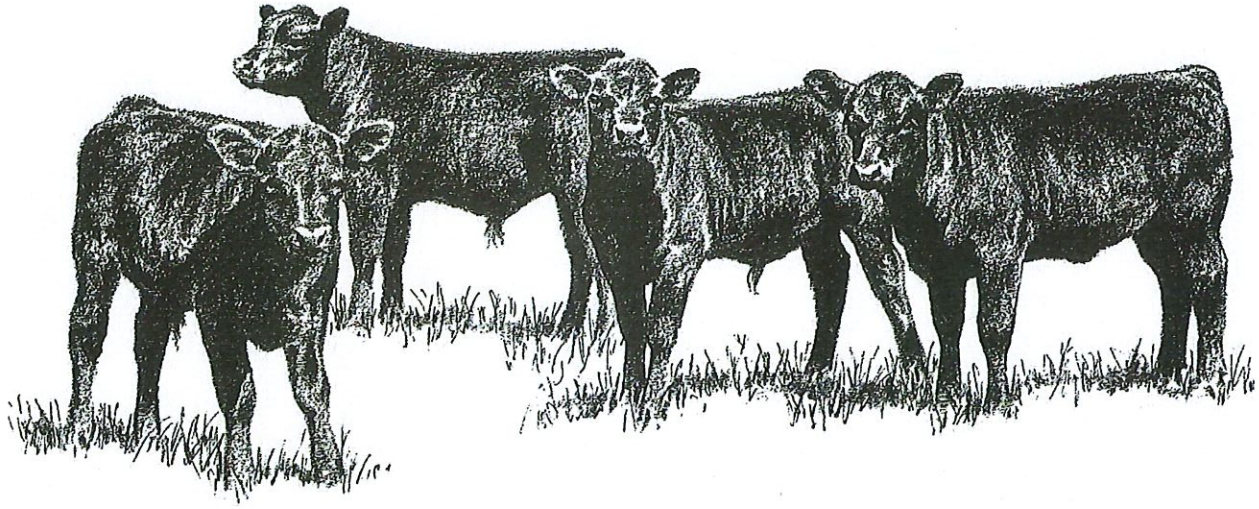
Introduction to the Bucket Calf Project



Seward County 4-H

What do I feed and how do I feed it?

You will start your calf on milk replacer, which may be purchased at most farm supply stores. Either a nipple bottle designed just for calves or bucket can be used for feeding milk replacer. Most farm supply stores will carry these supplies and will be happy to help you get started with your project. After 6 weeks or so you will wean your calf off of the milk and feed a calf starter ration along with good quality hay. For more information refer to the segment in this document on "*Feeding Your Calf*" on page 6.

How much space does a calf require?

Newborn calves can get sick real easy. Therefore, it is important to provide a clean environment for the newborn calf. Your calf will require shelter and a pen for protection from the weather and predators (dogs). A calf hutch and a small pen should only take up an 8x8 foot space. A plywood hut (3 sheets of plywood) and a 16 x 8 foot pen are sufficient for 2 bucket calves if you don't have a barn or other shelter. Calves should be housed separately in a clean, draft-free, dry environment to help keep it healthy. Good calf housing provides conditions that are comfortable for the calf and minimizes stress. Read the segment in this document on "*Housing for Your Calf*" on page 5 for more information.

Will my calf need shots or medicine?

Newborn calves can get sick real easy. Learn the signs of a sick calf and get to know your local veterinarian. Be sure that the navel is treated with iodine as soon as you get the calf and that you watch for navel infection. It is highly recommended that at the appropriate age your calf be vaccinated against IBR, BVD, Lepto, and Blackleg. Keep records of all medications given. Learn more about diseases and how to keep your calf healthy by reading the segment in this document on "*Keeping Your Calf Healthy*" on page 11 of this document.

What if I have more than one calf to feed?

