

MANAGING BEEF CATTLE FOR SHOW
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Deciding which type of beef project to exhibit can sometimes be the most difficult decision the 4-H member is asked to make. There are several beef projects to consider, including haltered market steers, commercial steers, haltered breeding heifers and commercial heifers. Of those, haltered show steers and heifers demand the most time, expense and work load.



Pen of Commercial Steers



Heifers

Commercial steer and commercial heifer programs are outstanding beef training projects as well. These projects educate 4-H members on economic strategies to feed and develop animals to market or for commercial cow-calf production. More emphasis is placed on feed costs, average daily gains, feed conversions and management strategies including dehorning, castration and vaccination. A detailed record book and an interview are often included in this type of project. Commercial cattle are not trained to lead or show by halter, but are instead, maintained in a pen. They are eventually evaluated as a pen rather than as individuals. More information on commercial cattle projects can be obtained from your County Extension Agent. This publication will detail management principles involved primarily with halter steers and heifers, but some references will be made to commercial projects.

Selection

After deciding on a type of project, it is time to begin the selection process. This is not an exact science, but practice, patience and experience will help the 4-H member properly select the project. It is a good idea to evaluate several young projects before deciding on one. Equally important, each 4-H member should ask someone else to accompany and assist them during this process. Usually, County Extension Agents, Agricultural Science Teachers, ranchers, breeders and experienced exhibitors offer the best advice.

There are selection criteria each 4-H member should consider during the selection process of haltered market steers and heifers for show. The first is whether to show a breeding project (show heifer) or a market steer. Before selecting the steer or heifer for show consult your County Extension Agent for county, regional, state or national rules governing the exhibition of your project. Then age, frame size, weight and breed are all important to coordinate for specific shows and dates for the show. Rules of the intended show should be studied carefully for specific

guidelines, such as ownership dates, minimum and maximum weights and ages and class weight divisions. Important selection criteria are age, weight, frame size and breed or breed types.

Selection

1. **Age**. Actual age and birthdate are very important. The age of a steer or heifer placed on feed will vary from 6 months to 10 months. Most calves are weaned about 6 to 7 months of age. Steers can reach slaughter point from 14 to 20 months of age and heifers should reach puberty to breed between 14 to 16 months of age. Most steers are exhibited at 16 to 20 months while heifers may be shown to 24 months of age, and some breed associations even allow mature cows to be shown. Be sure to check breed association requirements and fair rules and regulations.
2. **Weight**. Steers intended to be exhibited at major winter to spring shows (those from January to March) are normally placed on feed in March to May the year before, weighing approximately 400 to 600 lbs. This weight should allow the steer to reach 1100 to 1300 pounds in January, allowing for reduced weight gain and shrink due to training, fitting, conditioning and hauling. Show steers are normally on feed approximately 270 days and gain between 2.0 and 3.5 pounds a day. This rate of gain and growth can be slightly controlled by regulating the feed ration and amount fed for faster or slower gain.

Example:

Beginning on feed date - Begin to look for and purchase calves in March and complete selection by the end of June. Most ownership or validation deadlines for major shows are before July 1. These calves should have been born in August, September, October, November and possibly as late as December and January to make the major shows (January, February and March).

Beginning Weights - 400 to 600 lb.

Days on Feed should be approximately 270 days

Average Daily Gain of 2.0 to 3.0 pounds will produce total gains between 550 to 800 pounds, allowing for final show weights (March) 940 to 1410. This example indicates the range of possibilities but 940 pounds may be too light to make minimum weight limits at some shows and the 1410 may be considered too heavy to be competitive by many judges. Some cattle will have to gain faster and others may have to be slowed down to reach desired or competitive minimum or maximum weight goals.

Here is an average example:

A 600 pound calf placed on feed July gaining 2.85 pounds day for 250 days equals 700 pounds total gain. This calf would have a 1200 to 1250 pound Final Show Weight can be achieved.

3. **Frame Size** - A numerical frame size is generally correlated with growth and can be used to predict final height that correlates with definite mature weight ranges. On average, steers grow approximately 3/4" height per month from weaning to finishing and gain ranges from 2.0 to 3.5 pounds per day. The 4-H member can predict the final height of a steer by knowing the exact age and height of the animal at any given time and the date of the show. Referring to the Table 2 Frame Chart on page 3, simply match up the age in months with the hip height in inches. The most popular frame sizes are 4 to 6 for ideal show cattle height on show day. Table 1 is an example of a beef steer growth chart from the purchase date to the show date of the project.

Table 1. Example of expected growth from start to finish for a beginning 600 pound steer, frame size fed for approximately 300 days.

	MAR	APRIL	MAY	JUNE	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	GOAL
WT in Lbs.	600	670	740	810	880	950	1020	1090	1160	1230	1300	1300
—	—	—	—	—	—	—	—	—	—	—	—	—
HT in Inches	45.2	46.3	47.3	48.2	49.0	49.8	50.4	51.1	51.6	52.0	52.4	52.4

Table 2. Frame Scores, corresponding USDA Feeder Cattle Sizes and Predicted Final Slaughter Weights of Steers.

<u>USDA Feeder Cattle Size</u>	<u>Predicted Final Slaughter Weight*</u>	<u>Beef Improvement Federation Frame Score**</u>
Small	Below 1000	Below 3.0
Medium	1000 to 1200	3.0 to 5.0
Large	Above 1200	Above 5.0

*At 0.5 inch fat cover, estimated USDA Choice Quality Grade

**See TAEX bulletin L-5176, "Frame Score and Weight of Cattle".

Most judges prefer a live market steer weight range from 1100 to 1300 pounds. It should be noted that frame scores of below 4 might be too small, while frame scores above 6 will be too large for most judges. Frame score 3 and frame score 7 might be acceptable to some judges if managed, fitted and exhibited properly provided they excelled in visual and carcass characteristics.

4. **Breeds** - There are several breeds to consider when selecting the market steer or breeding heifer. Always check for classification and breed class rules for applicable shows. There are generally three divisions for breed types in many shows, especially county. These divisions are British, Continental and American breeds. Additionally, in most major shows, these divisions are further divided into the most popular breeds. Some major shows have classes for the breeds listed after the breed type

classifications:

1. Purebred British Breeds: Angus, Red Angus, Hereford, Polled Hereford and Shorthorn. These breeds are easily fattened or finished, usually have a more docile disposition and the average breed size is smaller than the other groups. They are typically smaller, easier to handle and are recommended for younger and less experienced cattle exhibitors for beginning projects.
2. Crossbred or Purebred Continental Breeds: Charolais, Chianina, Limousin, Maine Anjou, Simmental, and Any Other Breed or crosses (AOB). Some examples of other breeds are Gelbvieh, Braunvieh, Salers, and others. These breeds are often referred to as “Exotic” and are the larger, fast growing, leader, more muscular breeds. Because of their larger size and fast growth pattern, they are recommended for older, stronger and more experienced exhibitors.
3. Crossbred or Purebred American Breeds (Biological Type): Brahman, Brangus, Santa Gertrudis, Simbrah, and American Breed Crosses (ABC) e.g. Bralers, Brahmousin, Beefmaster, and any other crosses with Brahman breeding. These breeds with Brahman or Bos Indicus breeding generally perform more efficiently in hot, humid climates.



