

Sand and Sage Round Up Study Guides
Beef Senior Division
(14 & over as of December 31)

You should know the meaning of the following terms:

Bull - Male animal.

Heifer - Female not yet calved.

Steer - Castrated male.

Crossbred - The product of two or more breeds.

Castration - Removal of testicles.

Cutability - The amount of red meat in the carcass.

Grade - A judgement based on marbling, age prime, choice, select, standard.

Balanced Ration - A ration which provides the proper amounts and portions of required nutrients.

Palatability - Factors of a feed that effect the consumption of that feed (smell, taste, texture...)

TDN - Total Digestible Nutrients (energy value of a feed stuff).

Cud - The bolus of eaten feed which is regurgitated and further chewed.

Fattening - The deposit of energy in the form of fat within the body tissues.

Gestation - the time from conception to birth.

Cow - a female that has had a calf.

Interest - The charge made for money you have borrowed.

Expenses - Items that you have purchased for your project, i.e. grain, roughages, feeder, show equipment.

Income - Dollars that you received from your project i.e. prize monies and money from the sale of livestock.

Profit - When your income is a larger number than your expenses.

Loss - When your income is a smaller number than your expenses.

Breakeven - The price per pound you need to cover your total expenses.

Six essential nutrients - Protein, fat, carbohydrates, vitamins, minerals, and water.

Feed Efficiency - Measure of the number of pounds of feed required by cattle to gain one pound. Divide weight gain of animal by pounds of feed it eats.

Ruminant - Animal that has four stomach compartments (rumen, reticulum, omasum, and abomasum).

Animal Rights - Protection of animals from any type of exploitation or use such as pets or being used in the fair. Extends human rights to animals.

Animal Welfare - Concern for well being of animals for which a person has responsibility.

Animal Liberation - Animals should not be forced to work or produce for our benefit in any way.

Groups believe we should try to eliminate all types of animal use. These groups consider pets a form of enslavement.

You should be familiar with some of the products that are derived from beef.

You should know the minimum weight for market steers at the County Fair.

You should be familiar with the Colorado ethical care of beef guidelines.

You should know the phases of the project scored in the Supreme Champion Programs.

1. Live Placing
2. Record book
3. Written Test
4. Rate of Gain
5. Showmanship

You should know how to manage your market animal during the fair.

1. You should respect other people at the fair.
2. You should feed your market animal two times per day at the fair. Once before 8:00 a.m. and once between 6:00 and 7:00 p.m.
3. You should clean your pen two times per day, once in the morning and once in the afternoon/evening.
4. You should clean the alley in front of your pens every four hours.
5. You should wash your market steer before and after the show and before and after the sale for the minimum.
6. You should not leave your feed pans in the stall after feeding.
7. You should not leave your water trough in the stall after watering.
8. You should keep a neck rope on your market animal when tied in the stall.
9. Check your market animal every two hours during the day.
10. Make a plan on how to get to the show ring and the market sell ring from the stall.

You should know the following things about your market animal before entering the show ring.

1. Breed of your market animal
2. Weight of your market animal
3. Birth date of your market animal
4. Feed costs
5. Beginning weight at tagging
6. Number of pounds gained by market animal
7. Wholesale Parts of the market animal (see attached sheets)
8. Know how to tie your animal up
9. Tag number of your animal(s)

You should know how to dress for the show ring.

1. Shirt with collar, No tank tops
2. Pants with a belt
3. No cap or hat
4. Hair combed

You should know how to figure the selling price of your market animal.

- A. Multiply the weight of your animal by the price you received per pound.

You should know how to figure the gain on your market animal.

- A. Number of pounds gained, subtract the beginning weight from the ending weight to get the number of pounds gained.
- B. How to project your gain on your budget sheet. Multiply the number of days in the feeding period by the number of pounds you think your steer will gain each day and add the beginning weight to this figure.

Example:

Number of days in the feeding period x projected daily gain
 $140 \times 3.0 = 420$ pounds

Pounds to be gained + beginning weight = projected ending weight of steer
 $420 + 700 = 1120$ pounds

You should know of the existence of the following diseases.

