

4-H Market Beef Care & Showmanship



Nutrition Concepts

Your feeding program will be your largest cost of your project. Proper feeding of your animal will allow your beef animal to shine to the best of its ability! In order to properly feed your animal, a basic understanding of your animal's requirements is important.

There are six classes of nutrients that your animal requires. These nutrients are necessary for your beef animal to grow.

WATER:

Water is the nutrient required in the largest amounts for your beef animal, but is often overlooked. Your animal's body is over 70% water. Water is important for digestion, nutrient transport, waste removal, and temperature regulation. Your animal requires 10 to 15 gallons of fresh, clean water, every day.

CARBOHYDRATES:

Carbohydrates will make up over 80% of your beef animal's diet and are the most important source of

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Nutrient: Chemical that supports your animal's growth and development.

Ruminant: Animal such as cattle that has a stomach with 4 compartments. The compartments are the rumen, reticulum, omasum, and abomasum. Ruminants are also known as "cud-chewers".

Crude Protein: Crude protein (CP) is an estimate of the amount of protein in a feed. It is required by law to be listed on the feed label.

TDN: Total Digestible Nutrients (TDN) is an estimate of how much of feed is digested by the animal to be used as an energy source. For example, if a feed is 80% TDN, that means that for every 10 lbs of feed, 8 lbs is used for energy for the animal.

Crude Fiber: Crude fiber is an estimate of the fibrous portion of the feed. This portion of the feed is generally considered to be of lower digestibility. Cellulose and lignin are the primary components of this portion of the feed.

energy for your animal. The primary sources of carbohydrates for your animal will be roughages (like hay) and concentrates (grains like corn). Beef cattle are ruminants and are able to convert feeds that humans can't use into food products like meat.

PROTEIN:

Protein is required for your animal to grow and develop. Protein is made up of individual "building blocks" called amino acids. Muscle in your animal is made up of protein and your beef animal will require a diet between 12-15 % crude protein.

MINERALS:

Minerals are inorganic elements required for good growth in animals. Minerals such as calcium, phosphorus, and sodium chloride (salt) are important elements for growing beef cattle.

VITAMINS:

Vitamins are very important for the maintenance of your animal. Vitamins can be divided into two classes, fat-soluble and water-soluble. The water-soluble vitamins (vitamin C, B-complex) are not essential for your animal. However, the fat-soluble vitamins (vitamins A, D, E, and K) may be needed.

Common Feeds for Cattle

Feeds for growing/finishing cattle can be divided into two major categories: concentrates and roughages. Concentrates are high energy feeds such as cereal grains and contain less than 18% crude fiber. Roughages are lower energy feeds such as hays and forages and will contain over 18% crude fiber. Both are needed for your market beef animal to perform to the best of it's ability! Appendix 2 summarizes the nutrient composition of some of the more common feedstuffs used in growing and finishing cattle diets.

CONCENTRATES:

Corn. Corn is the most common feed grain in the United States and the one most other grains are usually compared with. Shelled corn (no cobs, kernel only) is one of the highest feeds relative to energy value, usually containing over 85% TDN and only about 2% crude fiber. Since corn is high in energy, it will usually represent the primary ingredient in many cattle finishing rations. If your ration contains less than 20% roughage, corn can be fed whole. However, if fed with a high roughage diet (over 20% roughage), the corn must be processed to improve digestibility. Examples of different processing will be to crack, roll, or steam-flake the corn. Corn will also provide a small amount of protein as well (8-10% CP).

Milo or sorghum. Milo is more commonly fed in the southern half of the United States, where it is commonly raised. Milo is lower in energy (about 75-85% TDN), than corn, but is higher in protein (12-14% CP). Milo must be processed prior to feeding to cattle (do not feed it whole). Suggested processing methods are similar to corn.

Wheat. Wheat is normally too high priced to be used in commercial feeding rations, since it is needed for human food products such as bakery items. However, sometimes it can be priced comparably to corn and may be used in rations. Wheat contains about the same energy levels as corn, but is higher in protein (12-14% CP). Care must be given when feeding wheat to cattle, as too much, too soon, can cause digestive upset. The best

method is to blend wheat with another feed (such as corn or milo), and make sure the wheat is processed (for example, ground).

Oats. Oats are one of the safest grains to feed, as they have the least tendency to cause digestive problems. Oats are high in fiber, compared to other grains (10-12% CF), however oats are the lowest in TDN (70-75% TDN). Oats are generally used in a ration to maintain animals, due to the higher fiber and lower energy values.

Barley. Barley is an excellent grain that is commonly used in the northern United States, where it is grown. Barley contains about 75-85% TDN and 13-14% CP. If barley and alfalfa hay are fed together, there is a small risk of bloat. However, this problem can be reduced if some additional fiber is added to the ration, such as oats, beet pulp, or other higher fiber feeds.

Millet. Millet can be used as a substitute for other grains in beef cattle rations, if priced right. Millet can be valued at about 75-90% the value of corn.

Beet pulp. Dried beet pulp is a tasty feed that can help reduce bloat in cattle. If it makes up 5-15% of the ration, the feeding value is similar to corn.

Soybean meal and Cottonseed meal. When soybean meal or cottonseed meal is used in a ration, it is being used as a protein source. These meals contain similar energy (TDN) as corn, but will contain about 40 - 47% CP!

ROUGHAGES:

Legumes. Legumes are forages that are high in energy (50-60% TDN) and crude protein (15-22% CP). Alfalfa hay is the most common legume used and is an excellent feed. Legumes are also high in calcium (about 1.2%), but only moderate in phosphorus (0.2%), so supplementation may be needed. High quality legume hay can sometimes cause scouring (loose stools), but this can be fixed by decreasing the legume or adding in some grass hay.

Grasses. Grass hays (such as timothy, fescue, meadow) contain similar amounts of TDN as legumes, but only half the protein of the legumes. A good quality grass hay works well if the animal is having difficulty with bloat.

Silages. Silages are fermented forages that are preserved for later use. They are most commonly made from corn, sorghum, or legume plants. Silages are high moisture feeds, containing about 70% water and 30% dry matter. About 3 pounds of silage will contain the same amount of dry matter as 1 pound of hay.

Pasture. Pastures vary greatly in quality due to maturity, species, weathering, etc. It's best to visit with local producers or extension agents who may have experience with similar pasture to yours to estimate the quality of pasture.

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Dry Matter: Dry matter (DM) refers to the feed with the water removed. The DM is the fraction of the feed where all the nutrients such as protein are concentrated. It is important to compare feeds for cattle on a dry matter basis as some are high moisture (silage is 30% DM) and others are low moisture (hay is 90% DM)

FEED ADDITIVES:

Antibiotics. Antibiotics are medicine (like you take) that are fed at low levels in a ration to help reduce sickness, and therefore improve animal performance. Common antibiotics are Aureomycin and Terramycin.

Ionophores. Ionophores are feed additives that may improve feed efficiency by 5-10%. The most common examples of ionophores are Rumensin (chemical is monensin) and Bovatec (chemical is lasalocid).

Anabolic agents. Anabolic agents are implants that contain steroid hormones that promote growth in cattle. These hormones are similar to the ones that are naturally occurring in the animal's body. These agents stimulate gain (especially lean gain) and common examples are Ralgro and Synovex.

Beta agonists. This is a new class of compounds that have recently been approved to feed to cattle. The **only** beta agonist approved for cattle is ractopamine (trade name is Optaflexx). These additives alter how the animal's body uses nutrients. As a result, beta agonists promote lean growth.

Talk Like a Cattle Feeder!

Feed Additives: Feed additives are chemical components that are added to a ration in small amounts, to accomplish one or more of the following:

1. Increased intake (which would mean increased performance)
2. Increased gain
3. Increased feed efficiency

Feed additives are products that you will not buy as an individual product, but as part of a pre-mixed feed or supplement. Extreme care needs to be taken when feeding these products.

FOLLOW THE LABEL DIRECTIONS!!!