House the calves in separate pens. This makes it easier to feed and prevents disease transmission. Identify each calf with an ear tag or neck strap with a name or number on it.

What other activities are involved?

Record keeping and awards: bucket calf exhibitors are encouraged to fill out a "Bucket Calf Record". One easy way to do this is to write on a calendar or in a diary, what you do each day with your calf. Then when you fill out your record form all the information you need is right there. Four-H members are recognized at the annual county achievement program for record books. Contact your Extension Educator or local leader for more information on records and awards.

Do I have to be Quality Assured?

All 4-H and FFA members that show meat animals need to be Youth Livestock Quality Assured in order to show their animals. Quality Assurance training are held by your local UNL Extension Staff or by a club leader, contact your extension office for dates and times. You will learn a lot about how to make your calf's environment, health and experience the best you can and help our producers protect consumers from unsafe foods.

BUCKET CALF PROJECT

THE BASICS

There several reasons for raising calves without their mothers. Occasionally, a cow dies giving birth or doesn't produce enough milk to support a growing calf. Some people buy calves to raise for beef and to use grass grown on a few acres. Some are bought to help control weeds on the farmstead. It also makes a great beginning 4-H or FFA beef project. Contact your local Extension Educator or FFA Advisor if this is of interest to you.

Purposes of the Bucket Calf Project

1. To design a beef project to fit the physical size, maturity and comfort level of younger or inexperienced youth.
2. To teach proper health care, nutritional requirements of young cattle insuring quality assurance.
3. To teach basic beef management skills without a large investment.
4. To teach basic record-keeping skills.
5. To provide a better understanding of the feeder cattle industry.
6. To give a young person a chance to interact, network and compete in a wholesome, useful venue.

Where to Buy Calves

It is best to buy calves at the farm whenever possible. However, you can buy calves through dealers that pick up calves at the farm and deliver them to you. Experienced dealers know how to care for calves in transit. Sale barns are the easiest markets for both the buyer and seller but can require extra care for the calves when you get them home. These calves are exposed to diseases and are under stress from being moved to and from the sale or auction. Care at the originating farm may have been less than desirable with calves sold through sale barns.

Shelter

Calves should be kept in separate pens that are disinfected and provide clean, dry, and draft free, shade and shelter. Pen space does not have to be that large. An 8'x 8' area is adequate for a calf hutch and pen. Read the segment in this document on *"Housing for Your Calf"* on page 5 for more information.

Feed

You will start your calf on milk replacer, which may be purchased at most farm supply stores. Follow mixing directions for the milk replacer. Read the segment in this document on *"Feeding Your Calf"* on page 6 to make sure your calf is nursing and getting adequate nutrition. This will help your calf maintain its built- in disease resistance. The next step is weaning, which is changing to dry feed, and this can be a stressful time for calves. Clean the bottle or bucket between every feeding and clean the feed trough daily when you switch to dry food. See the section on *"Weaning Your Calf"* on page 9.

Water

Calves should have access to clean fresh water daily. After you start providing dry feed (hay and calf starter), water should be available at all times. Clean the bucket and replace with fresh water every day.

HOUSING FOR YOUR CALF

Like all warm-blooded animals, dairy calves have only a very few basic requirements for normal growth and health--fresh water, proper food, and adequate shelter. A bucket calf's housing needs are simple, but it takes a truly concerned and "caring eye" to see that these simple needs are met. There is probably no other management program that varies more from one project to the next as much as calf housing.

Keep calves in individual pens until they reach weaning age. Separate pens prevent the calves from suckling one another and reduce the spread of calf disease. Housing calves individually allows you to watch the calf's daily feed intake and monitor it for diarrhea (also called scours).

Preferably arrange to use barns or pens that can be emptied completely for brief periods before starting more calves. After a calf is removed, clean and sanitize the entire pen to prepare for another calf.