American Breed Cross Steer



Continental Steers

These four criteria must all be evaluated thoroughly before selecting the project. Once the project animal is selected, the 4-H member must begin the feeding program and management program with a clear understanding of the evaluation criteria utilized in the beef industry that the judge will be using to select the “ideal” market show steer in the arena at the end.

THE IDEAL MARKET SHOW STEER

Every market steer evaluated in the show ring is evaluated for its end product against the USDA Quality and Yield Grade standards. The U.S. commercial beef industry utilizes a dual grading system to determine carcass value. The two systems are used to predict lean quality and carcass yield.

USDA Quality Grades

By far the most difficult to accurately predict in the live animal is the USDA Quality Grade. Quality grade in young cattle (under 30 months of age) is basically determined by the total amount of intramuscular fat in the ribeye, known as marbling. In addition to marbling, other factors associated with quality grading include predictors of maturity, texture, firmness and color of lean. Maturity is an important factor but show steers for slaughter are usually less than two years of age (A maturity) and therefore is not critically evaluated in the live steer.

Assuming A maturity, the quality grades in order of the most to least marbling scores are: Prime, Choice, Select and Standard. A realistic goal for the feeder to achieve is to reach the USDA Choice Grade.

An evaluator can only use visual characteristics of external fat deposits to estimate quality grades. The rule of thumb is, a steer possessing a uniform degree of finish over its rib cage measured at .35 to .45 inch of fat cover grade the Choice grade if it has the genetics to do so.

USDA Yield Grades

Yield grades are utilized to estimate carcass cutability or percent lean yield. Cutability is defined as the percent of boneless, closely-trimmed retail cuts. Basically, less fat and more muscle equals higher cutability. Cutability and numerical yield grades (USDA YG 1, 2, 3, 4 or 5) have an inverse relationship. Thus, the higher the cutability, the lower the numerical yield grade. USDA Yield Grade 1 is much leaner than USDA Yield Grade 5.

There are four measured factors used to formulate the yield grades: fat thickness, ribeye area, carcass weight and kidney, pelvic and heart fat. The mathematical numbers used to derive yield grades will follow the description of all the measurements.

Fat thickness (FT) is measured between the twelfth and thirteenth ribs, opposite the rib eye and is the major factor when figuring yield grades. Fat thickness measurements usually range between .1" and 1.0". This measurement can also be adjusted according to other locations of fat deposits. Some common depots include the brisket, chuck, round and cod fat. A measurement of .4" is considered to be well finished but not too fat.

The ribeye area (REA) is measured using a grid. The measurement is taken between the twelve and thirteenth rib and may not be adjusted for any reason. Ribeye areas are measured in square inches and range from 10 to 17 square inches. The average steer has about 1.1 square inches of ribeye for every 100 pounds of live weight. An average 1200 pound steer would have about a 13.2 square inch ribeye area. Steers evidencing more muscling would have larger ribeyes but over 15.5 square inches is considered too large.

The hot carcass weight (HCW) is also a fixed variable and may not be adjusted. Light and heavy carcasses both are price discounted severely. This is the reason steers weighing less than 900 pounds or in excess of 1,300 pounds are sometimes evaluated harshly in the show ring. An average dressing percent for slaughter steers is 63.5%. If one multiplies a 1,300 lb.

live steer by 63.5% the resulting carcass weight is 826 lbs. This weight is still acceptable, but as carcass weight begins to exceed 850 lbs., there are major problems associated with beef cuts becoming too large to market efficiently.

The final factor is kidney, pelvic and heart fat (KPH). This is a measurement of the internal fat surrounding vital internal organs and ranges from 1% to 6%. This is very difficult to predict in live cattle, but variation among beef cattle is minimal. Most will range between 2-3% KPH where the numerical percent represents the weight of the KPH expressed as a percent of the carcass weight.

The show steer feeder should remember a few important items while feeding the project to the desirable ideal carcass steer and keep in mind these three statements:

1. Try to select a calf with more than adequate muscle shape to insure an average or better REA (12-15 sq. in.).
2. Feed to produce fat cover of 0.35 to 0.45 inch which should result in USDA Yield Grade 2 and reach the Choice grade if genetically possible.
3. Aim for weights of 1,150 to 1,275 pounds show. Refer to the growth chart with exact age and height measurements to predict approximate final height and weight.

Following these guidelines should place the market steer in excellent contention from carcass acceptability from both USDA Quality and Yield Grade evaluation by today's judge.

General Health Management: Health is an important part of overall management and along with nutrition makes for a healthy animal. However, a health management must not be overlooked and a plan must be applied to ensure proper performance.

Disease Prevention: Consult your veterinarian for advice about your health management program. It is important for cattle to be vaccinated against diseases such as clostridial (Blackleg) and respiratory (Pneumonia) diseases. Probable vaccinations for your calf may include:

Blackleg Type Vaccine - Clostridial vaccinations should have been completed before weaning, but if not, vaccinate with 7-way at the time of purchase followed by a booster 2 to 3 weeks later and another booster 6 to 8 months later.

Tetanus Vaccine - Vaccinate with a tetanus toxoid at the time of purchase.

Brucellosis Vaccine - For Heifers Only!!! Heifers must be vaccinated against Brucellosis between 6 and 12 months of age. This must be performed by a veterinarian!

Leptospirosis Vaccine - Vaccinate with 3 or 5-way at purchase and give a booster every 6 months. This prevents production losses due to bloody urine, loss of condition, kidney problems, and decreased gains.

Metabolic:

Poor nutritional and feeding management may cause health problems referred to as “metabolic disorders.” These are not diseases but still cause severe health problems. Some of the more common feed related health problems one might encounter when feeding show cattle are scours, bloat, acidosis, founder and urinary calculi.

ACIDOSIS. The rate of fermentation, or acid production, from a given amount of feed is just as important as the total extent of fermentation of that feed. Thus, particle size of grains as affected by processing, meal size, rate of eating and day to day consistency of feed intake are all factors influencing fermentation rate and acid production. Excessive rates of acid production even for short periods, referred to as acidosis, cause a change in microbes which can then produce lactic acid. Lactic acid is a much stronger acid and accumulation causes acidosis, loss of appetite, decreased rumen motility, rumen ulceration, liver abscess, founder and even sudden death. Mild acidosis is first observed as erratic intake and possibly mild bloat, followed by scouring. Loose watery feces covered with clear gas bubbles which glisten in the light indicates acidosis. Acidosis, sometimes referred to as “grain overload”, usually results from introducing grain too rapidly into the diet of animals coming from forage diets. The types of microbes which ferment forages are different from those that ferment grains. It normally requires two to three weeks to allow for the shift in microbial populations of the rumen and a safe transition from forage to grain diets. Sometimes acidosis results after cattle are safely on feed due to erratic feed consumption or simply excessive grain intake over a long period of time. A good ration should contain feeds which are not all fermented at the same rate, especially not all rapidly.

Prevention. Start grain feeding slowly. Be consistent in the amount of feed fed; weigh each feeding. Make feeding changes gradually. If a feeding time is missed badly, skip it or feed a little hay and do not feed extra feed to make up for the missed meal-that is the worse thing one can do. Avoid dust and fines and limit feeds like molasses, which are rapidly fermented. Feeding hay will provide some measure of protection. Feed one of the more effective ionophore feed additives.

