a pound), your feed costs will be \$286. Thus, your cost of gain is 44.0 cents a pound. Experienced feeders who raise their own feed will do better, but these are good estimates for a 4-H member.

You'll pay interest on the money you borrow from the bank. If you borrow \$286 for a year to buy feed for your steer and the interest rate is 12 percent, you'll pay \$34.32 ( $\$286 \times 0.12$ ) in interest. So, when you repay the bank, you'll need to pay them \$320.32 (the original \$286 borrowed plus the \$34.32 interest).

Paying off your loan when it is due will help your reputation as a borrower. This is called your credit rating. Whether you obtain the money from your parents or borrow it from a bank, it's important to pay your debts by their due dates. Honesty and integrity are important to you as a 4-H'er and as a citizen.



# Early Care and Management

## Stress

Though stress is hard to define, it is important that you understand the concept so that you can give your feeder calf proper care early in its feeding period. Stress is a calf's physical or psychological reaction to circumstances that frighten, irritate, endanger or excite it. Any time a calf gets sick or scared, it has been stressed.

Hauling, vaccinating, introducing it to strange surroundings and strange calves, and many other things can scare or stress the calf. When a calf is stressed, it is more susceptible to sickness. It may eat less feed and grow slower. It is important to minimize stress throughout the feeding period, but especially when you first get your calf home.

## Trucking the Calf Home

Handle your calf quietly during loading to avoid getting it too excited. To avoid chilling your calf in cold weather, cover the front and one-third of the top and sides of the truck or pickup with canvas or cardboard to keep out the wind. Clean your truck and bed the truck with clean straw.

When you arrive at the calf's new home, have a clean shelter available. Be sure to use dry bedding to make the calf as comfortable as possible during this high-stress period. The calf should have enough room in its pen to exercise and move about. Don't lock the

calf in the barn where there is no ventilation; this may cause respiratory problems.

Try to familiarize your calf with its new home so it will know where the feed, water and shelter are located. Do everything you can to ensure the comfort and well-being of the animal.

## Castration

If you buy steer calves, make sure they are castrated. Knife castration is preferred to clamp castration. Knife castration minimizes the chance of having a staggy steer. A staggy steer shows many of the same physical characteristics as a bull (such as a very muscular neck and crest, and larger and broader head) This condition is caused by improper castration or castrating the steer at an older age (more than 12 months). Unless you or your parents are experienced, your local veterinarian should do the castrating.

## Dehorning

When you buy a calf from a horned breed, make sure it has been properly dehorned. Otherwise, dehorn the calf while it is young. Wait until the calf is adjusted to its new home, is well started on feed and is past the danger of any disease outbreaks. This may mean waiting 30 days.

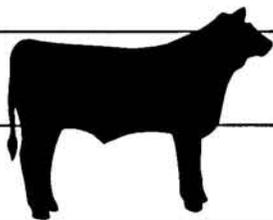
Calves you have raised at home can be dehorned by using a caustic paste before the calf is 10 days old. This simple method is less

stressful on the calf. If your new calf is not dehorned, the best method is to use a dehorning scoop, although other methods are acceptable. Use a sterile method and keep blood loss to a minimum. Get at least a quarter-inch ring of hair around the horn and be as humane as possible. Unless you've had a lot of experience, have your veterinarian do the dehorning.

## General Health

It's important to maintain the health of your new calf. The first two or three weeks are critical, so you should check your calf several times each day during this period. Frequent observation allows you to detect any small problems before they grow into big ones. A strong appetite and body temperature of 101.5° F are signs of a healthy calf. A healthy calf is active and alert.

If you think a calf is sick, take its rectal temperature. If it's 2 degrees or more above normal, call a veterinarian immediately. Quick diagnosis and treatment will pay big dividends. Always handle sick animals with care.



# Common Diseases/Ailments: Prevention and Control

It's important to keep your new calf healthy. The first two to three weeks after you bring it home are very important. New calves need a lot of care and attention. By careful observation you'll learn to tell a normal, healthy calf from a sick one.

Common signs of disease vary depending on the condition present. Signs of illness in calves include a dry, crusted muzzle, failure to rise or move about, poor appetite, difficulty breathing, high temperature, persistent cough and nasal discharge, diarrhea and depression. If you see these signs you should contact your veterinarian immediately. Early diagnosis and treatment will pay big dividends. Make your calf more comfortable during illness by giving it good feed, plenty of water, a clean, dry pen protected from dampness and drafts, and plenty of rest.