IBR - Infection Bovine Rhinotracheitis
BVD - Bovine Viral Diarrhea
BRSV - Bovine Respiratory Syncytial Virus
PI - Bovine Parainfluenza Virus
Black leg and Malignant Edema
Shipping fever - respiratory disease of cattle

You should be familiar with identifying symptoms of diseases. Here are a few examples.

| | |
|-------------|--|
| Ringworm | Round thick scaly areas on head and neck |
| Pinkeye | Watery discharge from eyes |
| Blackleg | Gaseous swelling in muscle, lameness |
| Pneumonia | Chestheaving |
| Warts | Small scaly elevations |
| Coccidiosis | Bloody diarrhea |
| Bloat | Right side of stomach enlarges |

You should know what to use in treating your market animal for the following external parasites:

1. Grubs (heel flies) - Pour on's (Co-Ral, Spotton,) or Ivomec
2. Face Flies - Ear tags with insecticide or Permethrin spray
3. Horn Flies - Ear tags with insecticide or Fenvaluate spray and pour on
4. Lice - Co-Ral pour on dust or Rabon spray or dust bag or insecticide spray and dusts

You should be able to figure the cost of feed per pounds.

A. You have purchased 3360 lbs. of feed at \$.06 per lb. How much did you pay for the feed?
 $3360 \times \$.06 = \201.60

B. You have purchased 1 1/4 tons (2500 lbs) of feed at \$160 per ton. How much did you pay for the feed? How much does the feed cost per pound?
 $1.25 \times \$160 = \200
 $200 \text{ divided by } 2500 = \$.08 \text{ per lb.}$

You should know the water requirements for your market steer are 10 to 15 gallons per day.

You should know some feeding facts. Feeds are usually classified in two categories: concentrates and roughages. Concentrates are feed high in energy, low in fiber and very digestible by beef cattle. Roughages are feeds high in fiber and less digestible than concentrates, so they take longer to pass through the digestive system.

You should know what information can be taken from a feed tag. Here are some examples: net weight, product/brand name, drug additives, guaranteed analysis, and ingredients.

You should know the feed ratio for your market animal and how to figure feed requirements.

A. The average feed ratio is 8 lbs of feed for 1 lb of gain.

B. Multiply the number of pounds your steer needs to gain by 8 and this will tell you how much feed will be required.

You should be able to identify grains, roughages, supplements, feed additive, vitamins and minerals.

| <u>Grains</u> | <u>Roughages</u> | <u>Supplements</u> | <u>Additives</u> | <u>Vitamins</u> | <u>Minerals</u> |
|---------------|------------------|--------------------|------------------|-----------------|-----------------|
| Corns | Alfalfa | Soybean | Molasses | A | Calcium |
| Milo | Grass Hay | Fish Meal | Fat | D | Phosphorous |
| Wheat | Milo Stalks | Cottonseed Meal | Whey | E | Potassium |
| Barley | | | | K | Salt (Sodium |
| Oats | | | | B-complex | Chloride) |
| Rye | | | | | Manganese |
| | | | | | Magnesium |

You should know how to find interest on money you borrow. For example you went to your local banker and asked to borrow \$500.00 to purchase your livestock. Your banker is going to charge you 12% per year on the \$500.00

A. Multiply the dollars borrowed by the interest rate.

| | |
|---------------------------|--------------|
| Total dollars borrowed -- | \$500.00 |
| Interest Rate | <u>x .12</u> |
| Interest to be paid | \$60.00 |

B. Divide the total interest to be paid by 12 to figure how much interest you will pay each month.

\$60.00 divided by 12 = \$5.00 per month

You should be able to figure profit or loss from a given group of items and figures on a set of animals.

Enter the following items and information of the expenses and income page provided, and figure and profit or loss and your breakeven.