A variety of housing systems work well, provided that each meets the following minimum requirements:

1. **Prevent direct contact among calves from birth to at least two weeks after weaning.** This reduces the risk of young calves transmitting diseases to each other. Although a few producers report success with "warm housing" (indoors) or with elevated slotted-floor stalls, the most popular method of housing for young calves is the individual calf hutch. Suitable calf hutches can be made on farm or purchased. Three major advantages of hutches are: (1) they are relatively inexpensive, (2) they are easy to clean and sanitize after each calf, and (3) they are easy to move to a new, clean location after each use.

2. **Provide shade from direct solar radiation.** It's not that the calf shouldn't have access to direct sunlight, but the calf must be allowed access to shade if needed. Heat-stressed calves will go off feed, become hyperthermic, and may even die. Outdoor calf pens must be partially covered and walled to prevent excessive heat caused by the sun and to guard against cold winter rains and wind. Pens open to the east gain warmth from the morning sun and provide shade during the warmer parts of the day. Rain seldom falls from the east. Hutches again work well for young calves up to 2 weeks after weaning. Be sure the hutches are well ventilated so that they don't become a miniature oven on hot humid days. Once older calves are grouped together, natural shade from trees or shade from properly managed shade structures (barn, shade netting, etc.) is adequate. Make sure there is enough square footage of shade for all calves. Check the shaded area frequently and prevent it from becoming a damp, manure-laden breeding ground for disease.

3. **Provide a clean, dry place for the calf to lie down.** Calf housing should be bedded to keep the calves comfortable and dry. Sawdust or straw is most commonly used. If the base under the bedding allows drainage, you can simply add bedding every few days to provide a dry bed for your calves. If the base is concrete or some other solid material, you need to remove the soiled, wet bedding at least weekly and replenish it with clean bedding. You may want to plan for an extra pen in this case to confine the calf while you clean its pen. Moist bedding harbors harmful bacteria and conducts heat away from the calf's body. The constant exposure to a large population of harmful bacteria will eventually overpower the calf's natural resistance and predispose the calf to disease. If a calf has no alternative but to lie on damp bedding, the bedding will conduct body heat away from her. This loss of body heat steals energy that the calf could have used for growth. Hutches are frequently bedded with straw, wood shavings, sand, or fine gravel. Older calves grouped on pasture will tend to find clean dry places to lie down, provided there are adequate shaded areas.

If you don't own a cow, colostrum may be available from a nearby dairy farm. Colostrum should be frozen in small amounts for fast freezing and easy handling. Be careful when you thaw frozen colostrum. Studies show that rapid defrosting using boiling water or in a microwave at a setting above 60 percent power destroys part of the protein antibodies. Two methods are recommended:

1. Warm water thaw where 1 or 2 quarts of colostrum are immersed in 110°F water and stirred every 5 minutes to assure even thawing and warming. Continue the process until colostrum reaches about 104°F.
2. Use a microwave oven set at no more than 60 percent power. Again agitate frequently to assure even thawing and warming. Stop when the colostrum reaches 104°F. Either process takes about 40 minutes.

Colostrum Supplements

During the past years, several colostrum substitutes have been promoted for use in calves. These products are not adequate substitutes for cow colostrum. They are meant to be supplements for calves that already have received some natural colostrum.

Bottle Feeding Your Calf

A calf will instinctively nurse its mother, but nursing a nipple bottle or drinking from a bucket is a new learning experience. Teaching a calf to suck from a nipple bottle is much easier than teaching one to drink from a bucket. A nipple bottle is convenient for measuring the correct amount of liquid feed.

The easiest way to teach your calf to consume milk or milk replacer is to take advantage of the calf's instincts. Since calves will instinctively nurse, insert one or two fingers in its mouth (yes, they have teeth, but only on the bottom) and let the calf start sucking. Then insert the nipple of the bottle in its mouth and let it continue to suck. If bucket feeding is used, force the calf's mouth into the bucket of milk while it is sucking on your fingers.