The following discusses some common diseases that affect cattle. Advice from your veterinarian is very important in identifying a disease and selecting treatments.

## Infectious Diseases

### Infectious Bovine Rhinotracheitis (Red Nose)

**Signs**—This disease is caused by a virus that attacks the upper respiratory system, but other areas of the body such as the eyes, nose and uterus of cows may also be affected. Because of this, a variety of signs are possible. This disease

usually affects younger calves during the fall and early winter.

Signs include an elevated temperature, excessive discharges from the eyes and nose, depression and refusal to eat. The calf's eyes become sore and the lining of its nostrils and muzzle appear unusually red and crusted. This explains why the disease is often called "red nose." Signs that show up later include diarrhea, secondary pneumonia and a deep cough.

This disease can be mild or severe and a calf will usually recover in 10 to 14 days. Once the disease starts, it's difficult to stop because it spreads to other animals. However, the death rate is usually low.

**Prevention**—Vaccinate two to three weeks after weaning or as soon as possible following shipment if the calf is in good health. Vaccinate alone or in combination with other vaccines.

**Treatment**—Antibiotics, sulfa and good nursing care during the illness will speed recovery.

### Bovine Virus Diarrhea

**Signs**—Severe ulcers and sores develop inside the calf's mouth, on its tongue and inside its esophagus, abomasum and intestinal tract. The animal often shows signs of severe diarrhea, dehydration, elevated temperature, depression and complete loss of appetite. The diarrhea persists and the general condition of the animal rapidly deteriorates. Pneumonia may develop later. This disease may be mild or severe.

Severely affected animals aren't likely to recover.

**Prevention**—Ask your veterinarian about vaccination.

**Treatment**—There is no good specific treatment, but good nursing care may help the calf recover.

### Parainfluenza (PI<sub>3</sub>)

**Signs**—This disease is common to calves and usually occurs shortly after shipment. It's basically a respiratory disease caused by a virus. Soon after it arrives, a calf may show signs such as a fever, depression, going off feed, a light cough and nasal discharge. If the condition is left untreated, pneumonia, excessive weight loss and diarrhea will often follow.

If the disease seems to be mild, the calf will often recover on its own. Severe infection must be treated.

**Prevention**—Many stresses are placed on a young calf such as weaning, vaccination, worming, shipping, change in feed and water, and exposure to other cattle. Any combination of these can weaken the calf and increase its chances of developing parainfluenza. Try to avoid stressing your calf as much as possible and vaccinate it. Try to minimize stress for your calf after it arrives, and ask your veterinarian for the best way to prevent parainfluenza.

**Treatment**—Parainfluenza readily responds to treatment if diagnosed early. If you use antibiotics or sulfonamide drugs, follow

directions. Your veterinarian should advise and supervise all treatments. Early treatment and good care will aid recovery.

### **Pasteurellosis (Pneumonia)**

**Signs**—This disease is caused by a bacteria that may be contracted through contaminated feed and water or by inhaling infective organisms. It affects the respiratory system and the calf will show signs of depression, fever, excessive salivation and nasal discharge.

**Prevention**—Proper vaccination and reducing stress on the calf is the best way to prevent this disease.

**Treatment**—Sulfonamide drugs and antibiotics are very useful for treatment. Consult your veterinarian for advisable treatments.

### **Bovine Respiratory Syncytial Virus (BRSV)**

**Signs**—As the name implies, this disease is caused by a virus that affects the respiratory system. It is transmitted by exposure to infected cattle or facilities. Signs include fever, rapid breathing, nasal and eye discharge, coughing and slight swelling in the neck and jaw.

**Figure 5.**  
**Active ringworm.**



**Prevention**—Vaccinate for BRSV.

**Treatment**—Administer antibiotics on the advice and supervision of a veterinarian.

### **Enterotoxemia (Overeating)**

**Signs**—This disease is caused by an organism that produces a very strong toxin. It can grow and produce toxic material when the calf is overfed on grains or other high-energy feedstuffs. The disease progresses so quickly that often no symptoms are noticed before the animal is found dead. Signs in less severe cases include depression and weakness, loss of appetite, diarrhea and rapid weight loss. Recovery depends on the amount of overfeeding and the degree of intoxication.

**Prevention**—Avoid overfeeding the calf on grains and other feeds it isn't used to. A toxoid, which reduces the effect of a toxin, is available for prevention. Increasing the roughage in the diet will also help prevent enterotoxemia.