1. May 20 - You purchase 2 bull calves at \$300.00 each for a total of \$600.00
2. May 22 - You purchase one water trough for \$24.00
3. May 28 - You had the vet castrate 2 bull calves for a cost of 8.00 each for a total of \$16.00
4. May 30 - You purchase 3500 lbs. of feed for \$.08 per pound for a total cost of \$280.00
5. June 4 - You purchase a used feeder for \$20.00
6. June 5 - Your water bill for two months was \$40.00
7. June 6 - Your interest payment for two months was \$28.00
8. June 8 - You sold your two steers that weighed 1120 pounds and 1275 pounds for \$.80 per pound.

How to figure profit or loss:

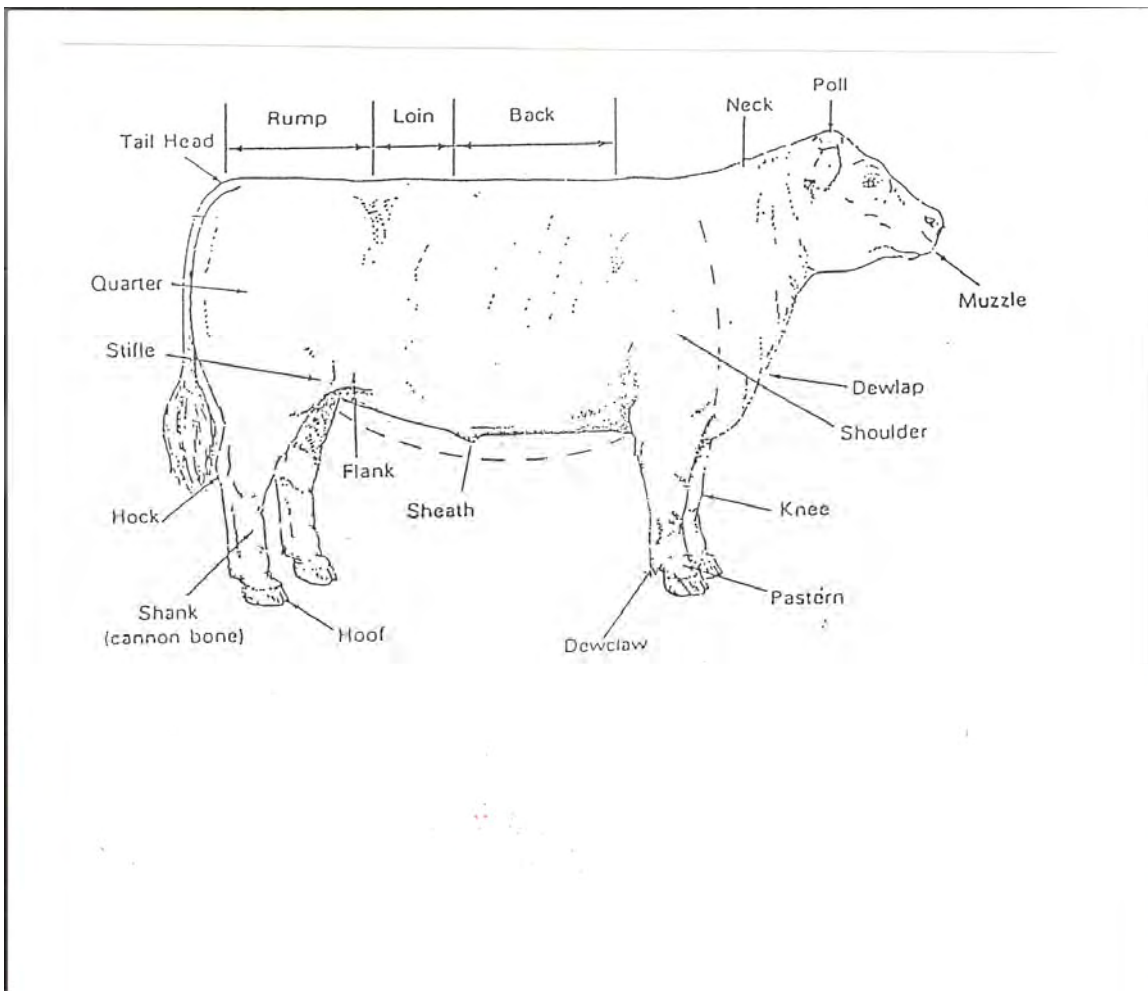
- A. Subtract your total expenses from your total income. If, after subtracting, you have a positive number, you have a profit; if you have a negative number you have a loss.