In addition to colostrum fed at birth, calves need milk for the first 3 to 4 weeks of life. After that, they can digest vegetable starches and sugars. Further milk feeding is nutritious but may be more costly than feeding cereal grains.

There is a tendency to feed the baby calf too much and the older calf too little. Whole milk or milk replacer should be fed at a rate of 8 to 10 percent of the calf's body weight for the first 4 weeks. For example, 10 percent of an 85-pound calf is 8.5 pounds or 1 gallon.

All liquids should be fed at room or body temperature. This allows the calf to more easily regulate its body temperature and makes drinking or suckling easier. While nipple bottles allow easier feeding with newborns, older calves easily learn to drink from a shallow bucket.

How Often to Feed

Calves are fairly adaptable to a variety of management practices; however, successful calf feeding programs should be as consistent as possible day to day. While calves are generally fed two equal feedings per day, weak calves benefit from more frequent feeding of the same total amount. Single daily feedings may increase the incidence of scours because of the high intake of total solids during a single, short meal.

Thoroughly clean any utensils used to feed calves. Milk residue, colostrum, or replacer is a great growing ground for disease-causing bacteria. Play it safe and ensure minimum exposure by thoroughly cleaning and sanitizing all utensils used after each feeding. Store equipment in a clean, dry place.

Calf Starters

The first dry feed offered to calves is called "starter." Starter is a very palatable, coarse textured or pelleted concentrate or grain mix. It should contain 75 to 80 percent total daily nutritional requirements and 15 to 20 percent crude protein.

Calf starters should either be coarsely ground, rolled, or pelleted. If the starter is ground too fine, palatability and feed intake go down. Coarse, dry feed promotes development of the calf's first stomach, called the rumen, and provides nutrients for growth.

A bucket is convenient for encouraging calves to consume calf starter (a dry feed, which can be put in the bucket as a calf finishes the milk replacer). Teach your calf to eat dry feed as soon as possible. Place a small amount in its mouth after each milk feeding or place a small amount in the feed box to encourage your calf to eat. About half a pint, or a quarter pound of grain, is all a small calf will eat each day. Increase the amount gradually as 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 the calf).

Good calf starters contain adequate protein, vitamins, and minerals. You can purchase prepared calf starters from most feed dealers. Feed the starter according to recommendations on the container. A dairy cow grain mix with 16 percent protein is a good calf starter. It shouldn't contain protein or nitrogen from urea. Calves can't use urea until their rumen is completely developed.

Water is Important

Make clean, fresh water available at all times. To prevent the calf from drinking too much water at one time, put the water in a different container and location than you used for milk feeding

WEANING YOUR CALF

Weaning

Weaning – means changing the calf's diet from one composed mostly of milk (bottle feeding) to one that is all dry feed. It is not practical to feed milk or milk-replacer after calves are consuming enough dry feed to continue growing well. Calves can be weaned between 4 and 8 weeks of age. Wean calves when their starter intake is 11/2 to 2 pounds per day. In some cases, calves must be maintained longer on liquid feed because of low grain intake. As calves mature, lower or increase the amount of grain you feed them to meet the desired weight gain and the relative prices of grain and roughages. The change from a diet composed of milk and dry feed to one that is all dry feed can create some stress on your calf.

This is one reason why it is important for your calf to eat calf starter and hay at an early age, so it will be somewhat adjusted to dry feed. You can quit feeding milk as you wean as long as plenty of clean, fresh water is available. Calves receiving larger amounts of liquid feed can be gradually weaned to reduce trauma. In general, early weaning reduces feed and labor costs.

Calves should consume some high protein hay for at least a week before they are weaned. The growth and development of the rumen as well as the nutritional requirements of young calves depend mostly on grains but also on forages.

The key for determining when a calf can be weaned is the amount of calf starter it is eating. Calves can be weaned when they are consuming at least 1.5 pounds of calf starter per day. A simple starter diet is listed below (See Table 2). Calves should also be provided trace-mineralized salt at all times in a location out of the weather, especially if it is not provided in the feed ration. An alternative ration that makes ½ ton mix of feed is located at the end of this document (see Table 5).