Treatment. Oral treatment with anti acid or buffering compounds such as sodium bicarbonate, together with intravenous infusion of electrolyte solutions will counter acid effects and prevent further dehydration. Getting cattle back on feed following severe acidosis will be just like starting on feed initially, lots of hay and not much concentrate. Because of the lost time and condition on cattle, it is important to prevent acidosis.

BLOAT. Bloat results from the accumulation of gas which the animal is not able to belch out. There are too many causes to discuss here. Signs of bloat are swelling high on the upper

left side behind the ribs and in front of the hip bone. Cattle on full feed may show a big, full rounded middle on the left side, and even the right side too a lesser extent, but a popping-out, away from the general contour of the body, basketball look high on the left side is a definite sign of serious bloat.

Minor Bloat. Many cattle may show a mild degree of bloat without any serious problem arising, but they should be watched closely as a minor bloat can advance to much more serious bloat.

Treatment. Keep calves on their feet and walking, up hill if possible with head up. Drench with mineral oil.

Acute Bloat. In additions to signs mentioned earlier, calves may froth at the mouth, fight for breath and go down in convulsions. A severely bloated animal may die a few minutes after it falls. As soon as you see the acute bloat symptoms call a veterinarian and administer the following treatments. Keep the animal walking, preferably uphill, with the head held up. While awaiting the veterinarian, place a stick about a foot long crossways in the calf's mouth like a bit on a horse; this encourages chewing and tongue movements to help release gas by belching. A large stomach tube or ½" water hose can be passed through the esophagus, being careful not to enter the trachea. This helps with ordinary bloat but is of little value in foamy or "frothy bloat." As the last resort only (with acute bloat only), puncture the animal's distended rumen. This should be performed by a veterinarian if at all possible. The wound is hard to heal as a result of infection from the rumen contents.

Prevention. Avoid feeds and management practices that encourage bloat. These include too many fines and dust (sorghum worse than corn), too much molasses, too much very high protein forage such as alfalfa or excellent grass hay and lack of any long stemmed forage in the diet. A little dry hay that encourages cattle to salivate discourages bloat. Rumensin® mixed in rations is more effective in preventing minor bloat than other forms of ionophores.

SCOURS. Scouring from any cause leads to dehydration of the animal so electrolyte therapy may be needed. Causes, prevention and treatment for scours resulting from acidosis have been discussed previously. Bloody scours may be caused by severe internal parasitism, bacterial infections or coccidiosis and should be treated with appropriate medication. It is important to keep pens, feeders and water troughs clean in an effort to prevent infections.

FOUNDER. Excess levels of grain intake, which would be expected to cause severe acidosis, frequently causes a condition known as founder where the hooves grow rapidly. There is an increased blood flow to the hooves causing them to become tender, thus crippling the animal and severely reducing feeding performance.

URINARY CALCULI. Kidney stones, water belly or urinary calculi can sometimes effect steers but is usually not a problem in heifers. The condition is caused by mineral imbalances

and/or diets that are too alkaline. A siliceous types of calculi is common on pasture or where animals are consuming high-silica feeds, while a phosphatic type calculi is more common in feedlot situations. The problem is often observed with diets that are high in phosphorus where calcium supplementation is inadequate. Diets should contain 1.5 to 3.0 times as much calcium as phosphorus. Salty water seems to increase the incidence. However, higher levels of salt (1 to 3%) in feed causes the cattle to consume normal water, helping counteract the problem by increasing urine volume. Excessive and/or extended use of sodium bicarbonate can cause problems. Ammonium chloride (1 to 1.5 ounces/head/day) in the feed acidifies urine and can be used as a preventative measure for fattening cattle in areas where problems are common. Frequent observation of the hair round the urinary opening for signs of mineral deposits can warn of a developing problem.

Other Problems: There are other problems that the feeder may encounter.

Warts are caused by a virus.

Treatment:

1. Keep warts covered with oil (e.g. mineral oil) to starve the virus of oxygen.
2. Recommended vaccines may work.
3. Tye off warts with dental floss or fishline.
4. Cut them off and dice them up and place in an empty bolus given to the animal, to create self-immunity. Warts may also be mixed in the animal's feed. The warts may be taken to a veterinarian to develop a vaccine.

Ringworm is caused by a fungus infection of the skin. It can be spread from animal to animal or by brushes, combs or contaminated surroundings. It can also be transmitted to humans.

Treatment

1. Repeated applications of strong tincture of iodine.
2. 5 lbs. of Captan® in 20 gallons of water administered by a pressure sprayer. Spray the premises, stalls and fence lines. This may also be made into a paste and spread over the infected area.
3. Chlorox applied directly to the affected areas.
4. Thiabendazole mixed with dimethylsulfoxide (DMSO).
5. Ivermectin.

Foot Rot is an infection caused by a bacteria which enters through a break in the skin of the hoof. It is mostly associated with swelling between the toes progressing to total swelling of the lower leg resulting in lameness.

Treatment - Administer long acting sulfa boluses and/or a thorough cleansing of the

area and local treatment with anti-bacterial ointment or 5% copper sulfate under a bandage.

Parasite Control. (Do not combine separate worming and grub or lice preparations).

De-Worming. Club calves require more care and sanitation because they are usually confined. The first treatment should be administered upon arrival; then in exactly 21 days followed by another treatment and continue this treatment every 100 days. It is recommended to alternate types of wormers for best results.

Grubs. Apply pour-on treatments for show cattle at the end of May and again the 1st of July, preferably in the late afternoon to prevent blistering (June 15 - July 15).

Ticks. These should not be a problem in properly groomed and handled show calves.

Flies. Proper sanitation and by cleaning fly breeding areas, especially manure will help control increased populations. Also, use a hand sprayer with fly spray on the animals and in the stalls. Additionally, fly tags, one in each ear, seems to control flies irritating the cattle. Some owners simply tie the tags to the halter instead of placing them in the ear.

Lice. Most abundant during winter and summer months. Apply insecticide in late winter and early spring months and a second application 14 days later to kill newly hatched lice. Read the label for application.

Systemic Parasite Control. Ivermectin - controls lice, flies, grubs, worms and ringworms.

Coccidiosis (Bloody Scours). Treat with a specific coccidiostat in drench or water trough. Feed an ionophore throughout the feeding period to help prevent this condition.

FEEDING SUGGESTIONS

Feed costs will be the largest expense aside from the cost of the animal, but an adequate quantity of a properly formulated diet or ration is essential in developing the genetic potential of show cattle. There is no magic involved in feeding, just science and art. The science involves basic principles of nutrient requirements, nutrient composition of feeds, digestive physiology and diet formulation. The art involves: keen observation of animals, recognizing their habits, likes and dislikes; doing things in a timely manner; and establishing routines and recognizing normal from abnormal behavior so that problems can be corrected when they first develop before becoming serious and costly.

NUTRIENTS

Nutrition refers to the processes by which animals consume, digest, absorb and utilize their food for either maintenance activity, growth, fetal development or milk production. Components of food or feed which have similar chemical properties and/or similar physiological functions in the body are referred to as nutrients. Protein, minerals, vitamins, water, sugar, starch, cellulose and fat are

nutrients, the last four being grouped together and referred to collectively as a source of energy for which a requirement is established.