Extra-label Use: All feed products are required to have label directions on them. It is the law to follow these label directions. ***If you don't follow the label, it's called "extra-label use" and can only be done under the direction of a veterinarian.***

Starting Calves on Feed

There are a variety of successful methods to start calves on feed, here are some helpful hints to aid you in being successfully starting your calf on feed:

- Minimize any stress associated with the transition and adaptation from purchase or weaning to the calf's new environment. This should minimize potential respiratory problems.
- Start the calf on a palatable, good quality hay. A grass or a legume-grass mixture is usually preferred for starting calves.
- Feed them a bulky, palatable grain mixture. It should be limited initially to several pounds (not more than 1% of your calf's body weight) per day.
- Quantity of grain should be increased GRADUALLY (ex. over a week or two) to the desired intake. Bringing calves on feed too rapidly can cause digestive upset. Table 2 shows intake levels (pounds of grain) for starting cattle on feed.
- Early in the feeding program, full feed the roughage source (hay). This means letting the calf eat as much roughage as it wants. Gradually, you will begin limit feeding the roughage until the calf is receiving 3 to 5 pounds of roughage. You will not want to feed less roughage than this, as it may lead to digestive upset.
- Use only fresh, high quality feeds!

- Remove stale feeds from the feeder or bunk.
- Feed regularly – preferably 2 to 3x per day.
- Observe regularly for disorders.
- Provide clean, fresh water at all times.

Table 2. Grain intake levels for starting calves on feed.

Body Weight, lbs.	Grain feeding rate, % of body weight				
	0.5%	1.0%	1.5%	2.0%	2.5%
500	2.5	5	7.5	10	12.5
600	3	6	9	12	15
700	3.5	7	10.5	14	17.5
800	4	8	12	16	20
900	4.5	9	13.5	18	22.5

Rations for Cattle

It is possible to do a professional job of feeding cattle with a variety of feeding programs. Many producers have specific ideas of what works and what doesn't work when feeding show cattle. Take the time to visit with those who are successful with their feeding programs to determine what might work for your calf as well. Most of the commercially prepared show feeds can produce the desired results when fed according to the company recommendations. However, they can be expensive. Working with your project leader to develop a successful feeding program can make your project successful and cost-effective.

Your calf's feeding program can be divided into two phases. These phases are described below:

Growing Phase: Grower rations are usually designed to be lower in energy (TDN) to allow cattle to grow as opposed to finishing (fattening). Typical growing programs will support gains from 1.5 to 2.5 pounds per day, depending upon your goals. Grower rations are based upon large amounts of roughages (50 – 100%) and limited concentrates. Some feeders prefer to use bulkier concentrates such as oats during this period. Concentrates are generally fed at no more than 1% of body weight.

Finishing Phase: Finishing rations are higher in energy and designed to promote "finishing" or fat deposition on cattle, as well as more rapid gains (in excess of 2.5 pounds per day). Finishing rations are lower in roughages (20% or less) and mostly made of concentrates. The level of grain intake is much higher and will range from 2 to 2.5% of body weight.

If a ration is doing a good job for you, the best advice is to continue it! When cattle are being fed to show, they have specific nutrient requirements relative to gain and/or finish. You may find the need to regulate your animal's growth and this can be accomplished by either controlling the quantity of concentrate fed, or altering the concentrate mixture (energy content). Appendix 3 demonstrates the changing nutrient requirements of growing/finishing beef cattle.

It is generally well accepted that cattle which are finished at slower rates of gain will have a harder, firmer finish than those which are permitted to gain more rapidly (even though the amount of finish at the end may be the same). Also, excessive finish may be minimized.

Some desirable characteristics of fitting rations are as follows:

- Bulky rations, using whole oats or steam rolled grains (oats, corn, milo, barley) are preferred.
- A mixture of several grains is often desirable.
- Dustiness, powder, and excessive “fines” should be minimized.
- Some molasses (5 to 7%) is helpful in improving ration palatability, uniformity, and acceptance particularly during the first few weeks on feed. With high quality feeds, improved intakes from molasses are probably just temporary.
- Wheat bran (no more 10%), beet pulp (5 to 15%), or dehydrated alfalfa pellets (5 to 20%) are extremely palatable and can be beneficial additions.
- Rations should contain a minimum of 13 to 14% CP and contain soybean meal, cottonseed meal, or linseed meal as a protein source. Linseed meal can improve gloss and sheen of the hair coat.
- When not too expensive, oats (whole or rolled) can be included in the ration at levels ranging from 20 to 60% or more. Straight oats are fine for younger cattle.
- Corn can be fed in the whole kernel form when used in grain mixtures and with lower levels of roughage (no more than 0.5 to 0.75% of body weight in roughage).
- Feeds must be fresh and not musty or moldy.

AMOUNTS TO FEED:

- Finishing Steer:
 - Full-feed concentrate at 2 to 2.5 pounds per 100 pounds of body weight
 - Limit-feed dry roughage at 3 to 5 pounds per day
 - Example: 800 pound steer
 - Concentrate: 16 to 20 pounds per day
 - $8 \times 2 = 16$
 - $8 \times 2.5 = 20$
 - Roughage: 3 to 5 pounds per day
- Growing Steer:
 - Limit-feed concentrate at 1 to 1.5 pounds per 100 pounds of body weight
 - Full-feed roughage
 - Example: 500 pound steer
 - Concentrate: 5 to 7.5 pounds per day
 - $5 \times 1 = 5$
 - $5 \times 1.5 = 7.5$

- Roughage: full feed
- Growing Heifer:
 - Limit-feed concentrate at 0.5 to 1 pound per 100 pounds of body weight
 - Full-feed roughage
 - Example: 500 pound heifer
 - Concentrate: 2.5 to 5 pounds per day
 - $5 \times 0.5 = 2.5$
 - $5 \times 1 = 5$
 - Roughage: full feed

FORMULATING A RATION:

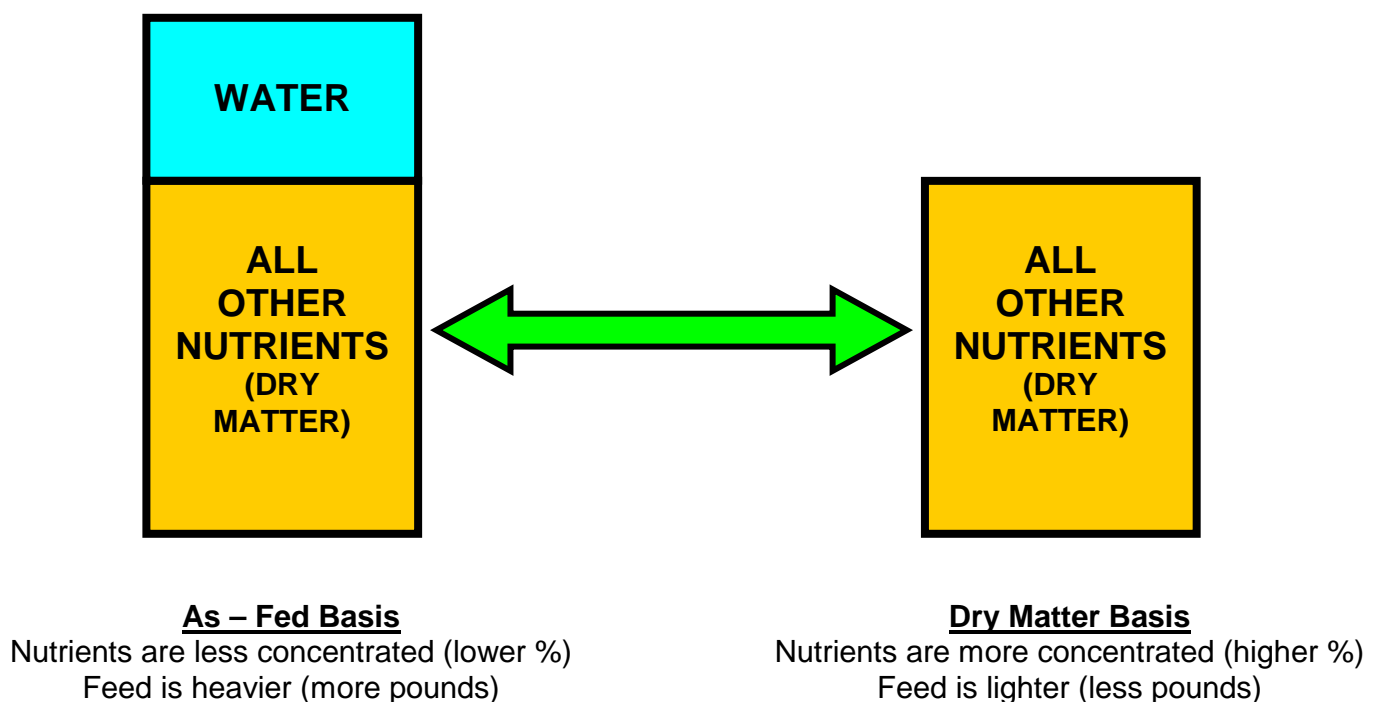
To formulate a ration for your animal you will need to know the following information:

1. Your animal's nutrient requirements (see Appendix 3)
2. The nutrient composition of the feeds (see Appendix 2)
3. Desired production level (ex. rate of gain).