KEEPING YOUR CALF HEALTHY

Preventing disease in the newborn calf gets them off to a good start, reduces death losses, and is cheaper than treating sick animals. Observe calves regularly, feed them correctly, and provide clean surroundings. Regular use of a rectal thermometer helps detect sick calves with fevers early. Normal body temperature is 101.5°F. Early detection is essential for effective treatment.

Seek advice from your local veterinarian in planning your disease prevention and treatment program. The veterinarian knows the diseases most prevalent in your area, appropriate vaccinations and will prescribe proper care and use of drugs. Your veterinarian may give advice by phone at minimal cost. Calf raisers should not vaccinate or treat calves without a veterinarian's guidance.

IS YOUR CALF SICK OR WELL?

What is normal?

If you think your calf is sick, it is a good idea to make the following checks before you call the veterinarian.

- **Respiration** (breathing rate) – Simply watch the animal breathe and count the number of breaths per minute. Normal breaths per minute for cattle range from 20 to 28.
- **Pulse** (heartbeat) – you can check the heartbeat by holding your ear against the lower left side of the calf's chest and listen to the beats. Or, you can feel the pulse with your fingers, by putting your finger on the artery that crosses the jawbone at the middle edge of the lower jaw. Normal heartbeats per minute for cattle range from 60 to 70.
- **Temperature** – For a small amount of money you can buy an animal rectal thermometer. Be sure and tie a string to the end of the thermometer to maintain control. Shake the mercury down below 98 degrees, and then insert it in the rectum. When the thermometer has been inside the calf for one to two minutes, pull it out and wipe it off with a paper towel or dry rag. Then read the temperature. Normal temperature is 101.5 degrees F. Be careful not to take these tests right after your calf has been excited or overheated. Also, outside temperature should be taken into consideration along with activity level.

Appearance and Behavior

One of the first things junior calf feeders need to learn is how to tell if calves are sick, or may be getting sick. Before you can tell if calves might be starting to get sick, you need to know how they act when well. One of the signs of well calves is eating. If calves start to eat less, or don't eat at all, this may be one of the first signs of sickness. Also, if calves are alert, stretch their backs when they get up, and are ruminating, then they're probably not sick.

Ruminating is a characteristic of animals with a complex digestive system called ruminants, such as cattle and sheep, but not swine or horses. Ruminants eat fast and then later "reprocess" the coarser parts of what they eat. They do this by regurgitating these parts back to the mouth, re-chewing and mixing with saliva, and, finally, re-swallowing. This is commonly referred to as "chewing the cud", and is a sign of a contented, relaxed, usually healthy animal. If you observe closely, you can see the physical signs of rumination.

If you'll watch your calves regularly, you'll better understand normal behavior. Then, if calves start to get sick, you'll recognize the early signs. But if you don't know how a healthy animal acts, you may not notice problems until a calf is very sick.

These are some of the more common signs of sickness or unusual health conditions in cattle. Again, study your calves closely every day and you'll be more aware of potential problems. It is a good idea to write down symptoms and conditions so when you talk to your parents, County Extension Educator, Ag Teacher, veterinarian, or other advisors they'll have a better idea of what might be wrong.

Once you determine that your calf is sick (if you have no previous experience with sick calves) call a veterinarian immediately. The quicker you involve someone with animal health expertise the better the chance your calf has of a quick recovery. Young calves get sick very easily and with a quick response and challenging the disease, you increase their chance of survival. Also, different diseases require different medicines for best results. Your veterinarian will be the most up to date on medication for specific infections. The following is probably the most common problem with bucket calves.