NUTRIENT REQUIREMENTS

The amounts of each nutrient needed by cattle for various levels of performance have been determined by years of research and are published on a regular basis by the National Research Council. These published requirements are very accurate for groups of similar cattle, but may be slightly high or low for individual animals. Thus, if a given individual is not performing well, it would be wise to increase the protein, mineral and vitamin levels in the diet by a reasonable amount. The concentration of nutrients in feeds and the concentration needed in the diet are commonly expressed as a percent of the diet, which is expected to be consumed at a predictable level. However, remember that cattle require an actual amount (weight) of various nutrients, not some percentage or proportion; thus the latter system works as a guide to feeding only when feed intake is in a normally expected range. Measures of energy content or requirement are expressed as percent TDN (Total Digestible Nutrients) or as NEM (Net Energy of Maintenance) and NEG (Net Energy of Gain), both measured as Mega calories (Mcal) per pound or 100 pounds of feed.

The dry part of a feed contains the nutrients, not the water. Most feeds, even though they appear dry, contain 7 to 13% moisture. Molasses contains 25% water. In order to standardize values, most nutritionists work with nutrient requirements and feed composition expressed or adjusted to a complete dry matter basis. However, feed tags express nutrient content on an as-fed basis, not dry basis. It is important to know the basis on which values are expressed when looking at various sources of information and making comparisons.

TYPES OF FEEDS

Types of feeds used in rations are broken down to broad classification of grains, roughages, protein, concentrates, minerals, vitamins and additives.

GRAINS. Feeds high in energy are required to fatten cattle. Corn is the best fattening grain because it is more consistent in nutrient content and processing properties, but it may be replaced pound for pound in any diet by sorghum grain. Barley may replace up to 50 percent of the corn or sorghum grain in a ration. Some feeders feel barley produces a finished steer with superior touch or handling qualities compared to corn, but water consumption, which effects the moisture content of tissues, has a much more dominant overriding effect on handling qualities. Further, calves will experience less bloat on corn diets compared to high barley diets. High percentages of grain, up to 65%, will be included in finishing rations. Wheat is a good high-energy feed, but is not recommended in show diets because of its rapid digestion and tendency to cause acidosis.

Oats, due to the hull lowering energy content, are excellent for growth and development of

steers or heifers. A mixture similar in nutrient content to oats can be formulated with a high energy source like corn, a roughage source like cottonseed hulls, and a high protein source like cottonseed meal. A mix of 70 to 75% corn, 15 to 20% hulls, and 10 to 15% cottonseed meal is about equal to oats. Such a mix is normally less expensive to feed and just as effective in growing steers or heifers. Energy density of the diet, which affects rate of gain, is the dominant factor controlling the degree of growth and fattening, not the type of feed (e.g. corn vs oats). Maximum lean tissue development is obtained when daily rates of gain are less than 2.25 pounds, while fattening is increased proportionally to rates of gain above 2.25. Feed only quality grain. Avoid weevil-eaten, dusty and spoiled feeds.

Grain should be processed. Steam flaking, rolled, cracked or coarsely ground grain is preferred. Dusty, powdered feeds reduce intake and result in more digestive disturbances. Whole shelled corn would be preferred to powdered corn, but sorghum grains must be processed. Calves weighing up to 450 pounds can digest whole kernel grains satisfactorily but, beyond this weight, all grains should be processed, except for whole shelled corn, discussed later in commercial steer feeding programs.

PROTEIN SUPPLEMENTS

Feeds such as cottonseed meal, soybean meal and linseed meal are commonly used to increase the protein content of the diet over that contained in grain alone. Small amounts (< 3%) of fish meal, dried blood meal, corn gluten meal, linseed meal and brewers or distillers grains can be used to improve the amino acid balance of the diet and the supply of amino acids to the lower gut, since these sources contain more rumen escape protein than the former. Over use of this latter group can result in a lack of adequate rumen degradable protein, and the animal proteins are not palatable, thus limiting their use. Young, light weight cattle need higher concentrations of protein in their diet than older, heavier cattle. Adequate levels of protein are critical for digestion, maintenance of feed intake and lean growth, but the feeding of excess protein is expensive, can cause greater heat stress and may result in more digestive problems. Urea can substitute for natural protein in high corn diets for heavy cattle (>800 pounds) and commercial steer feeders will want to take advantage of this cost cutting substitution. However, show steer feeders prefer the extra bloom that comes with natural proteins. Light weight cattle (<600 pounds) must have natural protein as they cannot utilize urea to meet their total protein supplement needs.

ROUGHAGES

Cottonseed hulls are the most satisfactory roughage. Cottonseed hulls have low nutrient value but cattle like them, which helps to keep them on feed. Hulls also help to hold the feed mix together, preventing feed separation. A small slab (3 inches or less) of medium quality grass hay daily will help to keep calves on feed by reducing the chances of digestive upsets. In finishing diets, a small amount of hay is recommended for the physical properties it adds to the diet and not its nutrient contribution; thus medium quality works better than poor or excellent quality. Hay is your insurance measure when feeding cattle. At the first sign of any digestive problems, increase hay while reducing concentrate. Once the problem is corrected, gradually decrease hay while increasing concentrate, but do not try to eliminate all hay as this greatly increases the likelihood of acidosis, bloat and possible founder. A big full middle on a steer can be more effectively controlled by limiting feed and water the last few weeks before show, not by eliminating hay from the diet. Hay should be free of mold, dust and bad odors. Alfalfa hay is nutritious but increases the odds of bloat. A small amount of

dehydrated alfalfa pellets adds nutritional quality lacking in cottonseed hulls. Peanut and rice hulls are cheaper roughages but not recommended for show cattle.

OTHER FEEDS

Molasses helps prevent feed separation and settles dust in the mixed ration. Since molasses is mostly sugar and rapidly digested, using more than 3 to 4 % can increase the chances of acidosis and bloat. Wheat bran adds variety to the ration and is somewhat laxative, thus making a good conditioner, if needed. Fats and oils also settle dust and increase the energy content of diets. Fat sources include whole cottonseed, beef tallow, corn oil, soybean oil and commercially manufactured protected fats.

SUPPLEMENTS AND ADDITIVES

VITAMIN A. Feedlot cattle require 1000 International Units (IU) of vitamin A per pound of feed. Green pastures normally supply adequate vitamin A but green hays may not due to deterioration during storage. Since it is cheap and subject to loss during storage, it is normal to include supplemental vitamin A in the diet at 2 to 3 times the requirement. Vitamin A toxicity can result when fed at 20 to 30 times the requirement.

VITAMIN D. Texas cattle that are outdoors and exposed to sunlight receive ample vitamin D. However, sheltered cattle should be supplemented with at least their requirement which is 125 IU's per pound of diet. Although cattle can tolerate up to 11,000 IU's of vitamin D per pound of feed for short periods of time, it is not considered safe to feed more than 1000 IU's for extended periods.

VITAMIN E. Vitamin E requirements are not well established, but are considered to range from 5 to 30 IU's per pound of feed. Higher levels of vitamin E (500 to 1000 IU's per head per day) have been shown to reduce sickness in receiving cattle, decrease stress from toxins like gossypol and improve meat color and shelf life of retail case beef, all thought to be due to its antioxidant properties. Cattle can tolerate up to 20 times the requirement.

B-COMPLEX VITAMINS. These vitamins are normally synthesized by the rumen microbes in adequate amounts and need not be added to the ration. However, acidosis, the use of high levels of antibiotics and other rumen induced factors may reduce microbial growth and result in deficiency. Thus, spot B-complex supplementation use during stress times may prove beneficial. For quick action, injectables are preferred. Follow directions on product used.