Your goal as a producer is to best match the feed to your animal's requirements in order to achieve a specific goal. Balancing your animal's ration is a great way to practice your math skills!!!

It is important to be able to convert nutrients and pounds of feed between a dry matter and as-fed basis. Dry matter basis refers to the feed with the water removed, as-fed basis refers to the feed as it is fed to the animal (it includes the water). Figure 5 illustrates the difference between these two expressions of nutrients.

Figure 5. Comparison of methods of expressing nutritive value of feeds.



The following sets of equations can help you convert between these two forms.

- *Converting nutrients on an as-fed basis to a dry matter basis:*

% nutrient (DM basis) = % nutrient as-fed \div % DM (make sure to put this value on a decimal basis, ex. 50% = 0.50)

Ex. A commercial steer feed contains 12% CP on an as-fed basis and is 90% DM. What is the percent CP on a dry matter basis?

$$\begin{aligned}\% \text{ nutrient (DM basis)} &= 12\% \text{ CP as-fed} \div 0.90 && \text{(remember, divide DM by 100)} \\ &= 12 \div 0.90 \\ &= 13.3\% \text{ CP on a dry matter basis}\end{aligned}$$

- *Converting nutrients on a DM basis to an as-fed basis:*

% nutrient (as-fed basis) = % nutrient as-fed \times % DM (make sure to put this value on a decimal basis, ex. 50% = 0.50)

Ex. A commercial steer feed contains 16% CP on a dry matter basis and is 85% DM. What is the percent CP on an as-fed basis?

$$\begin{aligned}\% \text{ nutrient (as-fed basis)} &= 16\% \text{ CP} \times 0.85 && \text{(remember, divide DM by 100)} \\ &= 16 \times 0.85 \\ &= 13.6\% \text{ CP on an as-fed basis}\end{aligned}$$

- *Converting amount of feed on an as-fed basis to a DM basis:*

Pounds of feed DM = Pounds feed as-fed \times % DM (make sure to put this value on a decimal basis, ex. 50% = 0.50)

Ex. You have 2000 pounds of corn silage which is 35% DM. How many pounds of corn silage on a DM do you have?

$$\begin{aligned}\text{Pounds of feed DM} &= 2000 \times 0.35 && \text{(remember, divide DM by 100)} \\ &= 700 \text{ pounds of DM}\end{aligned}$$

- *Converting amount of feed on a DM basis to an as-fed basis:*

Pounds of feed as-fed = Pounds feed DM \div % DM (make sure to put this value on a decimal basis, ex. 50% = 0.50)

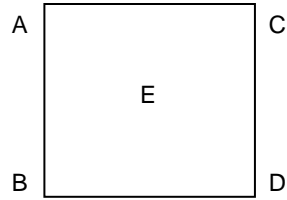
Ex. A beef animal requires 15 lbs of DM per day. If the ration is 75% DM, how many pounds of feed do you need to feed this animal?

$$\begin{aligned}\text{Pounds of feed as-fed} &= 15 \div 0.75 && \text{(remember, divide DM by 100)} \\ &= 20 \text{ pounds as-fed}\end{aligned}$$

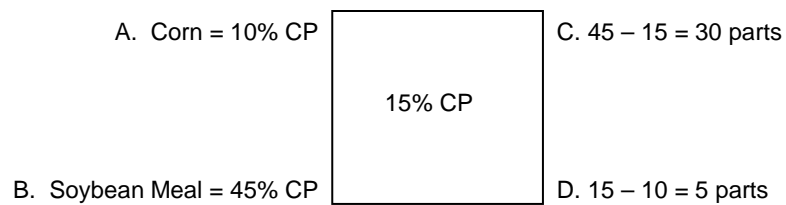
It is best to balance beef cattle rations on a dry matter basis and then convert the ration to an as-fed basis, due to the moisture differences found in feeds.

One of the simplest methods for balancing rations is the Pearson Square. This method allows you balance for a single nutrient using two feeds. Here are the steps:

1. Draw a square:



2. Place the concentration of the nutrient you want at “E” (example: balance for 15% CP, DM basis)
3. Place the concentration of the nutrient in each of the two feeds at “A” and “B”
4. Subtract diagonally ($B - E = C$ and $A - E = D$) and don't worry if you have a negative sign



5. “C” represents the part of the ration that is from Feed A (corn) and “D” represents the part of the ration that is from Feed B (soybean meal).
6. Sum “C” and “D” ($30 + 5 = 35$ total parts)
7. Now you can calculate the appropriate proportions of each ingredient! To do this you divide the “part” by the “total”, and multiply by 100, to express as a percentage.

$$\begin{aligned} \text{Corn} &= (30 \div 35) \times 100 \\ &= 0.856 \times 100 \\ &= 85.6\% \text{ corn} \end{aligned}$$

$$\begin{aligned} \text{Soybean meal} &= (5 \div 35) \times 100 \\ &= 0.143 \times 100 \\ &= 14.3\% \text{ soybean meal} \end{aligned}$$

$$\text{Check} = 85.6 + 14.3 = 100\%$$

Appendix 4 has some sample cases that may help you with your project.

Pen Requirements

- Your beef animal requires about 150 to 175 square feet of space. If you are use a feed bunk for multiple animals, each animal requires about 2 feet of space at the bunk.
- Have the pen located so that it drains well. Not only are muddy pens messy, but mud is hard to clean off the animals. For healthy animals, they need a clean, dry place to lie and rest. Bedding (such as straw or shavings) is generally used, especially in cold weather.
- If no shed is available, you will need to at least try to provide a windbreak for your calf during the winter, and shade during the summer.
- Keep the pen clean and free from manure. This will assist you in keeping parasites like flies, lice, and ticks under control. Additionally, you may need to use a commercial insecticide to prevent parasites. Use only as directed on the label.
- Examine the boards of the pen and/or shed where your calf will be kept. Make sure that there is nothing sticking out that can hurt the calf, such as nails, wire, or pieces of metal or wood.
- Quietness, kindness, and patience are the key to working with your calf. You are raising a product for human consumption, so it is important to treat your calf with care.

Common Diseases of Cattle

A few of the more common ailments that you may encounter in your market beef project are listed below. Remember, it is important that you establish a relationship with a veterinarian in your area. If you have any questions about your animal's health, you need to consult with your veterinarian. Your calf should be vaccinated against the clostridial diseases and IBR/PI₃. Optional vaccinations that may be required (ask your veterinarian) may include BVD, leptospirosis, hemophilus somnus, and pasteurilla. For a complete vaccination program, ask your veterinarian.

Shipping Fever. Shipping fever is an infectious disease affecting the lungs. Its primary cause is unknown. While it can occur any time, it most often occurs in cattle that are stressed. Examples of stress include excitement, shipping, changes in feed and water, and exposure to other animals that may have the disease. The first signs are a tired appearance, loss of appetite, chilling and a high temperature (105°F or higher), increased breathing rate, a soft cough may develop, and there may be a watery discharge from the nose and eyes. Treatment is usually by the use of antibiotics.

Acidosis. Acidosis is a common problem in commercial feedlots. Acidosis results from the ingestion of excessive amounts of easily digested carbohydrates. When an animal eats too much carbohydrate, too fast, the pH of their rumen drops considerably. If it drops too low, the animal could die. Acidosis is easily recognized by a grayish, loose stool that has a distinct odor. Treatment involves removing the source of easily digested carbohydrates and providing hay to the animal. In severe cases, it is best to contact your veterinarian.

Pinkeye. Pinkeye is commonly found in calves. The eyelids swell; a watery discharge from the eyes will often stain the face. Eyes are kept partially closed, the eyeball becomes cloudy, and a small ulcer may form on the front of the eye near the pupil. In severe cases, the animal may become temporarily or permanently blind. Treatment is with antibiotic ointments and keeping the animals out of direct sunlight.

Founder. Founder (laminitis) is a disturbance in the tissue of the foot resulting from too much feed at one time. It is seen most often when cattle are put on full feed before becoming fully accustomed to high concentrate diets. Sometimes cattle may accidentally find an open bag of feed and overeat. It also occurs in beef cattle that are overfed while being finished for a stock show or fair. Substances are formed in the body that cause damage to the inside of the hoof. One of the earlier signs of grain overload or founder will be the animal will go off feed followed by a very loose, watery diarrhea. A few days following the grain overload, lameness will be observed and damage to the hoof-producing tissue results in the growth of misshapen hooves. A stilted, halting gait may be seen after which corrugated and elongated hooves may be produced. The indigestion should be treated first. Cold applications to the feet and anti-inflammatory drugs are used to reduce the foot inflammation. After the acute symptoms have passed, repeated trimming of the hoof may restore something of the normal hoof-producing tissue.