Calf Scours

One of the more devastating problems with young calves, scours may be caused by: bacteria, viruses, and nutritional or environmental factors. Diarrhea causes dehydration, a loss of water and minerals from the body. An irritation to the digestive tract caused by one of the above factors results in inefficient digestion of food. It is sometimes difficult to distinguish scours caused by infection organisms from scours caused by other factors such as overfeeding, irregular feeding, or rapid changes in feed. Infection scours usually affects several calves with foul smelling diarrhea, and some animals may die quickly.

Quick Treatment Necessary By far, the most important treatment for scours is replenishment of vital fluids and electrolytes. Numerous powdered formulas are available commercially that help return fluids into the calf that are lost in the diarrhea. You should keep a supply on hand to meet a scours problem. Consult your veterinarian for the best product and for the amount of mixture you need to give sick calves.

Scouring calves are usually losing body weight because of dehydration, and are unable to digest their food well enough to maintain or gain body weight. The greatest concern for a scouring calf should be to replace the loss of minerals and avoid body weight loss. Therefore, the immediate treatment should be to replace the lost minerals by feeding an electrolyte solution in addition to milk or milk replacer.

Effective electrolyte powders for mixing with water are available from your veterinarian. The electrolytes should be mixed according to instructions and fed 10 to 15 minutes after the milk or milk replacer. It is important not to feed the electrolyte solution immediately after the milk, since the solution will dilute the milk too much and will affect the digestive enzymes.

Since a scouring calf's digestive system is upset, the feeding schedule should be changed to avoid overloading the system. Milk or milk replacer should be fed at the rate of 1 percent of the calf's birth weight, but this total amount should be divided into four equal feedings. A good feeding schedule would be: morning, noon, evening, and bedtime. The same amount of electrolyte solution should be fed approximately 15 minutes after the milk. When the scouring condition begins to subside, the number of feedings can be reduced to three times per day and then two times per day. Finally, the use of the electrolyte solution can be withdrawn during a three-day period. For more information about calf scours, call or visit your local county office of the UNL Extension Service or your local veterinarian.

NOTE: The following page contains some other diseases and problems that you should be aware of when you raise any kind of beef.

RECORDS

Keep good records of all events. One good way to do this is to write on a calendar or in a diary, what you do each day with your calf. Keeping track of all medicines that your calf receives is very important. Record the date, type of treatment, amount of medicine, who gave the medicine, kind of medicine, and any withdrawal date. This information will help your veterinarian determine if a different method of treatment is necessary.

COSTS INVOLVED – A BUDGET

Table 4 shows the approximate costs involved in raising a calf from birth to 17 months of age. As you can see, there is a lot involved in raising calves. General costs are listed in the table. There is the initial cost of the calf and additional costs in feed, housing, bedding, and medication. Costs vary from farm to farm.

Table 4: Example Costs for a Typical Bucket Calf Project (Per Calf)

Age	Item	Amount	Costs
Birth to 2 months			
	Milk Replacer	50 lbs.	$ 34
	Calf Starter Grain	100 lbs	$ 15
	Alfalfa Hay	30 lbs	$ 2
	Veterinary Care and Medicine		$ 10
	Buildings, Pens, Equipment		$ 10
	Bedding (Straw, Wood Chips)		$ 5
	Cost of Calf		$150
	Death Loss	10 %	$ 15
		Total Cost to 2 Months	***$241***
3 to 17 Months			
	Grain Mix	1250 lbs @ $185/ton	$115
	Alfalfa Hay	3500 lbs @ $ 75/ton	$131
	Pasture	10 months @ $12/mo	$120
	Mineral and Salt		$ 10
	Veterinary Care & Medicine		$ 10
	Death Loss	2 %	$ 9
		Total Cost 3-17 Months	***$395***
		Total Cost 0-17 Months	**$675**

If you sell your calf at 1200 lbs at $65/cwt your income would be - **$780**

You have a potential of making from your project a difference of - **$105/calf**

Alternative Calf Starter Ration (1/2 Ton Mix):