MINERALS. Minerals are required for structure (hooves, bones and teeth) and regulation of physiological processes in the body. High grain diets are deficient in calcium, salt and certain trace minerals. High phosphorus supplements, which are recommended for cows on forages typically deficient in phosphorus, are not suited for high grain diets. Feed grade limestone and oyster shell flour are good sources of calcium, while dicalcium phosphate and defluorinated phosphate are good sources of calcium and phosphorus. Adequate copper, zinc

and selenium are required for good health. Thus modern rations should be fortified with all needed minerals in order to maintain top level performance and health. Salt should be available free choice at all times in addition to that contained in the ration.

ANTIBIOTICS. Antibiotics such as Aureomycin supplied in the feed mixture at the rate of 10 to 15 milligrams daily per 100 pounds live weight, may be effective in preventing some feedlot stress problems. This low-level feeding will help control low-level infection, but has little effect on increasing gain. Some feeders would rather keep antibiotics out of the feed, feeling that they are then more effective when used at treatment levels for a specific problem rather than the prevention levels used in feed. Antibiotics are mostly used in receiving rations for young cattle going on feed for the first time and eliminated after a few weeks. It is important not to use antibiotics (feed additives or injectables) too close to slaughter. Follow instructions and withdrawal times for the product used.

GROWTH PROMOTANTS. Growth implants, which are placed under the skin on the backside of the ear will increase rate and economy of gain. Since implants tend to reduce fat deposition and increase lean muscle growth, there may be a very slight lowering of carcass quality grade. Since sunken loins and raised tail heads are often noticed in implanted cattle, implant only those cattle whose appearance will be enhanced by such effects. General appearance is of more value than maximum efficiency in show cattle, but commercial feeding projects will want to emphasize implanting and efficiency. Implants must be used according to the manufacturer's recommendations where various restrictions exist on the time of slaughter following implanting. Implants for bulls or heifer replacements are not recommended.

IONOPHORES. There are several feed additives collectively referred to as ionophores which improve feed efficiency when added to the diet as recommended by manufacturers. In addition to improving feed efficiency, the products vary in their capacity to suppress or control acidosis, bloat and coccidiosis. An ionophore is definitely recommended in both show and commercial steer diets. Many feed companies make diluted carriers which may safely be added to home mixes. Some ionophores are extremely toxic to horses, so feed only to cattle and at the recommended rates for the product used.

BUFFERS. If high grain feeding causes acidosis, it would seem that a buffer like sodium bicarbonate would be useful as an additive to the diet. A buffer can be useful during the transition period from forage to grain diets or following a bout of acidosis and off-feed. However, cattle produce enough of their own natural buffers once they become adjusted to a diet. Feeding a buffer all the time may decrease feed intake (not palatable) and can increase the incidence of urinary calculi. Levels of 1 to 3 ounces/head/day of sodium bicarbonate for cattle weighing from 500 to 1200 pounds, respectively, are normal.

DIRECT FED MICROBIALS AND ENZYMES

Well fed and managed cattle will probably benefit little from the addition of bacterial, fungal (yeast) or enzyme products to their diets. On the other hand, they shouldn't be harmful to the animal either,

only the pocket book of the feeder. Cattle normally have most of the enzymes, microbes etc. they need unless they have been starved, have had acidosis or have been treated with antibiotics or other drugs which may kill or depress rumen microbes. Thus, targeted use of some of the many highly promoted products may be effective and profitable.

COMMERCIAL SHOW ADDITIVES

There are more products promoted for show cattle than you can count. Many have catchy names and good sounding claims. They contain everything from nutrients like protein, fats, vitamins and minerals to enzymes, yeast, bacteria, mined earth products and unidentified stimulants. The same comments that were made for direct fed microbials and enzymes above are appropriate here. Wise feeders do not use any of these products until they recognize a need. Remember that the diets formulated by top feed manufacturers are designed by professional nutritionists to be complete. Adding extra minerals, vitamins, fat etc. can actually unbalance the diet and decrease performance!!!! It is recommended that you first choose a good diet, feed it without any extra commercial show additives and watch what happens. You will be surprised how many bloomy champions are fed this way. If you observe problems in an individual; poor appetite, erratic appetite (first consider acidosis and management), dull hair, hoof problems etc.; then select a product that contains what you consider to be lacking and try it. This approach will allow you to fix a problem without creating another.

DIGESTION AND PHYSIOLOGY

Cattle, being ruminants, have a four-compartment stomach which allow them to utilize large amounts of high fiber roughage-type feeds, which is not possible for single stomached animals such as chickens and pigs. The largest volume compartments are the rumen and reticulum, and feed digesta flows from them to the omasum and abomasum (true stomach). There is microbial fermentation of feed in the rumen and reticulum which results in feed protein being degraded to feed the microbes, microbial protein and B-vitamins being synthesized. Fats are saturated making them harder, while sugar, starch and fibrous carbohydrates are converted into volatile fatty acids (mostly acetic, propionic and butyric). Volatile Fatty Acids are absorbed into the blood and used as a source of energy by cattle.

FEED INTAKE. Most cattle consume between 2.0 and 3.0% of their body weight in dry matter daily depending on the type of ration (starter, grower, or finishers). As a percent of body weight, feed intake will decrease with increasing age, weight and condition. For example, a 600 pound steer consuming 2.5-3% of his body weight would eat from 15 to 18 pounds of feed per day. A 1200 pound steer consuming 2.0-2.5% can be expected to eat 24 to 30 pounds of feed per day. Study the effects of diet and cattle size on feed intake in **Table 3**.

To feed each calf correctly, it is imperative to know its weight. Not only is knowing the weight of the calf important, the owner should also have a scale to weigh the feedstuffs. Remember, each feedstuff varies in weight. A can of corn will weigh slightly more than the same can of oats.

STARTING CATTLE ON GRAIN DIETS

Feed a good quality grass hay free choice (all they want). Start by feeding 0.5% of the animal's

weight in concentrate feed. If a “starter” type feed is used, it can be incrementally increased fairly rapidly to a point of full feed in 10 to 14 days. If a higher energy grower is being used, use a more gradual increase where full feed will not be reached for 2 to 3 weeks. Do not limit hay until the cattle are safely on full feed.

TYPES OF DIETS OR RATIONS

Most commercial feed manufacturers and show feeding programs have three major basic feed mixes, referred to as starter, grower and finisher rations (see examples in **Table 3**). These mixes are fed at different stages of growth and development as cattle physiologically mature.

The beginning ration is the starter, receiving or preconditioning mix. A starter mix is low in energy, high in roughage and fiber, and high in protein relative to the energy content and commonly medicated with antibiotics or coccidiostats. A high roughage mix is bulky and will fill up the rumen, preventing young calves from over-eating grain while the rumen bacteria become adjusted from forages to grain diets. Using a starter ration would be ideal, but many feeders simply feed a grower ration on a limited basis, with hay fed free-choice to get calves on feed. Either system allows for rumen bacteria to adjust and prevents acidosis. A starter ration would normally only be used for the first 2 to 4 weeks before switching to a grower ration.