| | | |
|------------|------------|--------------------|
| Expenses | Income | \$1,916.00 |
| \$1,008.00 | \$1,916.00 | <u>-\$1,008.00</u> |
| +\$908.0 | | 0 = profit |

How to figure breakeven.

- A. Divide your total expenses into your total number of pounds of animals.
\$1008.00 divided by 1450 pounds = .69 cents per pound

You should know the body parts of beef.



WHEN IT'S A MEAL

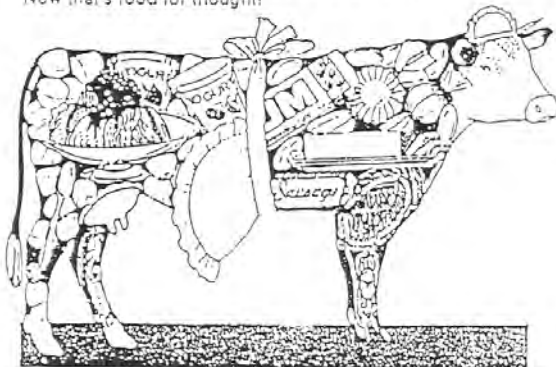
Most people usually think of beef as a hamburger, steak or delicious roast for a satisfying and nutritious meal. There are other edible parts in addition to the protein-packed and mineral-rich muscle. The variety meats such as liver, heart, tongue, kidneys and sweetbreads are just a few of the tasty alternatives used in gourmet dishes.

But there are some edible products that are not so obvious. Did you know that the gelatins in products such as ice cream and yogurt are made from the bones of the cow?

Take a look at some basic edible by-products:

| | | |
|-----------------------|------------------|--------------------------|
| <u>Collagen-based</u> | <u>Blood</u> | <u>Fatty acid-based:</u> |
| Sausage casings | Blood sausage | Oleo margarine |
| <u>Gelatin</u> | Protein Extracts | Oleo shortening |
| Ice cream | Flavorings | Chewing Gum |
| Yogurt | Marshmallows | <u>Plasma Protein</u> |
| Candies | Mayonnaise | Cake mixes |
| | | Imitation Seafood |
| | | Pasta |
| | | Deep-fry batters |

Even inedible by-products of beef cattle are used to feed other animals. Beef fat, protein and bone meals are used in feeding poultry, pork, dairy cattle and domesticated fish. Now that's food for thought!



Super Stomach

Humans have some physiological similarities to the cow, but there is one major difference. The bovine's complex, 4-compartment stomach enables it to digest and convert all types of vegetation indigestible by humans, into energy and important "building blocks" of the body. The simple human system cannot utilize vegetation efficiently, and therefore these potentially valuable resources would be wasted if we didn't get them from another source.

WHEN IT'S A HOUSEHOLD

"What do cows have to do with me? I don't have one in my backyard!" This might be your first reaction to the statement above. However, items manufactured from inedible beef by-products surround us in our daily environments. The soap you washed your face with this morning; the baseball equipment in the closet; even the sheet rock in the walls of your home - all of these contain by-products!

How many of these are a part of your everyday life?

