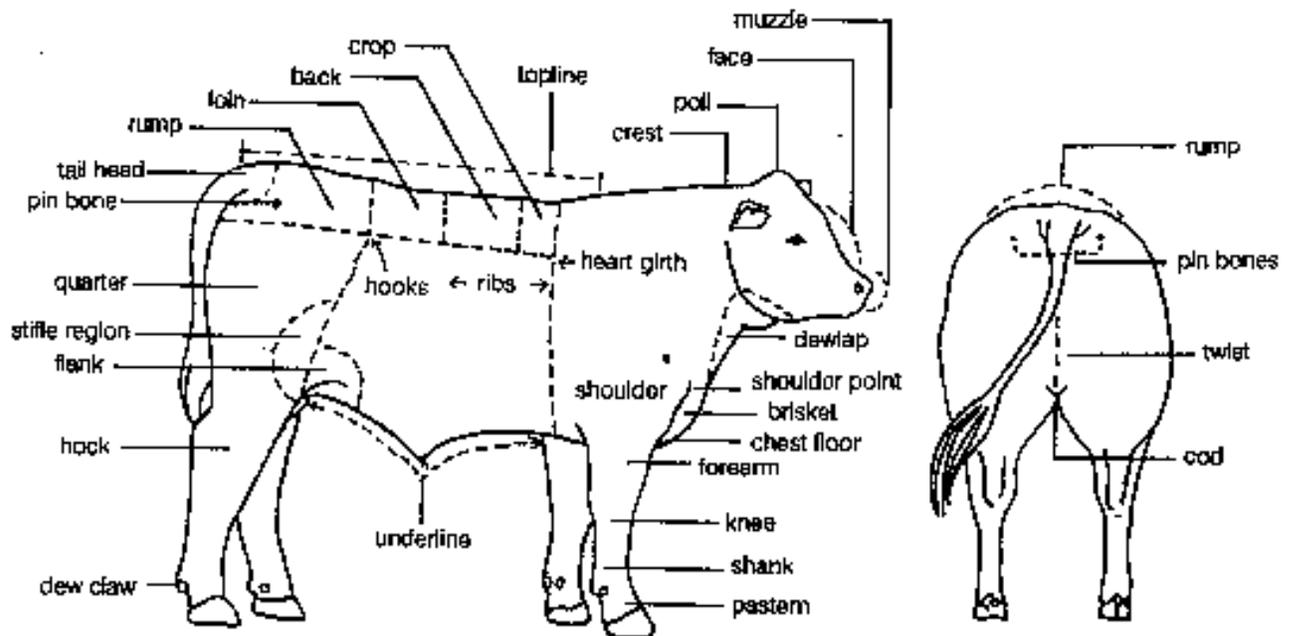# Judging Beef

The aim of the beef industry is to efficiently produce carcasses of the type and quality demanded by the consumer. The ability to look at the live beef animal and evaluate its potential to produce these carcasses is a challenge to you and to others in the beef industry. We use live animal appraisal techniques in the show ring, the feedlot, the pasture and at the auction sale to assess the quality of our beef animals. This is what we refer to as judging beef - the art of visually comparing and ranking beef cattle.

The objective of this unit is to:

1. Give you background knowledge of the structure and function of the beef animal so you know the important points to look for when judging beef.

2. Show you how to determine if a particular animal possesses these important traits.

Parts of the Beef Animal

Beef Terminology

One of the most confusing things about judging is the terms we use to describe the animals. It may be hard to define some of these terms because they have different meanings to different people. Let's have a look at some of the more common terms and their definitions.

Market Steer Terminology

Muscle	• Red meat or lean. • That part of the carcass which is not bone or fat.
Carcass	• The part of the animal which remains after the removal of the head, feet, hide and internal organs. • The carcass is composed of bone, muscle, fat and connective tissue.
Finish	• The amount of fat covering on a market animal. • Overfinished - the animal has too much fat cover. • Underfinished - the animal doesn't have enough fat cover to fall into a desired grade.
Lean Yield	• Estimation of the percentage of the carcass that is red meat.
Frame	• Skeleton size. • This can be determined by looking at bone length and width and is easy to see in areas where there is nothing but bone, such as the cannon bones.
Structure	• Must be sound or free from any defects which inhibit performance. • Must be correct and show the desired structural traits.
Balance	• The overall view of the animal, including how well the parts blend into one another and how freely and smoothly the animal moves.
Trimness	• Freedom from excess fat or finish. • This can be determined by looking at places where fat tends to accumulate; the brisket, flank and twist.
Grade	• The description a carcass receives based on the maturity of the carcass, colour, texture, and firmness of the muscle, fat and marbling and fat measurement.
Style	• Way of going, alertness, gait, colouring. • This is often referred to as eye appeal.
Meatiness	• The degree of muscling. • A meaty animal will have superior muscling.

Breeding Animal Terminology

The terms used for breeding stock are similar to those used for market animals. Soundness, correctness and breed character are most important in conformation of beef breeding stock. There are several terms which relate to these qualities.