Bloat. Bloat is frequently a cause of worry to club members feeding calves. An animal may bloat and die very suddenly. It results from the inability of an animal to belch up the gas that is formed in the rumen. Some feeds such as fine alfalfa hay and barley have more of a tendency to cause bloat than others. Also, some animals tend to bloat more easily than others. In most cases, there is a very noticeable distention or swelling on the left side of the animal, just in front of the hip bone. In mild cases, walking the animal around can help alleviate the problem. Additionally, in these mild cases, a dose of 3 to 4 ounces of mineral oil or cooking oil is effective in overcoming the trouble. In severe cases emergency procedures may be necessary to let the gas escape before the animal dies. However, when this point is reached, seek expert assistance from your veterinarian!

Warts. Warts are commonly seen on young cattle. They are infectious. Hence, if one calf in a pen has them, you can expect to find them on the other calves. A vaccine is used for prevention and treatment of animals with warts. You can obtain this vaccine from your local veterinarian.

Foot Rot. Foot rot is caused many times by animals being forced to stay in wet lots or muddy pens. Swelling and redness appear around the top of the hoof. It becomes very sensitive and sore. The animal will become lame in many instances. Sulfa preparations are used or antibiotics may be given to cure the condition.

Good nutrition, management, and animal health program will prevent most problems. When a problem arises, early and adequate treatment is necessary to assure recovery.

How Much Your Calf Should Eat Per Day

Weight of calf (pounds)	Pounds hay to feed	Pounds grain to feed
400	8	4
500	8	6
600	7	8
700	5	14
800	4	16
900	3	18
1000	2	20
1100	2	22



Training And Grooming

Halter breaking and gentling your calf should be your first job after you get him. Remember, the calf grows faster than you do and the longer you wait to break him, the tougher your job will be.

Sometimes it is easier to halter your calf and tie him on the trailer when you bring him home. He should have settled down and stopped fighting the halter by the time you get him home.

When you get the calf home, tie him to a sturdy fence or post in a cool, dry, comfortable place. Be sure the halter is positioned high up on the bridge of the nose to prevent restricting his breathing. Tie him up high and securely with only 12 to 18 inches of slack. He may get his feet over the rope if it is too low or too long. Also, always tie the rope with a slip knot which can be loosened easily if necessary. Stay with him at all times while he is fighting the rope.

Get your hands on the calf. Begin scratching him around his tail head and down his back. **Keep your hands away from his head!** This irritates the calf and may cause him to start butting. Nothing you can do will help calm him more than scratching and brushing.

After the calf has settled down and will allow you to scratch him, try leading him to water. It might be best to wait until the morning after you first tied him to do this, because his head will be sore and he will appreciate the water. Do not carry water to your calf—to do so defeats your purpose.

Place a bucket or trough of

clean, fresh water at the far end of the pen. Quietly, untie you calf while talking softly to him and scratching him. Pull him toward the water. He will probably balk, but keep steady pressure on the rope until he steps forward. As he steps forward, immediately release the pressure on the rope. This release of pressure is a reward to him. Repeat the process giving and taking. Leading is a process the calf must learn and you must teach.

When you reach the water, back away from the calf and give him plenty of time to drink. If he will not drink after five or six minutes, lead him back. He will probably drink the next time.

While leading the calf, have someone place some feed at his tie space. This way he is rewarded in leading to and from the water. Give your calf no more than 20 minutes to eat his feed. After that time, take the feed away from him and give him plenty of fresh hay. (Never leave buckets of any kind under your calf!)

If you stick to this process and brush the calf generously, he should be settled enough to turn him loose at the end of three or four days. However, it is very important that you catch him, lead him and brush him at least once a day for the next several weeks. This is to make sure he has learned his lesson and does not forget it.

Halter breaking can be eased by taking the time and patience when your calf is the right size and age.

Equipment

To participate in the market beef project, you will not need a lot of equipment.

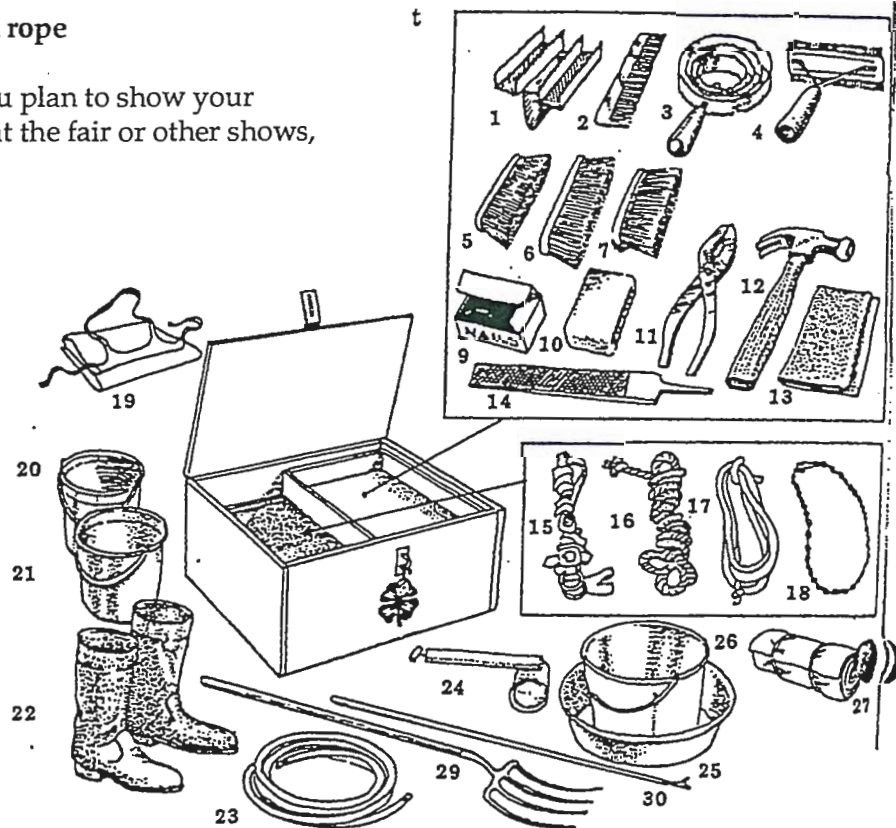
Basic equipment you will need are:

rope halter
feed pan
water bucket
hose
neck rope

If you plan to show your animal at the fair or other shows,

you will want to have many more items like those in a show box.

A show box is typically three feet long, two feet wide and 1.5 feet deep. This size is convenient for storing and transporting items to groom and care for your market steer.



Top of Box

1. Liner
2. Comb
3. Currycomb
4. Scotch Comb
5. Coarse Brush
6. Soft Brush
7. Rice-root Brush
8. Clippers
9. Nails
10. Soap
11. Pliers
12. Hammer
13. Emery Cloth

Bottom of Box

15. Show Halter
14. File
16. Rope Halter
17. Lead Rope
18. Neck Chain
19. Rubber apron
20. Wash bucket
21. Dip Bucket
22. Boots

23. Garden Hose
24. Hand Sprayer
25. Feed Pan
26. Water Bucket
27. Rags

Not in box:

29. Pitchfork
30. Show Stick

Not shown: Hair dressing

Glossary

If you are going to work with cattle, it is important in your beginning project to learn some of the more commonly used cattle terms. Every profession, sport and industry has its characteristic terminology. The cattle business is no different, and knowing these terms will help establish your credibility.

Balanced Ration—One that supplies all of the essential nutrients in the right proportion for the specific stage of production.

Bovine—Term referring to all cattle.

Breed—Animals similar in color, structure and other body characteristics. When mated, members of the same breed produce offspring having color, structure and other body characteristics similar to their parents. They are said to “breed true.”

Bull—A male bovine that is used for breeding.

Calf—Young animal of either sex, usually less than one year old.

Carcass—What is left after the head, hide, feet and internal organs have been removed from the animal.

Carcass Weight—Weight of the carcass.

Castration—To remove the testes of bull calves.

Concentrates—Feeds such as corn, barley, oats and protein supplement.

Condition—Degree of fatness.

Conformation—The visual outline of an animal.