From lactic acids & protein meals

| | |
|--------------|---------------------------|
| Candles | Perfumes |
| Cellophane | Paints |
| Ceramics | Plastics |
| Cosmetics | Shoe cream |
| Crayons | Shaving Cream |
| Deodorants | Soaps |
| Detergent | Textiles |
| Insecticides | Pet foods |
| Insulation | Floor wax |
| Linoleum | Horse and livestock feeds |

From hide

| |
|------------------------|
| Leather sporting goods |
| Luggage |
| Boots & shoes |

From collagen-based adhesives

| |
|--------------|
| Bandages |
| Wallpaper |
| Sheet rock |
| Emery boards |
| Glues |

From hair

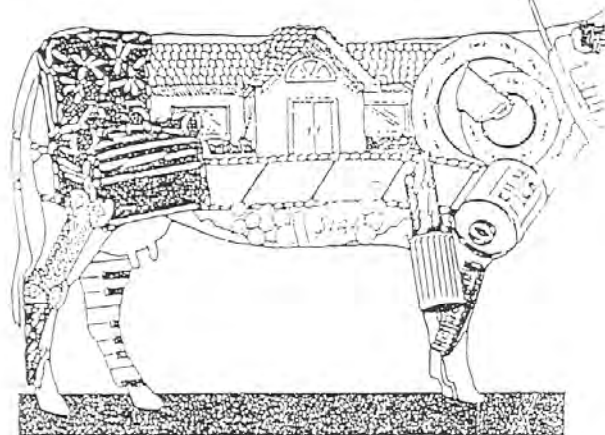
| |
|------------------------|
| Artist's paint brushes |
|------------------------|

From hooves & horns

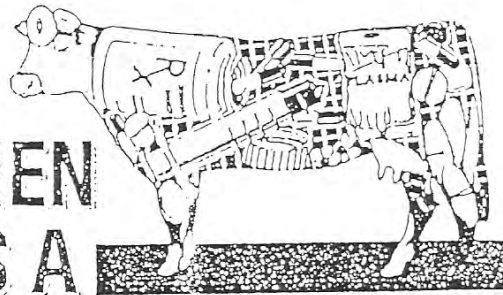
| |
|-----------------|
| Tortoise shell |
| Combs |
| Imitation ivory |
| Piano keys |

From gelatin

| |
|----------------------|
| Photographic film |
| Photographic records |



WHEN IT'S A PHARMACY



The medical world also relies on many by-products for the pharmaceutical wonders it produces and uses. Cattle have great similarities in organic chemical structure to humans. Our bodies will easily accept a medication or treatment made with these animal components. Some of these products can be synthesized, but many are still made from beef animals because they are much more economical without sacrificing quality, whether they are used in surgery, research or routine health care.

From the pancreas

Insulin - for diabetes
Pancreatin - aids digestion
Glucagon - treats hypoglycemia

Trypsin and Chymotrypsin - for burns and wounds, promotes healing

From the blood

Blood plasma: Fraction I - hemophilia
Fraction V - kills viruses
Blood albumin - RH factor types
Thrombin - blood coagulant
Iron - anemia

From the bone

Bone marrow - blood disorders
Soft cartilage - plastic surgery
Bone meal - calcium and phosphorous source

From the spinal cord

Cholesterol - hormone products

From the intestines

Medical sutures

From the pituitary gland

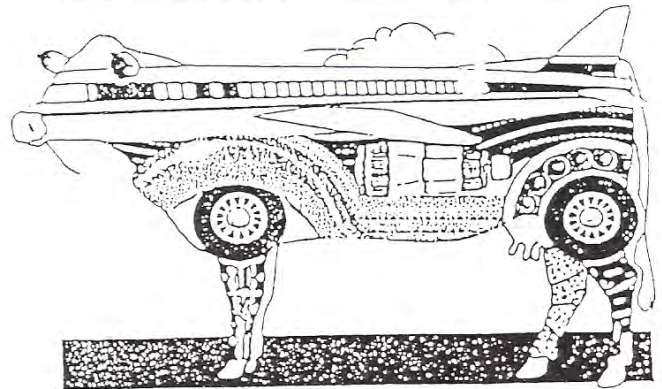
Prolactin - promotes lactation
Pressor hormone - regulates blood pressure
Vasopressin - controls intestinal and renal functions
ACTH - arthritis and allergies

From the liver

Heparin - anti-coagulant
Liver extract - treatment of anemia
Vitamin B₁₂ - prevention of B-Complex deficiencies

Butcher, Baker, Candlestickmaker

The beef industry is an active part of our economy. By-products serve as source material for hundreds of other industries. In other words, without beef as a renewable resource, not only would the butcher be out of work, but so would businesses that produce pharmaceuticals, chemicals, and textiles. Yes, it even affects the baker and candlestickmaker.