**Treatment**—Antitoxin and other treatments counteract the effects of the toxin and the diarrhea. Your veterinarian should treat this disease.

### **Blackleg and Malignant Edema**

**Signs**—These are two similar diseases caused by related organisms that may be found in the soil. The organisms can enter the animal's body through the mouth or through open wounds. Toxins produced by the organisms bring about the disease. Calves aged 6 to 18 months are most susceptible. The first sign is a swelling over a heavily muscled area of the body. Beneath the skin in this area will be small gas bubbles and fluid. The calf also shows great pain and

stiffness, an elevated temperature and difficulty in breathing. Affected calves often die.

**Prevention**—A vaccination is available to use against these two diseases and should be used routinely if the problem exists on a farm or in an area. Avoid grazing cattle on creek pastures and wet lowlands where there is a greater chance for them to come in contact with the resistant spores. Affected carcasses should be properly buried.

**Treatment**—Treatment of affected cattle is difficult because of the rapid course and severity of the disease. Large doses of penicillin, if given early, may help the calf recover.

### **Ringworm**

**Signs**—This common disease is a fungus infection of the skin surface (see figure 5). It spreads slowly through groups of cattle by direct contact between an infected calf and a susceptible one or by indirect contact with contaminated feed bunks, rubbing posts and grooming equipment. (Ringworm can also be transmitted to humans.) The disease first appears on the head, neck, shoulders or over the rump. The skin becomes dry and scaly, the hair falls out and a thick, grey scabby patch appears and grows larger. New areas will develop on other parts of the body as the disease spreads. Ringworm is common during winter, when calves are stabled, because the chances of exposure are greater and the calves aren't in the sun as much.

**Prevention**—Careful grooming and isolation of affected calves will help prevent the disease. Once the disease begins, it's difficult to control.

**Treatment**—Once you recognize the disease, you must treat it right away, so contact your veterinarian immediately. Scrape the dry scurf patches and then apply a solution containing iodine or other suitable material. A new oral medication is available that has shown good results. Many states, including Michigan, consider ringworm a contagious and communicable disease and won't allow affected cattle to be shown or sold. Consult your veterinarian for possible treatments.

### Warts

**Signs**—This disease is a viral infection of the skin that causes growths that look like cauliflower (see figure 6). These warts spread slowly and commonly appear on the neck, shoulders and head. Warts occasionally become so large that they break off, bleed excessively and later become infected.

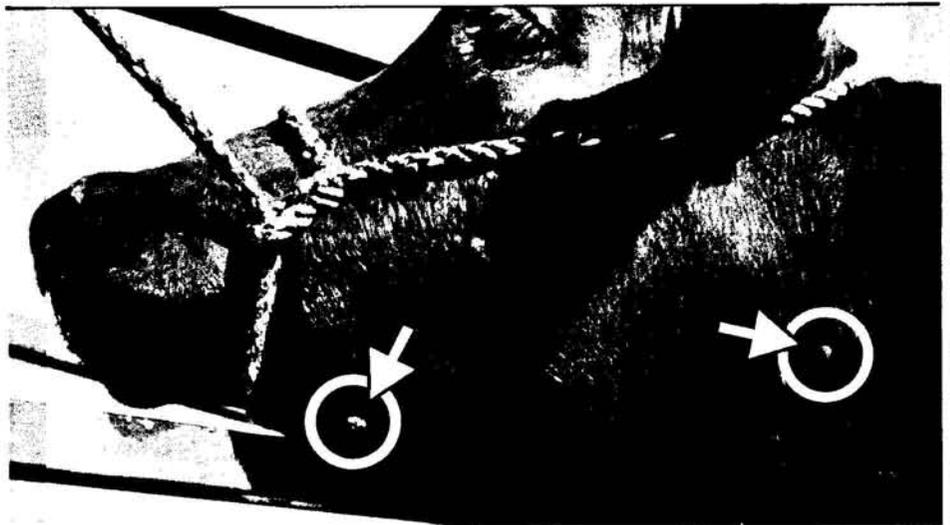
**Prevention**—Isolation of the affected calves will help prevent the disease from being transmitted to other animals.

**Treatment**—Small warts often disappear spontaneously, but you may need to have larger warts removed. A vaccine is also available. Ask your veterinarian for the best treatment. Many states, including Michigan, regard warts as an infectious disease and forbid sale or exhibition of affected cattle.