Table 5 – Calf Starter Ration

Ingredients	Amounts
Corn (Cracked) or Milo (Rolled)	400 lbs
Oats (Crimped or Course Ground)	200 lbs
Wheat Bran or Barley	100 lbs
Soybean Meal or Cottonseed	165 lbs
Dehydrated Alfalfa Pellets	70 lbs
Dicalcium Phosphate	10 lbs
Trace Mineralized Salt	5 lbs
Vitamin D Supplement	250,000 IU
Vitamin A (Stabilized)	2,500,000 IU
Aureomycin or Terramycin	15 gms
Liquid Molasses (If available)	50 lbs
Prairie Hay or Green Alfalfa	Free Choice

Alternative Calf Grower Ration (After 4 Months of Age)

Table 6 – Calf Grower Ration

Ingredients	Amounts
Corn (Cracked) or Milo (Rolled)	700 lbs
Soybean Meal or Cottonseed	100 lbs
Dicalcium Phosphate	7 lbs
Trace Mineralized Salt	7 lbs
Antibiotics	As Needed
Prairie Hay or Green Alfalfa	Free Choice

References:

Kansas State Cooperative Extension 4-H Bucket Calf Project Parent and Leader's Manual, and the Oklahoma State Cooperative Extension 4-H Bucket Calf Guide. Adapted from the Kansas Dairy Leaders Notebook.

4-H BUCKET/BOTTLE CALF EXHIBIT

POSSIBLE QUESTIONS FOR INTERVIEW

1. Where and when did you obtain your calf?
2. Why was it for sale?
3. What did it cost you? Who paid for it?
4. How old was the calf when you got it?
5. How old is your calf now?
6. What did you name it? Why did you name him that?
7. Does your dad or mom have a name for this calf different than yours?
8. Did you have any health problems with the calf? Was it ever sick?
9. What did you do to help make him better?
10. How did you get him home?
11. What did you feed the calf when you first got him home?
12. Do you know what colostrum is? Did you feed it to your calf?
13. What was your feeding program for your calf?
14. What is milk replacer? Did you use any?
15. How long did you feed it milk? Are you still feeding it milk?
16. Did you warm up the milk? How did you do this?
17. When did you start giving your calf solid feed?
18. What did you feed it when you started the solid feed?
19. What are you feeding it now?
20. What feed does your calf like the best? How come?
21. How often did you change the ration?
22. Did you feed any antibiotics?
23. Where did you keep your calf? Did he have a special house or pen?
24. Did you have to get some special things for your calf? What were they?
25. Can you name some management programs that you used? ie—castrate, vaccinate, trimming, etc. How did you do this?
26. When did you start training your calf? Was it hard to do?
27. Do you plan to make a profit with your calf? How much?
28. What are you going to do with the money you earn?
29. What are you going to do with the calf after the fair? Why?
30. What did you like best about your bucket calf project?
31. What did you like the least about your bucket calf project?
32. What is the best thing about your calf that nobody else knows?
33. Did you like doing your record book? Why or Why not?
34. Do you suppose your parents like keeping records?
35. Would you do this again? Why or Why not?

4-H BUCKET CALF
SCORE FORM

As an enrollee in the 4-H Bucket Calf project exhibiting at the Seward County Fair, the 4-H participant will be evaluated in four categories as follows:

	Possible Score	Judge's Score
Evaluation of completed record form	35 Points	_____
Member's knowledge in interview	35 Points	_____
Quality and condition of the calf (exhibition)	15 Points	_____
Evidence of training and showing of calf (exhibition)	15 Points	_____

Ribbon Value for exhibition portion of project:
Purple = 15 pts. Red = 11 pts.
Blue = 13 pts. White = 9 pts.

_____ **Total** _____
100 Pts.

_____

Ribbon Placing _____

Suggested overall ribbon placing to score receiving:

Purple -- 85-100 points
Blue -- 70-84 points
Red -- 55-69 points
White -- 54 or less points