WHEN IT GETS US THERE

By-products are used in all types of mechanical items to get us where we're going. Chemical manufacturers use numerous fatty acids from inedible beef fats and proteins, for all sorts of lubricants and fluids. Antifreeze contains glycerol derived from fatty acids to keep your car running cool. Tires have stearic acid which makes the rubber hold its shape under continuous surface friction. Glue from colloidal proteins has been used in automobile bodies. Even the asphalt on our roadways has a binding agent from fat.

Some other unusual but necessary products from cattle sources:

- Hydraulic brake fluid
- Airplane lubricants and runway foam
- Various machine oils and viscous fluids
- Steel ball bearings containing bone charcoal
- Car polishes and waxes
- Textiles for car upholstery

SO, WHEN IS A COW MORE THAN A COW?

Whenever we depend on its renewable resources to be part of the world that helps us.

BEEF BY-PRODUCTS - THE NATURAL SOURCE



COLORADO 4-H ETHICAL CARE OF BEEF CATTLE

An understanding of good husbandry is a key component for raising beef-cattle in order to ensure their welfare. The following summary offers some important guidelines for the proper care and handling of your 4-H beef-cattle.

Proper care and handling is critical for all beef animals. Manage project animals in a safe, humane manner. It is important to understand the biological needs and behavioral differences of beef-cattle in order to provide appropriate facilities, training and nutritional management.

Housing

The most important component of adequate housing is a dry resting place. Provide shelter, whether man-made or natural, such as a windbreak. Typical man-made housing includes sheds that provide protection from extreme climate changes. Buildings should be free of sharp edges, wires, nails and so forth. Direct all water runoff away from the housing facility. For the small number of animals tied in an enclosed barn, ventilation should provide fresh air exchange into the facility.

Bedding

Access to clean, dry resting places should be available to cattle. The size of each pen area needs to be large enough for the animal to stand, turn around easily, lie comfortably and have ample room to walk the circumference of the pen with freedom and ease. Provide a minimum of 200 square feet per animal when loose. The minimum space when tying is 8'X8'.

Bedding should be absorbent and free of toxic chemical residues. When animals are tied, clean stalls of urine and feces at least once a day. Replenish bedding or replace frequently. Keep dust levels to a minimum.

Fans and water spray mists keep animals comfortable and at desirable body temperatures. Secure all feeding, cleaning and grooming equipment safely away from livestock.



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Feeding and Water

Place cattle on a new diet gradually. Make any increases in total volume of concentrates being fed in small, incremental steps.

When selecting a calf, a 4-H member should consult experienced individuals, such as your Colorado State University Cooperative Extension livestock agent or veterinarian. They can provide guidance in selecting calves that will reach desirable weights by show time.

When penned together, all animals will establish an order of dominance, i.e., "pecking order." It is important to space the feed or separate over-aggressive animals from less-aggressive animals. This ensures each receives an adequate amount of feed.

When hand-feeding twice daily, make sure bunks are long enough to distribute the feed evenly for proper consumption. Each animal should have at least 2 feet of bunk space. All feeders should be free of sharp edges. Feeders should be made of solid materials that can be cleaned easily, such as plastic, rubber, concrete, or smooth wood.

Feed ruminant animals concentrates as the primary component of their diet. The safest nutritional plan for ruminants is a diet that includes sufficient roughage. It is critical to manage the rations to ensure the animals reach the desired end-weight by show date. Your local Cooperative Extension livestock agent can provide information to determine the dietary requirements of beef-cattle.

Locate feed and water so that it does not come in contact with urine, feces and so forth. Store feed in weatherproof buildings and containers to minimize molding or nutrient loss. Do not feed moldy hay or grain to livestock.