Cow—A heifer that has calved.

Cow-Hocked—Crooked hind legs as viewed from the rear.

Creep Feeding—Providing a calf with feed in addition to what it gets from its mother’s milk and pasture.

Crossbred—Animal from parents of two different breeds.

Cutability—Estimated percentage of carcass weight in boneless, closely trimmed retail cuts from the round, loin, rib and chuck.

Dam—Female parent.

Dehorning—Removing horns from cattle.

Double Muscled—An animal with an abnormal enlargement of the muscles, especially noticeable in the loin, rump and round.

Fat Thickness—Depth of fat measured over the rib-eye muscle of the carcass at the 12th rib.

Feed Efficiency—Term for the number of pounds of feed required for an animal to gain one pound of weight; e.g., 6.5 pounds of feed per pound of gain.

Finish—Degree or amount of fatness on an animal.

Founder—A nutritional ailment from overeating—resulting in high fever, lameness in front feet with excessive hoof growth.

Free Choice—Allowing animal to eat as much as he wants at any time.

Grooming—Care of animal such as washing, clipping and brushing.

Heifer—Female bovine that has not calved.

Live Weight—Weight of the live animal.

Management—Selecting, feeding and caring for beef animals.

Market Beef—Steer or heifer fed for the purpose of producing meat.

Market Value—The price you receive for a live animal.

Nutrient—Ingredients in a ration such as protein and vitamins that help develop bones, muscles and finish.

Performance Record—Measure of a calf's growth such as weaning or yearling weight.

Post-Legged—An animal that does not have ample set on the rear legs.

Production Records—Measure of a cow's productivity based on the number and weaning weights of the calves she has produced in her lifetime.

Purebred—An animal whose ancestry traces to registered stock of one breed; however, all purebreds are not registered.

Quality—State of desirability or excellence.

Ration—Amount of feed given to an animal in a 24-hour period.

Registered—Recorded in a herd book of a recognized breed association which issues a certificate that the animal is the offspring of registered parents and meets registration requirements.

Roughage—Feeds such as silage, pasture and hay.

Scours—Diarrhea that may be caused by moldy or sour feed. Young calves may get scours by consuming too much milk or from being in a cold, damp building.

Sickle-Hocked—An animal with crooked hind legs as viewed from the side.

Sire—Male parent.

Steer—Male castrated when a calf.

Structural Soundness—Refers to the physical condition of the skeletal structure, especially the feet and legs.

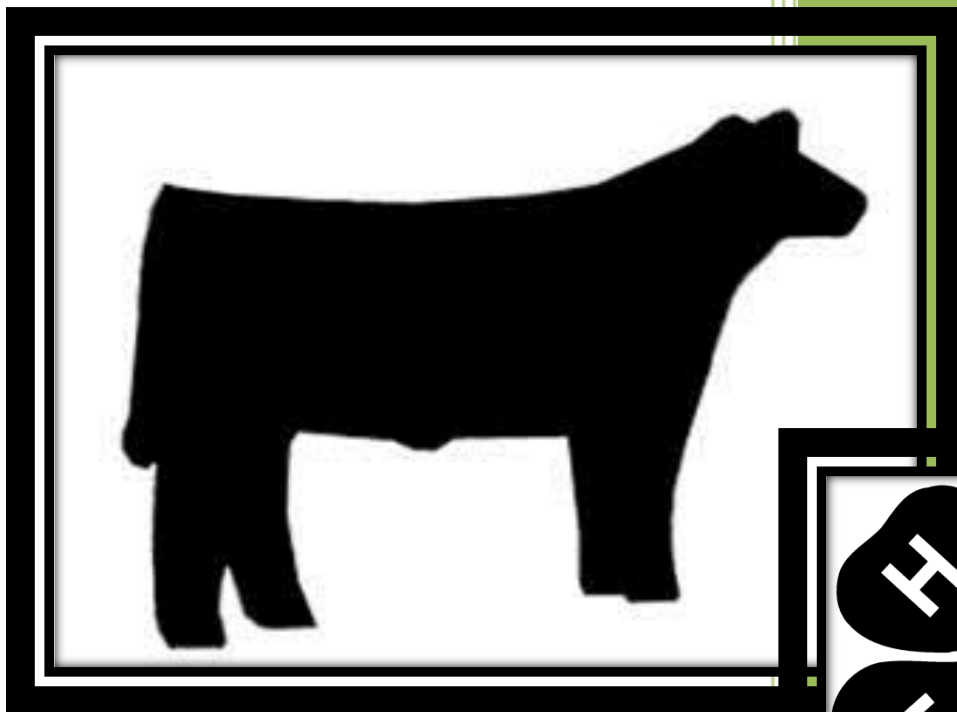
Weaned—When a calf is no longer nursing its dam. Weaning is the act of separating the calf from its mother when it is about seven to eight months old.

Weanling—A calf that was recently weaned.

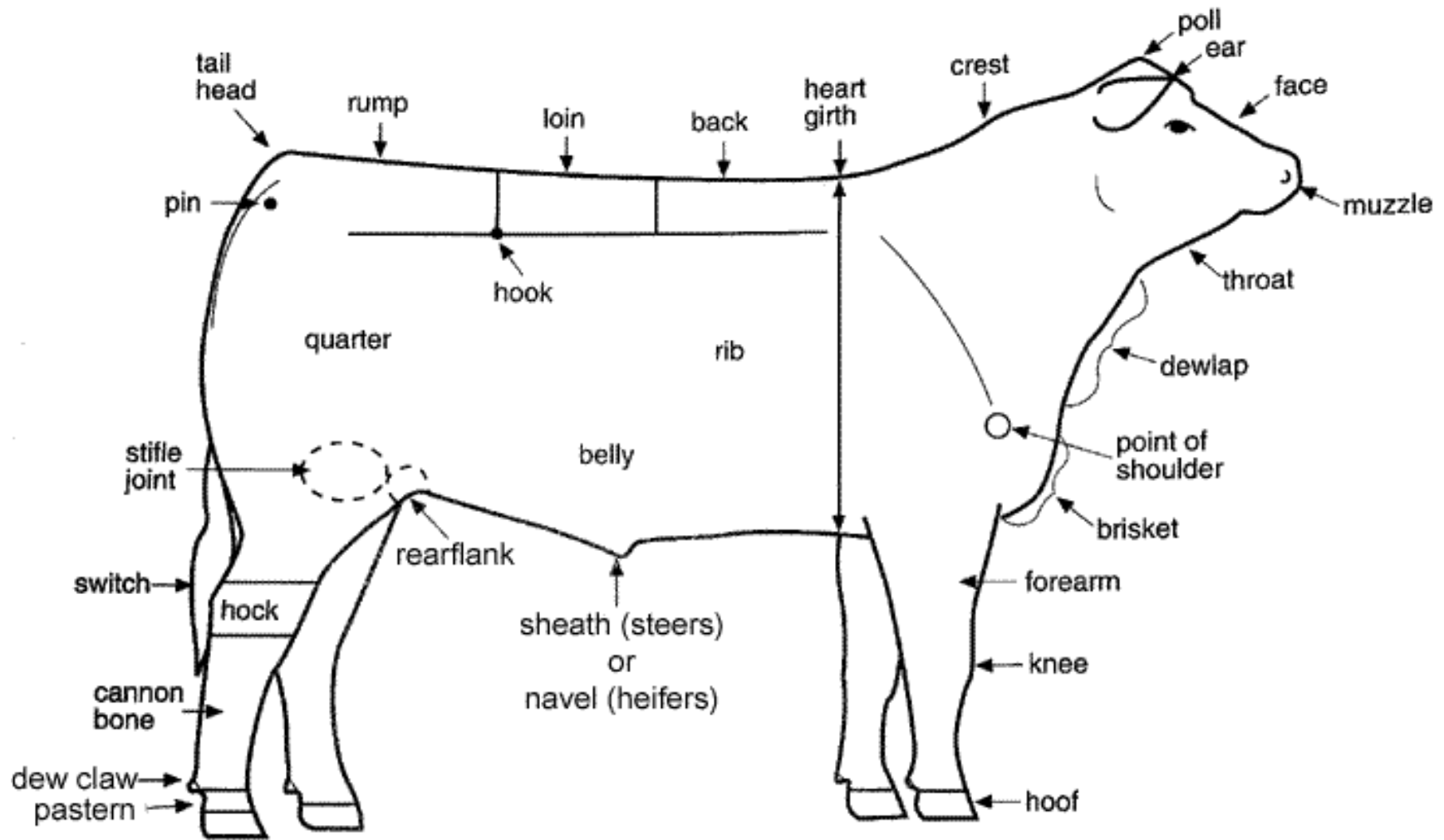
Weight Per Day of Age—Measure of weight gain; usually from birth to weaning, or from birth to one year old.