A grower mix is exactly what the name implies, a diet for cattle that are in a growing stage of 500-900 pounds. It should have at least 12% protein, moderate fiber, and moderate energy content. The moderate energy content will properly develop the frame and muscle and help prepare the growing steer for a finishing ration. Most grower diets contain a level of roughage and energy that make the feeds suitable for a variety of uses. Small-framed, early maturing steers can actually be finished on many grower diets. When limited to 1 to 2 % of the animal’s live weight, grower diets are good for developing show heifers. Heifers should receive additional amounts of forage in the form of hay or pasture as opposed to finishing steers. Large framed, later maturing steers will need to be moved to a finishing diet 100 to 150 days prior to show, or when they weigh 800 to 1000 pounds. Some of the finishing diets may be too high in energy for Brahman-type cattle, and even some British and Continental cattle, if not diluted with a grower ration or hay, especially when fed for long periods (over 75 days). Many feeders blend a grower and finisher to come up with a mix that best suits each individual animal, determined by watching appetite, droppings and freedom from bloat.

A finishing ration is the last feeding stage. Finishing diets are high in energy, usually at least 50% corn (or related high-energy feedstuffs). Finishers should be carefully fed, particularly at the beginning. Good feeders will slowly move to a full finisher ration by adding this mix to a grower diet in one-fourth portions by 7-14 day intervals. Later maturing cattle usually need to be on a finisher diet sooner than early maturing cattle. This will insure they reach the correct amount of finish. Cattle that are finishing satisfactorily on a grower ration do not need to be switched to a full feed finisher; most Brahman cattle should not be switched. Some feeders add steam-flaked corn to grower diets, which in effect produces a finishing ration. Realize that the addition of much more corn to a finisher is asking for trouble. Utilizing fat to increase energy intake is a safer method as discussed later. Seldom should breeding heifers require a finisher unless fed on a very limited basis with plenty of hay.

The optimum goal is to properly finish steers at 0.35 to 0.45 inch of fat to reach their optimum yield and quality grades. Heifers need to have a moderate degree of body condition (less than that of steers). Excessive fattening of heifers at young ages diminishes future milk production potential. Breeding heifer's condition is referred to as a body condition score and a BCS of 5 for a mature heifer is similar to the properly finished steer.

DIET FORMULATIONS AND EXAMPLE DIETS

A series of diets are shown in **Table 3** to illustrate nutritional relationships. Roughage in the form of cottonseed hulls (CSH) was decreased from 39 to 15% of the diet in diets A through G. As the CSH was reduced, corn was increased proportionally from 35 to 62%. Increasing corn and decreasing roughage increases the energy content (NEM, NEG or TDN) of the diets and projected gain. Note a slight decrease in feed intake as energy content is increased. Study the relationship among feed intake, average daily gain (ADG) and feed conversion or efficiency as the size of the cattle and the diets change.

Thinking you want high energy and fast gain to fatten steers, many feeders try to feed a diet similar to E. However, many cattle may suffer from acidosis from the increased level of corn in Diet E (62%), or any rapidly fermentable energy source. Remember that acidosis is more of a problem for Brahman-type cattle, but can affect all cattle to varying degrees.

By utilizing 1.5% fat in Diet F (which is basically Diet D + fat), an energy content and predicted animal performance equal to Diet E is obtained without the level of corn which may cause digestive problems. Notice that Diet F has 18% roughage for safety as opposed to the 15% in Diet E, less corn (57.5% vs 62%), but because of the fat has similar energy values and animal performance.

Fat contains 2.25 times as much energy per pound compared to carbohydrates like grains in a nonfermentable, non-acid producing form. Caution should be exercised when adding fat because total fat in the diet should not exceed 5% on a dry basis or digestible energy value of the diet normally declines. Note that Diet G contains 4.6% fat (5.2% dry basis), which is a bit too much unless 1% of the fat is supplied as protected fat. There are protected fats commercially available which have been chemically treated so that the fat does not disrupt ruminal digestion, but is digested and absorbed from the lower gut. The high level of fat shown in Diet G is probably not needed except for the very large framed, hard to finish steer. High fat diets are not recommended for early maturing steers or breeding heifers.

Diets A and B with less corn and more roughage are good for starting cattle on feed. Diets B and C work well for feeding heifers where maximum gain and fattening are not desired. Diet D would also work for heifers if limited to less than 2% of body weight.

MANAGEMENT OF FEEDING

MANURE OBSERVATION. Each animal differs in its capacity to consume and digest feed. The percent body weight intake recommendations are simply general ranges. A more

desirable way to determine the optimal amount of feed for each steer is to observe the steer's droppings. A consistent firm-like patty that does not splatter when dropped to the ground indicates the steer is on full feed with the proper amount of concentrate. A watery stool (scours) usually means the amount of energy intake is in excess and either the amount of feed or the energy level (corn) portion of the ration should be reduced. If this problem persists, severe "Acidosis" will typically result and the steer will go off feed. If the droppings are too firm and lack moisture, the steer needs more feed or a higher energy concentration (more corn) in the ration. Inadequate energy intake will result in lower gains and decreased finishing.

DAILY HAND FEEDING ROUTINE. Cattle should be fed twice daily (e.g. 6-7 am and 6-7 pm) 12 hours apart for best gains. In the event cattle need to consume more feed and are perhaps "slow eaters" three times per day feedings are recommended. Of course smaller portions per feeding are advised compared to the two feeding total amounts. Cattle eating three times per day (6 am, noon and 6 pm) usually consume more total feed with less digestive stress than they would when fed only 2 times daily. For most cattle two times per day is sufficient for optimum efficient growth and development.

GROUP AND INDIVIDUAL HAND FEEDING. Feeding together in groups is an excellent way to reduce labor and increase intake because of competition between steers. However, close observation of each steer is required because of individual feeding variations. Some steers are dominant eaters and will consume another steer's calculated portion resulting in some overfed and some underfed individuals. Some steers are slow eaters compared to fast eaters resulting in uneven portions being consumed when fed together. Individual feeding requires some time and labor but insures the determined amount being consumed and you as a feed manager must observe the animal for results and make any necessary feeding or ration adjustments for each individual. Group feeding works best when cattle are on a full feed growing ration.

BULK OR SELF FEEDING SYSTEM. This system is most appropriate for a pen of steers used for commercial steer production and not show cattle. This system is the best for labor savings and self feeding corrects individual feeding variations from dominant, fast, and slow eaters. Just remember, the bulk feeder should never run out of feed. This system does not allow the exhibitor to work closely with the animal nor does it allow for intake control to be exercised with each animal.

FEEDING COMMERCIAL STEERS

Commercial steers could be fed the same kinds of diets that are recommended for the show steers. However, there are different goals involved for the commercial steers versus the haltered steers. The emphasis for show steers is for high gain and safety with little or no emphasis on efficiency of gain. The show steer rations are more expensive than the commercial steer diets. Commercial projects place emphasis on efficiency and cost of gain as well as rate of gain with limited concern about long toed, slightly foundered cattle. This means the commercial steers will be fed low roughage, high

energy diets over a shorter feeding period. Many of the commercial steers are fed whole shelled corn with a commercial pelleted supplement. This method works well because whole corn is very digestible but coarse enough to have a roughage effect on the rumen and the commercial supplements are designed to furnish missing nutrients (e.g. potassium).