### Pinkeye

**Signs**—The name of this disease accurately suggests an eye infection. It's caused by a bacteria and when severe can permanently blind the animal in one or both eyes. Pinkeye can also be spread to humans. Precautions should be taken to avoid transmission.

Figure 6. Warts.



The disease commonly occurs during the summer months when the organism is spread by flies. At first a clear discharge runs from the affected eye and down the side of the face. The eye appears red and may bulge. A white spot will appear and may remain if the eye doesn't heal properly. Affected eyes are sensitive to bright sunlight and the calf may not eat normally. The permanent loss of one or both eyes from this infection is a serious hazard to the calf.

**Prevention**—Pinkeye is contagious and infected calves should be separated from calves that haven't been infected. Effective fly control (spraying, dipping or dusting the calves) is important. You should also spray the pens. Dispose of manure frequently to eliminate places where flies lay eggs.

**Treatment**—Keep affected calves in a cool, darkened pen and give them plenty of feed and water. Apply antibiotic ointments on the affected eyes under the direction of a veterinarian. Severe cases may require other treatments or surgery.

### Noninfectious Diseases

#### Foot Rot

**Signs**—This common disease involves the hoof and surrounding areas. The soft tissue between or around the toes will become tender if the calf stands in soiled, wet bedding, muddy yards or wet pasture ground. An open wound develops in the soft tissues and infection develops in the foot and surrounding joints. Lameness, soreness and swelling will develop between the toes and in the hairline above the affected hoof.

**Prevention**—Keep calves in clean, dry corrals and pens and locate water tanks in well-drained areas. Keep yards and pens free of glass, wire, cans and scrap metal. You can also use organic iodine in feed, but check with your veterinarian before doing so.

**Treatment**—Prompt attention is necessary and involves cleaning, medicating and wrapping the affected foot to protect it from more contamination as it heals. Penicillin can also be used. Your veterinarian can tell you about treatments.

## Bloat

**Signs**—Bloat is caused by a combination of factors. Normal feed fermentation results in gas formation in a steer's rumen. The calf must eliminate this gas by belching to avoid a buildup of pressure. Bloat often happens when cattle graze on green, succulent alfalfa or clover in the prebloom stage of growth or are fed a high-concentrate ration. Various infections that depress the calf's appetite may indirectly cause bloat.

The first sign is a bulging of the area between the last rib and hip bone. As gas pressure increases inside the rumen, the entire abdomen enlarges on both sides. This causes pressure and pain resulting in difficulty breathing. Muscular weakness quickly occurs, the mucus membranes turn blue and the calf dies soon after.

**Prevention**—Bloat can be prevented by avoiding rich feeds such as lush alfalfa and by feeding adequate amounts of roughage with concentrate. Forgetting to feed your calf or changing its feed abruptly can also cause bloat. Sick calves tend to bloat more easily than healthy ones, so try to keep your calf healthy.

**Treatment**—The objective of treating bloat is to slow down fermentation in the rumen and help relieve the excess gas pressure. Your veterinarian can tell you what to give your calf orally to accomplish this. For emergency treatment give mineral oil orally. Another emergency treatment is passing a stomach tube or piece of garden hose into the rumen to release the gas. These practices require skill and should only be done under the supervision of an

experienced person. Use a speculum or wedge in the calf's mouth to help guide the tube and to prevent the animal from biting off a piece of the tube.

When a calf is in great pain, avoid handling or exciting it. Relieve the gas pressure quickly. Contact your veterinarian immediately.

Products can be mixed in the feed of calves that bloat repeatedly to reduce or eliminate the gas buildup. Contact your feed salesperson or veterinarian for information on these products.

## Urinary Calculi or Water Belly

**Signs**—This disease of the urinary system can be caused by an improper balance of calcium and phosphorous in the diet, not enough vitamin A or not drinking enough water. The disease occurs more often in male calves than in female calves

A small, hard stone develops inside the bladder. The stone eventually lodges in the tube leading from the bladder. This causes a partial or complete blockage of urine flow, and makes the calf very uncomfortable.

Signs include uneasiness, stomping the feet, switching the tail, arching the back and kicking at the belly. If the disease is untreated, the bladder will rupture and the calf will die from uremic poisoning.

**Prevention**—Making sure your calf has enough water at all times can usually prevent this condition. During the winter months, use heated water tanks. Provide recommended levels of vitamin A, calcium and phosphorous in the ration. Force feeding salt at the rate of 3 percent of the total ration will also help.