Yearling—An animal that is more than one year and less than two years old.

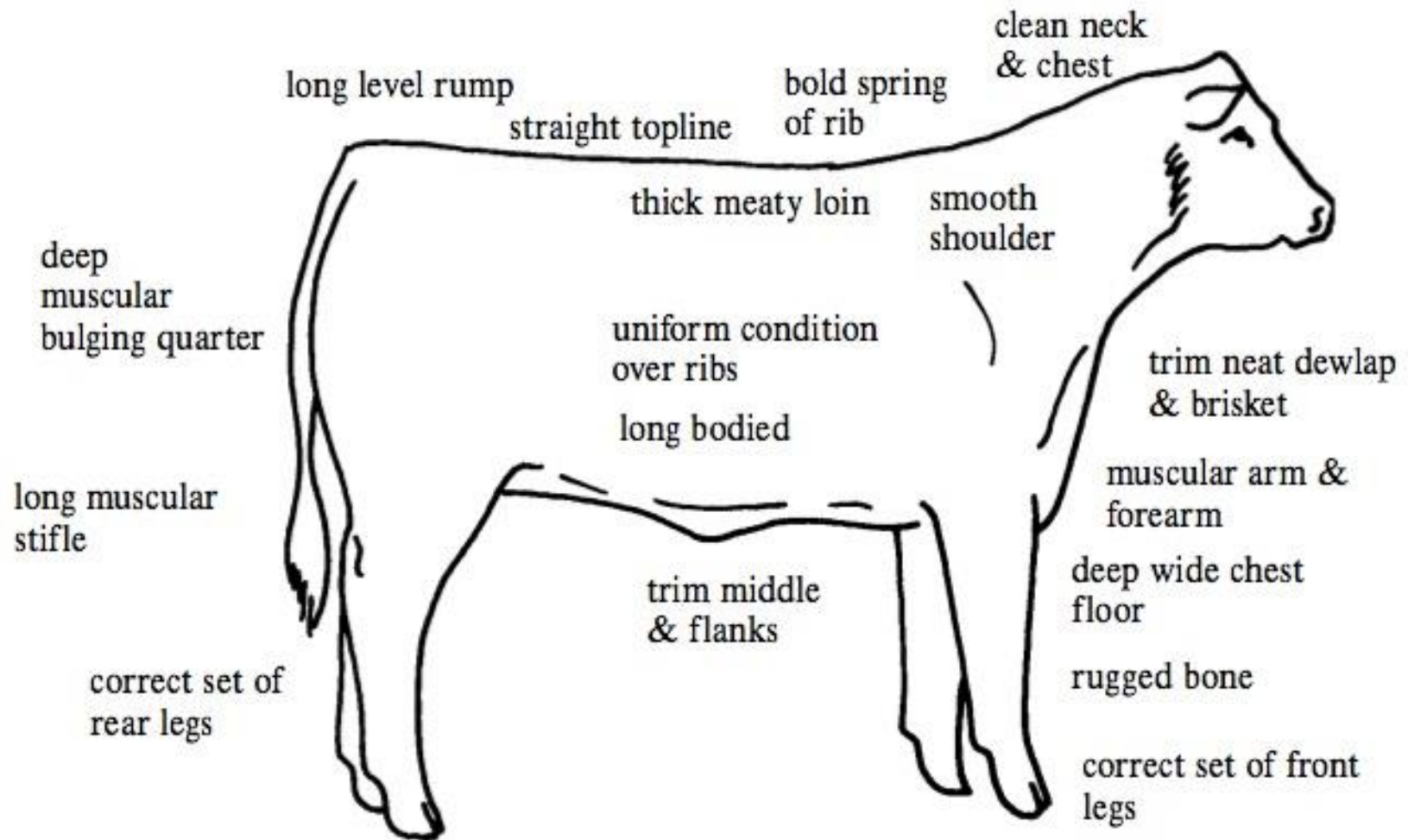
Beef Showmanship



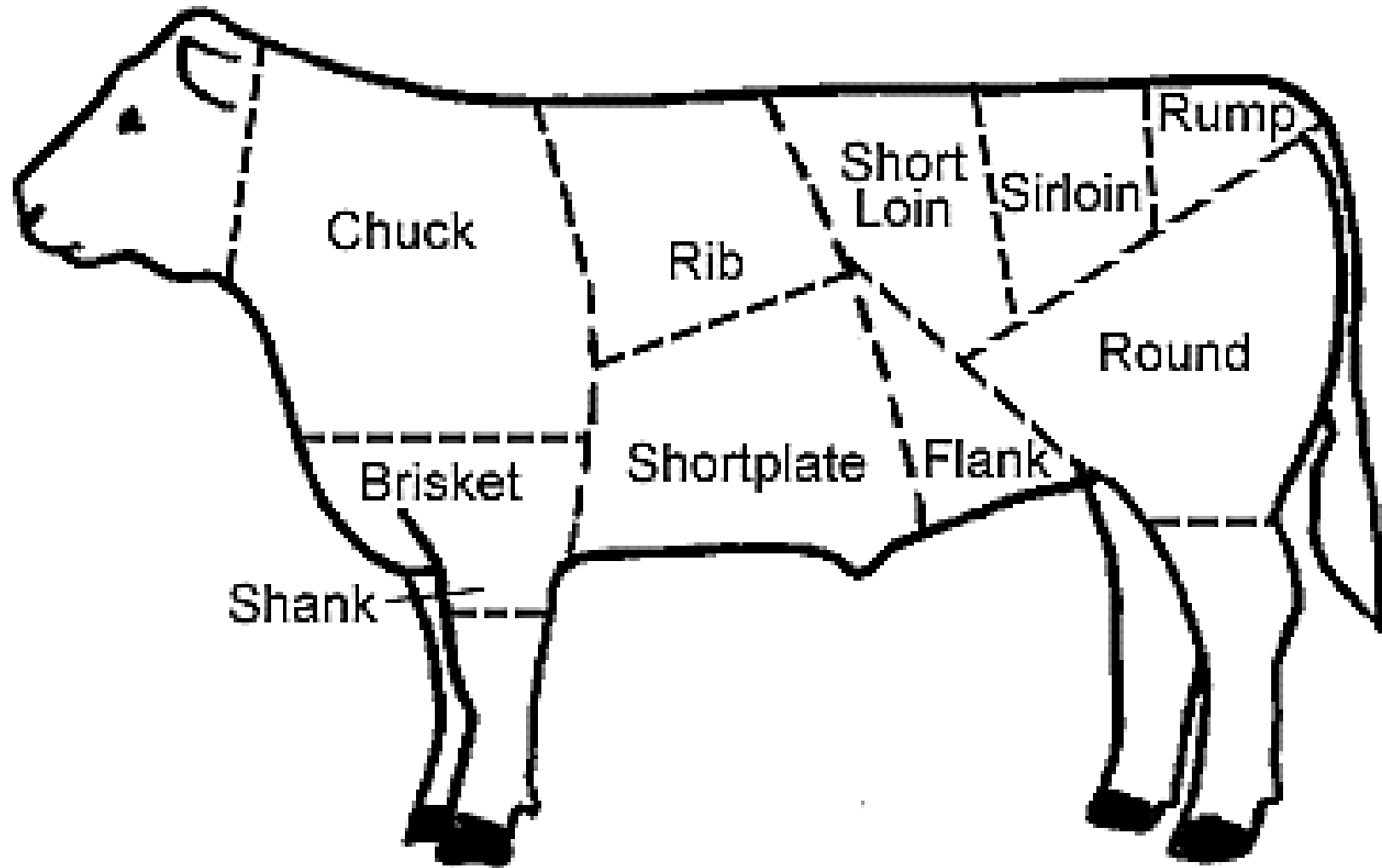
Parts of a Steer



Ideal Market Steer



Wholesale Cuts of a Market Steer



Common Cattle Breeds

Angus (English)



Maine Anjou



Charolaise



Short Horn



Hereford (English)