The **concept** of the whole shelled corn feeding program is to self-feed the cattle. You want the cattle to eat small amounts several times a day. Cattle should nibble and chew and not gulp the feed or a 10 to 15% loss of efficiency may result. **Start the cattle on feed** with 50% cottonseed hulls and 50% corn plus the supplement. Increase the corn 5 to 10% every 2 to 3 days and have on full feed (self feeding) by 3 to 4 weeks. Another approach would be to full feed grass hay, add corn at 0.5% of body weight plus supplement. Increase the corn ½ pound per day until on full feed and then self feed. Once on full feed, a **final diet** of shelled corn, supplement and 5% cottonseed hulls is recommended. The hulls help to hold the mix together and add a small amount of management insurance against digestive problems. **Corn moisture** is preferred to range from 14 to 18%, as 10 to 12% moisture corn will result in a slight increase in dry matter intake, the same gain and a slight reduction in efficiency. The **supplement** should definitely contain an ionophore (preferably one noted to be effective against acidosis and bloat) and come as a good quality pellet in a size that will stay mixed with shelled corn. Light (400 to 500 pound) cattle should receive an all natural **protein** supplement while heavy cattle (900 pounds plus) perform well on all **urea** supplements with a gradual transition of supplement types.

For the beginner. An experienced cattle feeder will obtain the greatest feed efficiency with little (5-10%) or no roughage in the final ration. However, it will normally work out better for the beginning feeder to keep 5 to 10% roughage (cottonseed hulls mixes best) in the ration. The extra roughage reduces feed efficiency slightly but it adds a measure of safety against serious digestive problems which can result in drastically reduced performance. A small slab of hay during stressful weather periods or when cattle show signs of bloating or scouring can help keep them on feed and prevent serious digestive upsets.

HANDLING THE BEEF PROJECT

The purpose of training a beef calf is to be able to exhibit the animal to maximum potential. An evaluator will not favor a calf that will not cooperate. It takes proper skills, patience and practice to train a calf correctly.

After the 4-H member receives the beef project, the owner should allow 7-10 days for the calf to learn the new environment and surroundings. At the conclusion of this period, the owner should begin working with their calf.

Again, starting slowly, the owner should try rubbing and scratching the animal while moving quietly. This should allow the calf to become familiar with the mannerisms of the new owner. Scratching should begin around the top (back) or tail head of the project, not the head or face.

The 4-H member should never work alone when first breaking cattle to lead. Always have a helper

in case the calf becomes unruly.

The first month is the time when the project will develop a trust and sense of security with its owner. It is imperative to work slowly and calmly during the early part of the training stage.

Halter Breaking. The steer should be halter broken as early as possible, the earlier the better to keep everyone and the calf from getting hurt. The most preferred halter to break calves is one with a padded nose band. This type of halter helps to prevent serious injury and scratching of the calf's nose. Place the halter on the calf and adjust it to fit correctly. For proper fit, the nose piece should be up over the nose just under the eyes. The halter should be moderately loose. Tightness can cause sores behind the ears.

After haltering the animal, apply tension to it a couple of times before releasing. Allow the animal to drag the lead rope on the ground. As the calf walks, it will step on the lead rope and pull its head around.

This should teach the calf to respond to pressure and keep the nose tender enough to make it easier to handle the first few days. The animal may be allowed to wear the halter and drag the lead rope for several days. Always remove the halter each evening. The calf could receive blisters on the head, face and feet from rope burns if kept on all day and night. After the calf is broke to halter, do not leave the halter on unless the calf is tied or held. The calf must learn that it will be restrained whenever haltered.

Training to Stand. A calf may be tied to a post to halter break. An inner tube should be secured to a solid post. The calf pulls back, the inner tube will stretch and as the calf comes forward, the inner tube will tighten. The calf learns to stop the pressure on its head by stepping forward. Never leave the calf unattended when tying the first several times! It is also a good idea to place feed, hay and water in front of the calf to reward it for doing a good job.

Training to Lead. When training a calf to lead, pull on the lead rope and then give slack allowing it to move forward. Do not apply continual pressure. Always pull and then release the pressure as the calf responds. When the animal learns that the rope loosens when he walks, he will lead. Do not attempt to lead a calf that is not broke to halter or else breakaways may be encouraged.

DO NOT

1. Tie the calf behind a vehicle and pull!
2. Hit the calf with any object!
3. Pull on the rope with hard jerks!
4. Use an "electric prod" or "hot shot!"

Training for the Show Ring. As soon as the calf starts to lead, begin daily exercise and

practice proper show ring procedures. Daily exercise is important for both the condition of the animal and its response to the handler.

The owner will need a show stick to start training the calf to stand correctly. Begin by setting up the beef animal's front feet. Push the feet back with the end of the show stick and pull them forward with the hook. After the front feet are set squarely, set the back ones in the same manner. Slight backward or forward pressure on the halter lead also is useful in positioning feet. The feet should be set squarely under the calf. One leg should be under each of the four corners of the body. The calf should appear natural.

After lots of training and practice, the calf will soon understand what is expected and will begin to set up itself. The calf should be taught to stand in one place for ten to fifteen minutes to help build stamina for the show ring. When a calf is standing correctly, use the show stick to rub under the belly. The calf will associate standing still with the rubbing of the show stick.

Daily Activity. After the initial halter breaking, the steer should be tied up daily for a few hours. When convenient with the exhibitor (based on their school and daily schedule) the steer should be rinsed off daily to remove dirt and encourage healthy skin and hair coat. The steer should be brushed or blown dry to condition and train hair. After this daily routine is completed, the exhibitor should walk the steer to develop familiarization and confidence between the steer and exhibitor. When this exercise is complete, practice showing the steer with some one acting as the judge. Walk the steer in a circle to simulate a show. When the total routine is complete the steer may be fed. While the steer is finishing his feed, the exhibitor may clean and freshen the pens with bedding for use the next day. For best exercise and relaxation, the steer should be turned into a large lot for the night.

The next morning the steer should be brought into the smaller lot, feeding pen, or tied up in the shelter. Then it should be fed, made comfortable in clean, shaded shelter with good air flow or movement in the summer (with fans if needed) or wind break and roof in the winter for protection. The steer will remain here until evening when the exhibitor returns home to start the daily routine. Note that the routine can be changed in the summer to accommodate the free time of the exhibitor during the day rather than the evening routine if desired.

The more you work with your steer the more effectively he will respond to feed, training, showing while developing the healthy skin and hair coat for proper grooming.

Daily Management for Summer Months. Show cattle become accustomed to daily routines much like people. After the new calf becomes comfortable with its new environment and learns the mannerisms of its owner, it is time to set up a daily routine. Summer is the time for the 4-H member to seriously train and work with each calf.

Calves should be fed twice daily, exercised, cleaned, brushed and practiced being shown. The pen should be cleaned thoroughly, and stalls should be fresh and raked, allowing each

calf to be comfortable during the hot summer days.

It is best to begin feeding early in the morning before the day becomes uncomfortably warm. In Texas, a good feeding time is around 6:00 to 7:00 a.m. Each calf should be fed in an individual stall. While the calf is eating, the owner should have few problems placing the halter on the calf and tying it to a fence. As the calf finishes the morning feeding, the owner should prepare the stall. This should include raking, picking up manure and lightly spraying with water to slightly dampen. Also, make sure manure is dumped far away from the stall, preventing flies and other insects from building their population around the calf. After the calf finishes eating, it is time to exercise and sharpen showmanship skills of the calf and owner. This takes approximately fifteen minutes to lead, stop, to set up and scratch with a show stick.