Check water supply daily. Scrub buckets or pans clean regularly with water.

Beef-cattle differ in frame-sizes and desired end-weights. You must manage the feed intake for each calf. The following table shows the relationship of frame-size to live-weight for 8-month-old calves. Use the chart to determine the desired weight of a calf at show time. Steer measurements are Beef Improvement Federation guidelines for bulls.

Determining the Relationship of Frame-Size to Live-Weight

| *Frame Score | Steers | | Heifers | |
|--------------|--------|-----------------------|---------|--------|
| | Inches | Weight approximate | Inches | Weight |
| 1 | 37.2 | 750 | 36.0 | 600 |
| 2 | 29.2 | 850 | 38.0 | 700 |
| 3 | 41.2 | 950 | 40.1 | 800 |
| 4 | 43.2 | 1050 | 42.1 | 900 |
| 5 | 45.2 | 1150 | 44.1 | 1000 |
| 6 | 47.2 | 1250 | 46.2 | 1100 |
| 7 | 49.3 | 1350 | 48.2 | 1200 |

*From: American Simmental Association "Focus 2000" and Beef Improvement Federation Guidelines for Uniform Beef Improvement program.

Handling

Initial human contact with calves can be stressful. It is important for handlers to understand bovine behavior and begin training by using patience. Remember, calves do not understand what handlers expect. For approximately the first month, handlers should spend time with their calves with little or no pressure (physical contact). This gives the animals a chance to accept their new environment and allows handlers an opportunity to learn and understand animal behavior.

Halter cattle low enough on their noses to keep the nosebands out of their eyes but high enough to ensure breathing is not obstructed. A common practice is to leave the halters on calves when they are turned loose. The calf will become accustomed to having pressure from the halter on its head. This will allow the handler an opportunity to catch the calf with little or no stress to the animal. When you use this practice, it is important to check the halter daily to ensure it has not tightened on the calf's nose or become entangled with other animals, fences and so forth. Never tie the leadrope to any part of your body or wrap the lead around your hand or arm. This is extremely dangerous, because calves spook and bolt easily and may drag the handler.

A young 4-H member should not attempt to halter a calf without assistance. Ask for help from an experienced individual who is familiar with cattle behavior. When haltering a calf, it is critical to have a confined area in which it can be restrained and easily haltered with little stress. Halter-breaking should begin at least 3 to 6 months prior to the show date.

When training a calf to lead, it is desirable to prevent it from getting away from its handler. Use many different methods to train a calf to lead without being abusive. Patience is the foundation of training. It is especially important to gain the calf's trust prior to leading. Hot-shots or whips are not acceptable training devices. Most animals do not respond to training, because they are scared and do not understand what the trainer wants to accomplish. Another person behind the calf encourages forward motion.

Spend time combing and brushing your calf to establish trust. This also starts the foundation for a quality haircoat. During the spring and summer months, handlers should incorporate a strict cleaning and grooming schedule.

At least two months prior to show date, tie steers most of the day to allow them to get used to being tied at the show. Use fans to encourage air circulation in the barn. Turn cattle loose at night. It is the responsibility of the handler to walk or turn the steer or heifer loose daily when increasing the amount of time the calf is tied.

Veterinary Care

Sick animals show depressed behavior, lack of appetite for feed or water, are gaunt or bloated, or maintain isolation from other animals. Sick animals should be separated from any contact with other livestock. Any medication should be administered according to a veterinarian's recommendation with complete compliance for withdrawal times. (Refer to General Policy For All 4-H Livestock Handlers Concerning Extra-Label Drug Use.)

Transportation

Treat beef-cattle humanely during loading and unloading. Protect animals from unnecessary stress or injury due to transportation. Vehicles used to transport livestock should have non-slip floor surfaces and ramps.

Showing

Any animal in the show ring that exhibits unsafe behavior and poses a safety hazard to the handler and other exhibitors should be excused from the ring or given adult assistance to quiet the animal. Excessive kicking, running or unruly nervousness warrants such consideration.



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