**Treatment**—Certain medicines may help pass the stone. However, these are not always successful and sometimes surgery is necessary. A successful recovery depends on prompt recognition and treatment of the condition. Calves usually recover after surgery. Once again, consult your veterinarian.

## External Parasites of Cattle

**Signs**—External parasites are a serious problem. They can harm a calf as much or more than internal parasites or infectious diseases. Larger parasites, such as flies and ticks, are easily seen and recognized, but lice and mites may go unnoticed. You should constantly be alert for these external parasites. Calves will look and perform better once external parasites are controlled.

**Control and Treatment**—You can find useful information on the treatment and control of external parasites at your MSU Extension office. Recommendations on the kind and dosage of insecticides are constantly being changed, consult your 4-H staff for the latest information.

Insecticides are strong chemicals. It's important that you follow the manufacturer's directions on the label. Insecticides are available in sprays, wettable powders or dust preparations. Some are applied directly to the calf while others are mixed with water before application. Be certain to mark containers clearly and to use and store these chemicals safely.

## Cattle Grubs

**Signs**—When present in large numbers, this common parasite can severely damage a calf. The life cycle of cattle grubs is compli-

cated and involves the movement of larvae inside the calf's body. Various organs in the calf become inflamed and the hide over its back is damaged when the grubs come through. Adult females torment the calves as they lay their eggs.

#### **Control and Treatment—**

Cattle should be treated for grubs in the fall to prevent infestation. Various products are available from your veterinarian.

#### **Flies**

**Signs—**Many species of flies aggravate and torment cattle. Flies prefer warm, moist surroundings that often result from poor sanitation and management. Face flies spread the organism that causes pinkeye. Female flies lay eggs in open flesh wounds and beneath moist, matted hair. Soon maggots infect the area.

#### **Control and Treatment—**

There is no practical way to eliminate flies, but you can minimize their effects. Keep calves reasonably clean and well-groomed at all times. Remove manure regularly and use clean straw bedding or good grass pasture. Spray the calves and the building where the calves are housed. This will control and treat at the same time.

#### **Lice and Mange Mites**

**Signs—**These small, external parasites often go unnoticed. The several species of each cause different kinds of damage. Some suck blood through small holes made in the skin, and others merely bite and feed on skin surface debris. The results are damaged, unhealthy skin; infection; and loss of hair, blood and body fluids. Heavy infestations can

**Table 2. Stomach and Intestinal Worms**

<b>Common Name</b>	<b>Usual Location</b>
Medium stomach worm	Abomasum (fourth stomach)
"Barberpole" worm	Abomasum
Thread-necked worm	Small intestine
Small intestinal worm	Small intestine
Strongyloides or hair worm	Small intestine

make a calf unthrifty and can cause serious infections.

**Control and Treatment—**Lice and mites are difficult to see with the naked eye and often go unnoticed until the problem becomes serious. If your calf is frequently rubbing against fences, feed bunks and other surfaces, it may have lice or mange. Check your calf frequently for these parasites and if you have questions, ask your veterinarian to examine your calf. Parasites can be controlled and eliminated with proper insecticides.

#### **Internal Parasites of Cattle**

Cattle are hosts to a variety of internal parasites. Different species affect various organs. Signs vary according to the organ involved and may be mild or severe, depending on the degree of infestation. Ask your veterinarian about a good control program. Table 2 lists common stomach and intestinal worms.

**Signs—**Signs of parasite infestation include poor weight gain and feed conversion, unthrifty appearance, rough hair coat, diarrhea or constipation, and in severe cases, anemia.

**Control—**The best method of parasite control is good management. Don't overgraze pastures—rotate them. Select previously

treated calves. Have your veterinarian make routine fecal examinations for parasites and other problems.

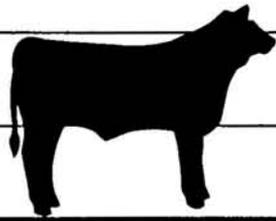
**Treatment—**Some products available for treatment include albendazole, fenbendazole, ivermectin and levamisole. Follow the manufacturer's recommendations when you use these products.

#### **Coccidiosis**

**Signs—**Coccidiosis parasites live in a calf's intestines. They can cause diarrhea, loss of blood in the intestine, poor appetite, weakness, loss of condition and weight, and death. The disease can spread rapidly through a group of calves; younger calves are more susceptible. Contraction of the disease is caused by ingestion of contaminated feed and water.