Next, lead the calf to a wash rack and rinse it using a water hose and nozzle. After rinsing thoroughly, train the hair by brushing everything forward using a rice-root brush. The summer is not the time to grow hair, but is the time to teach and train. Even if will be shown slick shorn, they still should be kept clean. Quite simply, beef cattle that are placed in a clean and sanitary environment will be more efficient performers for their owners.

Upon completion of rinsing and brushing, the calf can then be placed in its clean stall. It is a good idea to keep the calf tied up until it is completely dry. This will build stamina to more effectively prepare for show. After a couple hours, the steer can be tied down and allowed to rest.

The calf should rest until late afternoon. At this time, the owner should clean the stall and rinse and brush again if possible.

The day should conclude with the evening feeding. Again, try and feed as the temperature begins to cool. After feeding individually, turn the calf out to exercise in a large pen. Clean stalls, surrounding areas, and prepare for the next day.

Conclusion

Not everyone can have the best, most complete beef project. However, each 4-H member can have an advantage in the show ring if the work at home is done correctly. Remember, perfect practice makes the best showperson. A great showperson always leaves a favorable impression on the evaluator.

Getting Ready for the Show. Many feeders work with calves all year and then take them to the show to find out the calves are in the wrong weight class, will not eat, will not drink and will not show. Proper conditioning of show cattle can make the difference between a champion and just another calf at the show. Every calf is a different individual and must be programmed to bring out the strong traits of each individual.

The importance of the condition of a show steer can be compared to that of a superior athlete who becomes an Olympic champion. Show cattle must be trained and fed with a definite purpose in mind in order to obtain a championship banner. There are many different methods used by experienced feeders in Texas today.

The following tips should be helpful in developing future champions in the show ring:

1. Cattle are creatures of habit and have good memories. Develop a routine and follow it each day. A daily routine makes chores much easier. For example, exercise the calf, show it by setting it up, and make it stand properly, then brush it and feed it last.
2. Weigh the steer periodically to monitor gain. Decide in which weight class you will show your steer and shoot for that weight. Old class breakdowns from previous shows are very helpful in determining desired weights.
3. To be a good showman you need a well trained calf. A calf should be taught to stop and lead with his head up. A good daily practice is to pull the animal's head up to a stop so both front feet are placed squarely under the front end. Using a show stick with a blunt point on the end, teach the calf the use of a show stick by stroking its underline while tied. Stroke the animal, then place the foot in the correct place. After the calf moves its feet properly when tied, then it is ready to be led and have its feet placed while being held by the exhibitor. Teach the calf to keep its top level and to lead and walk freely. Work often for several minutes at a time, rather than a few long drawn out periods.
4. When training calves or working and brushing hair, it is best to tie them to a high rail rather than placing them in a blocking chute. Working cattle in this manner tends to make them easier to handle and makes them more accustomed to strange movements at the show. Before washing the calf, remove dirt and manure from the hair with a comb or brush. An electric blower will help in this process.
5. Two weeks before the first show of the season, start handling the steer just as you will at the show. A good practice is to make some type of "tie outs" at home along a fence and tie the calves as you will at the show. The bedding should be the same type you are going to use at the show. Calves should be tied in the barn all day and exercised each afternoon. Another method is to tie the calves during the day time and turn them loose in the lot or small trap at night. Feed and water the calves just as you would at the show -- twice a day out of the same feed and water buckets you will use at the show. Some feeders

add small amounts of black strap molasses to the water to get the steers accustomed to drinking sweet water. The molasses will hide the taste of chlorine in city water.

CALENDAR OF EVENTS

APRIL

- Purchase a show prospect.
- Place on starter ration.
- Administer health shots.
- Administer a parasiticide.

MAY

- Halter break and begin training.
- Trim hooves.
- Treat for external flies (stable, horn, face flies).

JUNE

- Begin the training of the beef project. The summer is the time for the owner and the project to gain trust in one another.
- State steer validation for entry to major shows. Each county will set their own individual date sometime within the month.
- Move to grower diet.
- Administer a parasiticide.
- Treat for external flies (stable, horn, face flies).

JULY

- Trim hooves.
- Consult the County Extension Agent to find local prospect shows and try to participate in a few local shows for practice.
- Treat for external flies (stable, horn, face flies).

AUGUST

- Treat for external flies (stable, horn, face flies).
- Administer a parasiticide.

SEPTEMBER

- Treat for external flies (stable, horn, face flies).
- Trim hooves (if needed).
- Implant if needed.
- Trim hooves.
- Move to finisher ration.

OCTOBER

- Administer a parasiticide.

NOVEMBER

- Trim hooves.
- Implant if needed.

DECEMBER

- Administer a parasiticide.
- Deadline for major shows is before December 1st. Check with the county Extension office for the deadline in each county.

JANUARY

- Trim hooves (if needed).

TABLE 3. EXAMPLE DIETS WITH VARYING ROUGHAGE AND FAT LEVELS

TYPE DIET > DIET ID >	STARTER GROWERS			-----FINISHERS-----			
	A	B	C	D	E	F	G
INGREDIENTS, %							
Corn	35	46	51	57	62	57.5	57
Cottonseed hulls	39	30	25	20	15	18	18
Cottonseed meal	8	7	7	6	6	6	6
Soybean meal	8	7	7	7	7	7	7
Alfalfa dehy	5	5	5	5	5	5	5
Molasses	3	3	3	3	3	3	3
Limestone	1.25	1.25	1.25	1.4	1.4	1.4	1.4
Salt	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Dicalcium phosphate 0.25	0.25	0.25		0.1	0.1	0.1	0.1
Vitamin A,D,E	+	+	+	+	+	+	+
Fat	0	0	0	0	0	1.5	1.0
Protected fat	0	0	0	0	0	0	1.0
Trace mineral	+	+	+	+	+	+	+
Ionophore	+	+	+	+	+	+	+
NUTRIENT CONTENT (AS FED BASIS)							
NEM, Mcal / lb	61	66	69	72	76	76	76
NEG, Mcal / lb	36	41	44	47	50	50	50
TDN, %	59	62	65	67	69	69	69
Crude protein, %	12.4	12.1	12.4	12.3	12.5	12.2	12.2
Crude fiber, %	20	16	14	12	11	12	12
Fat, %	2.2	2.5	3.6	2.7	2.8	4.2	4.6
Calcium, %	0.67	0.66	0.65	0.67	0.66	0.66	0.66
Phosphorus, %	0.32	0.33	0.34	0.31	0.32	0.31	0.31
PREDICTED PERFORMANCE BASED ON 1100 LB STEERS							
Feed Intake, lb	-	-	26.1	25.6	24.9	24.9	24.7
Avg. Daily Gain, lb	-	-	2.59	2.75	2.85	2.85	2.86
Feed/lb ADG, lb	-	-	10.05	9.32	8.75	8.74	8.63
PREDICTED PERFORMANCE BASED ON 800 LB STEERS							
Feed Intake, lb	20.7	20.7	20.5	20.2	19.6	19.6	19.4
Avg. Daily Gain, lb	1.95	2.40	2.59	2.75	2.85	2.85	2.86
Feed/lb ADG, lb	10.62	8.64	7.92	7.34	6.89	6.87	6.80
PREDICTED PERFORMANCE BASED ON 500 LB STEERS							
Feed Intake, lb	15.5	15.5	15.3	-	-	-	-
Avg. Daily Gain, lb	2.08	2.54	2.73	-	-	-	-
Feed / lb ADG, lb	7.43	6.10	5.61	-	-	-	-