Simmental



Showmanship Terms/Questions

Bull: an intact adult male

Steer: a male castrated prior to development of secondary sexual characteristics

Stag: a male castrated after development of secondary sexual characteristics

Cow: a female that has given birth

Heifer: a young female that has not yet given birth

Calf: a young bovine animal

Polled: a beef animal that naturally lacks horns

1. What is the feed conversion ratio for cattle?
 - a. 7 lbs. feed/1 lb. gain
2. About what % of water will a calf drink of its body weight in cold weather?
 - a. 8%...and in hot weather?
 - a. 19%
2. What is the average daily weight gain of a market steer?
 - a. 2.0 – 4 lbs./day
3. What is the approximate percent crude protein that growing cattle should be fed?
 - a. 12 – 16%
4. What is the most common concentrate in beef rations?
 - a. Corn
5. What are three examples of feed ingredients used as a protein source in a ration?
 - a. Cottonseed meal, soybean meal, distillers grain brewers grain, corn gluten meal
6. Name two forage products used in a beef cattle ration:
 - a. Alfalfa, hay, ground alfalfa, leaf meal, ground grass
7. What is the normal temperature of a cow?
 - a. 101.0°F
8. The gestation period for a cow is...?
 - a. 285 days (9 months, 7 days)
9. How many stomachs does a steer have? Name them.
 - a. 4: Rumen, Omasum, Abomasum, and Reticulum
10. Name a disease cattle may get.
 - a. Blackleg, Leptospirosis, Influenza, Pneumonia, Pink eye, Hoof rot
11. Name a parasite that may affect cattle.
 - a. Ticks, Lice, Horn Flies, Intestinal Worms, mites

12. What are the top cattle producing states?
 - a. Texas, Nebraska, Kansas, California, Oklahoma
13. The acceptable weight range of an ideal market steer should be...?
 - a. 1250 – 1350 lbs.
14. What is the average dressing percent for a market steer?
 - b. 60-65%
15. What are the more expensive cuts of a steer?
 - a. Loin, rib, round, rump
16. The grades of beef for young market animals are...?
 - a. Prime, choice, select, standard, utility
17. Define Quality Grading.
 - a. The total amount of intramuscular fat streaks inside the rib eye
18. What are 3 quality attributes to be considered in grading quality?
 - a. Maturity, marbling, firmness of the lean, texture of the lean, and lean and fat color
19. Why is marbling important to a piece of meat?
 - a. Important for flavor and it influences juiciness.
20. Define Yield Grading.
 - a. Used to evaluate the amount of red meat (cutability) in a carcass.
21. There are four measured factors used to formulate yield grades. Name them.
 - a. Fat thickness, rib eye area, carcass weight, kidney, pelvic, and heart fat
22. In order to reach the USDA Choice quality grade, the fat opposite the 12th rib should measure...?
 - a. .4 to .45 in. or $\frac{4}{10}$
23. What are body condition scores?
 - a. BCS are numbers are used to suggest the relative fatness or body composition of a cow: 1 meaning very thin, 9 meaning very fat
24. What are the names of three retail cuts of beef?
 - a. Round steak, rib eye roast, arm pot roast, T-bone steak, skirt steak, brisket, sirloin steak, short ribs, back ribs, chuck eye roast.
25. One of the best indicators of muscling in a steer may be observed in the...?
 - a. Stifle

Beef Showmanship

Using the Halter

When leading, walk on the calf's left side with the lead in your right hand. Hold your hand 6 to 12 inches from the animal's head on the lead strap (This is near the junction of the chain and leather strap).

Firmly grip the lead so your thumb is up and toward you with your little finger nearest the chain. Your wrist is stronger this way and provides better control over the animal. Measure the lead strap to be just long enough for control (about shoulder width). It must not touch the ground; if the lead can reach the ground, you or the calf may step on it, making it awkward to switch hands. To prevent injury, do not wrap the halter strap around your hand or fingers.

At Show Time

Before the show, walk over the show ring to find any low spots on the surface. This will help you avoid these areas when setting up your calf. If possible, position the calf so the front feet are placed on higher ground than the rear feet. Enter the show ring counter clockwise promptly when the class is called.

Generally, cattle are lined up side by side to start a class. When pulling into line, look where you will be, and head into that position. Do not merely follow the person in front of you since this usually ends in an "S" configuration. You can end up brushing against the calf that was in front of you as you pull into line. If you are third or fourth in the ring, line up even with the other calves, leaving 3 or 4 feet on both sides of your calf. This allows ample room for all exhibitors to set up. Smoothly, yet quickly, get the calf set up with its head high.

When pulling into line, check your calf a few feet before reaching your destination to slow the calf. To check the calf, lift up slightly on the halter so the calf knows you are about to stop.

Using the Show Stick

Four basic uses for the show stick include:

- Assisting in placing the feet.
- Calming and controlling the animal.
- Keeping the top level.
- For scotch-driving the animal.

When setting up your calf—

- Switch the lead strap from the right hand to your left hand quickly and smoothly.
- Switch the show stick from your left hand to your right hand.
- Slowly scratch the calf's belly a couple of times to help calm the calf.
- Set the calf's feet in the appropriate position.

Remember: You have two tools in your hands to set the feet—the lead and the show stick. Set the rear feet first. To move a rear foot back, push backward on the lead and use the show stick to press (do not jab) the soft tissue between the toes in the cleft of the hoof. To move a rear foot forward, pull on the lead and use the show stick to apply pressure under the dew claw (Figure 1).

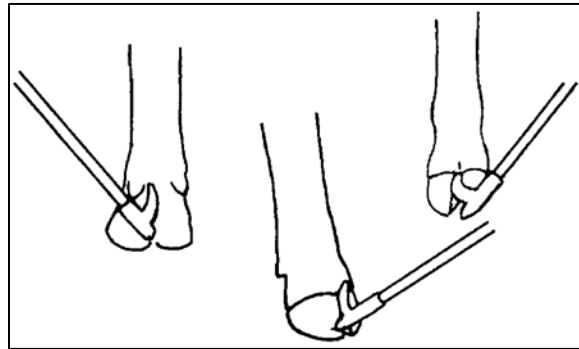








Figure 1. Proper use of the show stick in placement of the feet.

It is easier for the calf to put a foot back than move it forward. When the rear feet are too close together, apply pressure to the inside of the leg just above the hoof or at the hock, and the calf should stand wider. You can move its front feet by using your boot or show stick to apply pressure on the foot while pushing or pulling with the halter lead in the desired direction you want the foot to move. Younger, less experienced exhibitors are safer using the show stick.

Front View of the Animal		
		
Too close The animal appears narrow through the chest floor.	Just right Enhances the animal's natural volume and capacity.	Too wide Appears unnatural and unbalanced
<p>When setting up the front feet – use your own foot as a “brake” when asking the front foot to move forward or use your own foot to push the front foot back (less distracting than trying to maneuver the show stick). With enough practice your animal will almost set themselves up!</p>		

Placement of the feet depends on what view is desired for the judge and what makes the calf look its best. When cattle are lined up side by side in a straight line, the feet should be set on all four corners (bearing a full share of the calf's weight). On this view, the judge is looking at the rear and front of the calf.

Rear View of the Animal		
		
Too close The animal appears narrow and the stance detracts from the natural muscling. Also, the feet are not quite square, which enhances the narrowness.	Just right Enhances the animal's natural muscling and base width.	Too wide Appears unnatural and unbalanced
<p>When setting up the rear feet – use your show stick point to push the feet back, and the hook to pull the foot forward. With enough practice your animal will almost set themselves up!</p>		

When the cattle are lined on the profile (head to tail), set the feet as if a professional photographer is taking a picture. Stagger the rear feet so your near side foot is slightly in front of the foot closest to the judge (Figure 2). As the judge moves to the rear of the calf on profile, an

experienced exhibitor will again square the feet. As the judge moves back to the side view, profile the rear feet again.