**Control—**Practice good herd sanitation and avoid fecal contamination of feed and water supplies. Separate older calves from younger ones.

**Treatment—**Prompt and early diagnosis and treatment is essential to avoid harm to your calf. Treatment includes the use of sulfonamide or amprolium in feed and drinking water. A calf with severe diarrhea may require fluid and blood transfusions.

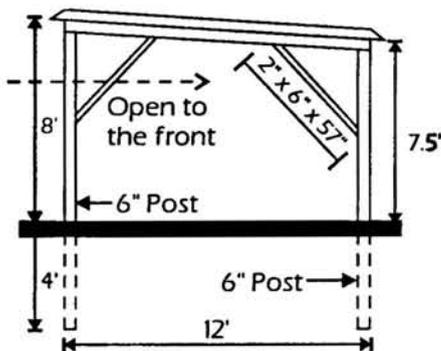


# Facilities and Equipment

## Housing

Shelter for your calf doesn't need to be elaborate or expensive. The most important thing is plenty of fresh air. Shelter should provide a dry bed and protection from the wind, snow and freezing rain. However, be careful not to keep

**Figure 7. Calf shed.**



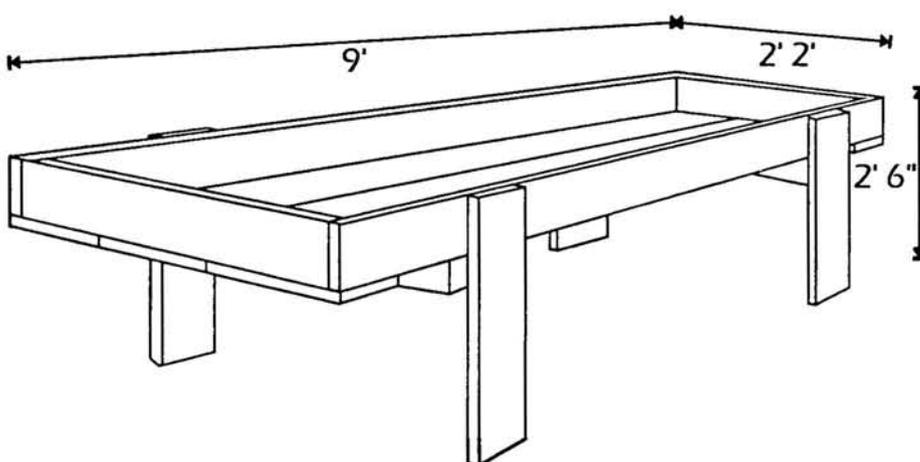
your calf too warm in cold weather. If a calf becomes too warm and is then exposed to extremely cold temperatures, it can become sick and may develop pneumonia.

If you don't have a barn for your calf, an inexpensive, three-sided shelter (see figure 7) is fine for one to three project calves. The top and sides can be covered with corrugated steel roofing and the lower four feet of the walls can be hinged to open toward the south for summer ventilation.

Old barns can be converted for project calves, but may have to be renovated to provide enough ventilation and light. Stalls should be roomy and the bedding should be dry.

You can use a variety of bedding materials. Straw is the best for winter, while a 4- to 6-inch layer of sand is best in the summer. Wood shavings and sawdust also make good bedding.

**Figure 8. Bunk trough.**



## Feed Lot

A 10,000 square foot feed lot is ideal for up to six project calves. A lot that is too large makes calves hard to catch at feeding time or when you want to show them to visitors. A small lot doesn't provide enough room for your calves to exercise. Plenty of exercise is very important to your calf.

The lot can be made of 1- to 2-inch boards nailed on treated posts or of hog wire with barbed wire on top.

## Feeders

You may feed each calf in its own feed trough or pan. This way you can tell what each calf is eating. If you prefer to feed several cattle together, you can build a bunk (see figure 8). The bunk can be made of 2-inch lumber and its length can be varied for the number of calves. Each calf should have about 2.5 feet of bunk room. Clean the bunks periodically and discard any stale or moldy feed or manure that may accumulate.

## Waterers

The ideal way to supply fresh, clean water to your steer is through an automatic waterer. Unfortunately, these are expensive to install. Water barrels or tanks are less expensive and work very well. Water tanks and barrels should be cleaned periodically to ensure that your calf always has fresh, clean water available.