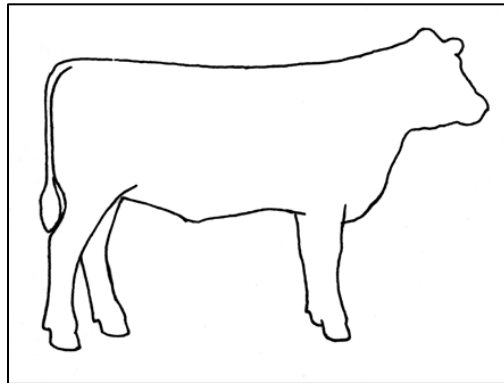



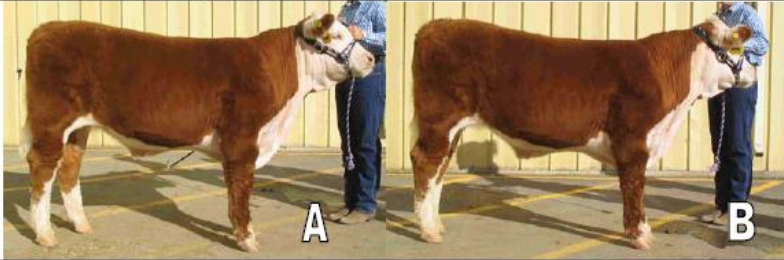


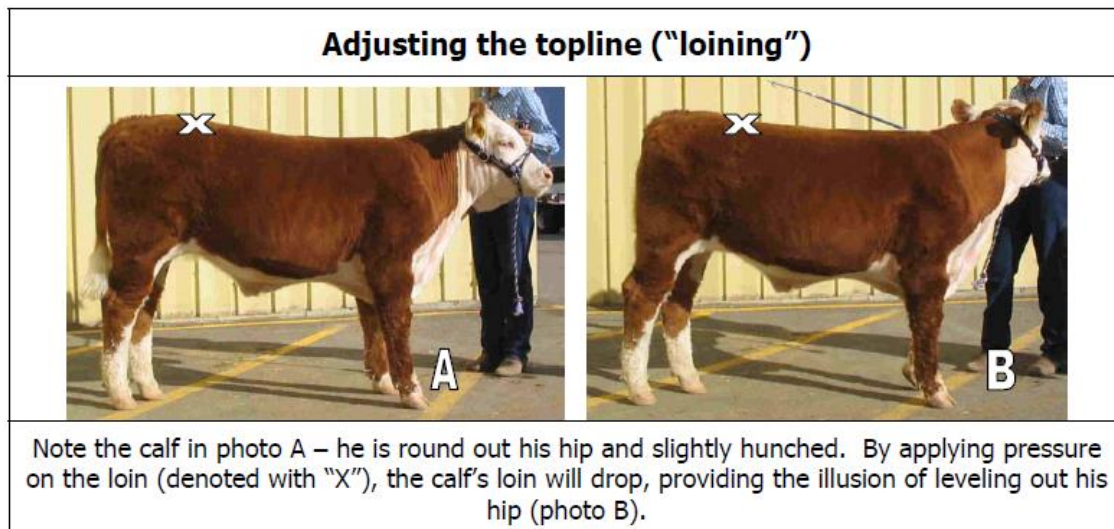
Figure 2. Set up when viewed on the profile

A heel-to-toe relationship works best when profiling. The heel of one foot is parallel with the toe of the other foot. The front feet are set squared or staggered less than the rear feet. The toe of the front foot away from the judge should be set back half the width of the hoof on the judge's side. By setting the feet in this manner, you give the judge a perception of depth and thickness. It also makes it easier to correct a top line and rump structure.

Side View of the Animal		
		
Too close The animal appears short sided and structurally incorrect.	Just right Enhances the animal's balance and eye appeal.	Stretched Appears unnatural and unbalanced, can cause the animal to appear weak down its top.
		
<p>When setting your animal up on a side view (or profile), you may either offset the hind legs slightly (A) or set the animal up square (B). If you offset the hind legs, make sure the side closest to the judge is slightly back and the side furthest from the judge is slightly forward. By offsetting the legs, some animals will appear more level down their top and out their hip.</p>		

When using the show stick to correct a top line—

- Apply pressure at the navel or flank with the hook of the show stick if the top is weak and needs to be raised.
- If the rump is steep and the loin is high, apply pressure to this area to bring it down; continue to scratch the calf's belly to keep it calm.



While showing, always keep the point of the show stick down for safety and professional appearance. Keep the stick in your left hand at the handle or about one-third of the way down when walking. This allows its use as an additional control tool if needed. If the calf is moving too fast, hold the portion of the stick between your left hand and tip or hook end in front of the calf's nose.

To scotch-drive: push forward on the halter with your right hand, and touch the calf with the show stick on its side or rump. This makes the calf think someone is behind it, and it should start to walk. Scotch-driving is needed when the calf will not lead or walk and no one is around to help you get started.

Using the Comb or Cloth

With haired cattle, carry a scotch comb in your right back pocket or in a comb sheath, with the teeth toward you for safety. Use the scotch comb to groom the hair that becomes messed up from the judge's handling your calf or from another animal bumping into your calf. You can use the corner of the comb to level the loin. If showing American breeds with short

hair, carry a wipe cloth (bandana). You can use the cloth in the same manner as the scotch comb to groom the hair while in the showing.

When it is time to walk the cattle—

- Move as the judge or ring steward instructs. Most likely you will pull the cattle up to the rail, turn left, go three-fourths of a circle, and walk right behind the tail of the other cattle in the side-by-side line.
- Assist the exhibitor in front of you in moving a calf if he or she is having trouble. Tap the calf's rump with your stick, or, preferably, put your show stick in your right hand and twist the tail of the calf in front of you with your left.
- Let your calf walk out freely. Move at an easy pace, not too slow or too fast.

When it is time to stop on the profile—

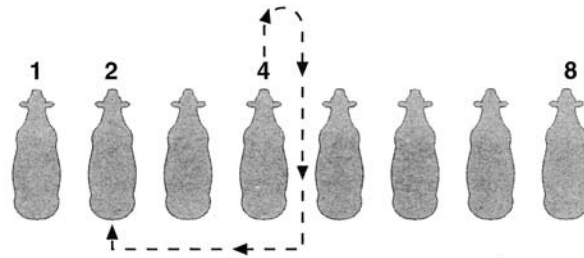
- Stop in a straight line head to tail. Remember to check the calf and then stop by lifting its head. Allow 4 to 6 feet between your calf and the one in front. This allows the judge space to move freely around the cattle and helps to prevent calves from mounting or disturbing others in the line.
- Position the feet as discussed earlier; keep the top line level and the calf's head up.
- Locate the judge and wait calmly. Do not "saw" your calf in half with rapid stick movement while waiting for the judge. Use slow, deliberate strokes with the show stick. Do not make noises or rattle the chain of the halter.

Remember to allow proper distance between calves, and set the calf up at its best. As the judge pulls cattle from the profile line, empty spaces occur. As spaces between cattle become empty, move forward in the line. By moving forward and filling the empty spaces, it becomes easier for the judge to make comparisons. Once pulled into a side by side line, you are nearing the end of the class. Stay alert and set the calf up as positions may continue to be switched.

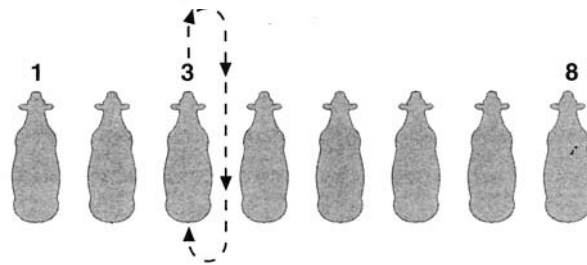
When turning an animal, always turn to the right (clockwise) unless the ring steward gives other instructions. Pushing the calf's head away from you prevents the possibility of the calf stepping on your foot, causing harm to you or the calf.

Certain situations may occur in changing placings (Figure 3). Note that you pass back through the same hole you left, then to the proper position. If positioned up to a rail, do not turn around in the line. Back the calf out by pushing back on the halter with your left hand and applying pressure with your right at the point of the shoulder. Pull into the line at the instructed position.

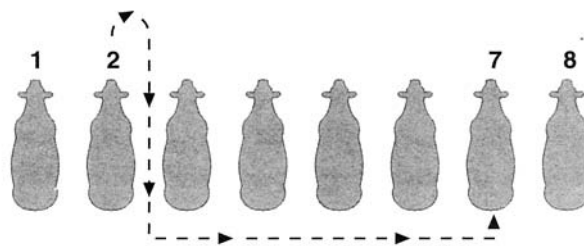
Figure 3: Switching positions



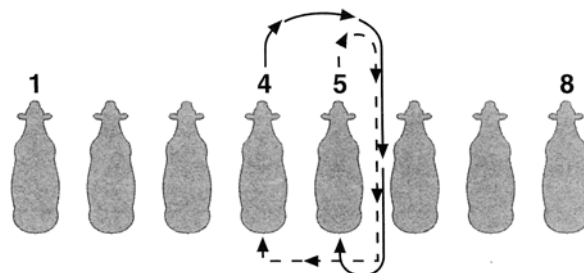
1. How to switch from position 4 to position 2.



2. How to reset in the same position using position 3.



3. How to go from position 2 to position 7.



4. How to switch positions 4 and 5. Position 5 would move out first.

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