Conformation	• The overall structure of the animal. • Includes all the points mentioned.
Masculinity	• This term is used to describe bulls. • Size and strength of the animal. • Secondary sex characteristics such as well developed and defined muscles, thickness throughout the shoulder, neck and crest regions, overall well developed forequarters and a well developed scrotum.
Femininity	• This term is used to describe heifers and cows. • Refinement of the head, neck and shoulders, the degree of muscling, evidence of udder and teat development. • Females should have smoother muscling than bulls and should be more refined through the head, neck and shoulder.
Breed Character	• The shape of head, length of body, height, colour markings and other characteristics defined by the breed associations as characteristic of that breed.
Condition	• This means the same thing as finish does for the market animal. • It is the amount of fat and muscle that the animal is carrying.
Broodiness	• Indicators that a female will be or is a good mother. • Includes adequate size and frame to carry a calf, udder and teat development and disposition.
Capacity	• Also means volume or depth. • The greater the capacity of an animal, the better their ability to eat and breathe. A greater ability to eat and breathe means that the animal will be better able to grow and develop. • The size and frame of an animal in relation to its ability to carry a calf, develop desirable muscling and remain structurally sound over the years.
Progeny	• The offspring or calves of a female or bull.

Carcass Terminology

In addition to the terms already defined, there are many other terms you will encounter when working with carcasses.

Because, in the beef industry, our product is meat, we need to understand the importance of the characteristics whether we are judging live animals or carcasses.

Connective Tissue	• Includes tendons, ligaments and cartilage.
	• These all help to hold the body and organs together.
	• Connective tissue looks like white or colourless ribbons and threads through the meat.
Gristle	• Refers to the heavy deposits of connective tissue found in the muscle.
	• Meat with lots of connective tissue will be tough to cut and chew.
Cartilage	• Connective tissue which may be replaced by bone as the animal matures and develops.
	• In the mature animal, cartilage is only found in places where there needs to be elasticity and flex such as the ears and the joints.
Maturity	• The age of the animal or carcass.
	• Affects the eating quality of the meat.
	• Is determined by the degree of bone ossification or hardening of cartilage into bone.
Colour	• When grading a carcass, colour is important.
	• The meat must be bright red and the fat must be white or amber to receive Canada Grade A or higher.
Marbling	• Amount of fat within the meat.
	• This does not include the outside covering found on many cuts nor any large fat deposits within the muscle.
	• Looks like little white flecks in the meat.
	• Marbling gives the meat flavour and tenderness.

T bone Steak with Marbling   T bone Steak with No Marbling

Did you know that all meat would taste exactly the same if it were not for fat? Lamb, pork and beef would all taste the same. But, because of the type and amount of fat, we have three very different tasting meats.

Before we learn about the live animal, let's discuss what to look for in a slaughtered animal, or in the meat. When the consumer buys meat, he or she looks mainly at price and grade. Grade gives the consumer an indication of colour, tenderness, juiciness, flavour and the amount of fat or marbling.

Cuts of Beef

The wholesale cuts on the beef carcass are shown below. Note the locations of the higher priced cuts.
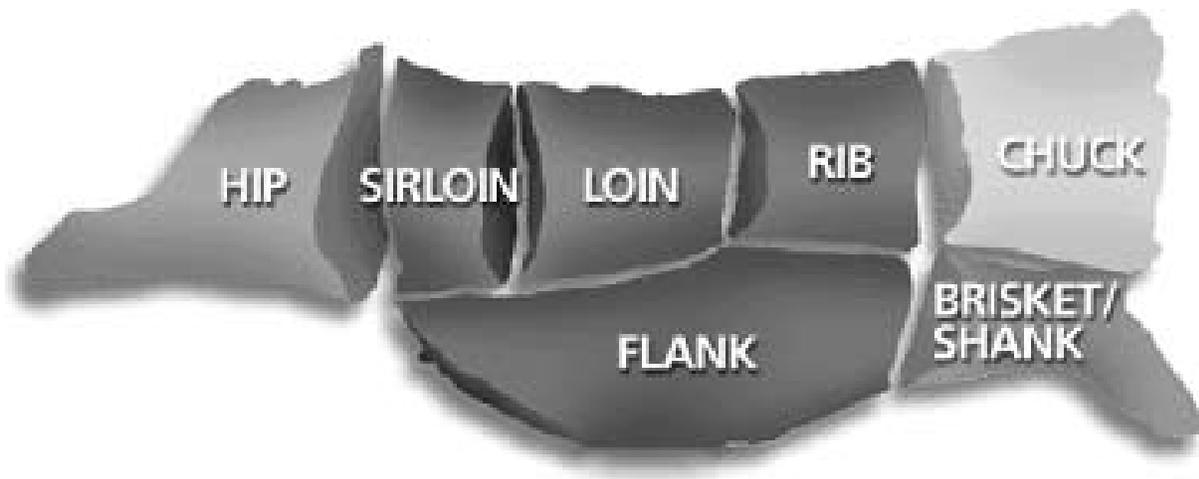
Wholesale Cuts of a Beef Carcass

High Priced Cuts

1. Hip
2. Sirloin
3. Loin
4. Rib

Low Priced Cuts

5. Chuck
6. Flank
7. Brisket/Shank

Source: Beef Information Centre (www.beefinfo.org)

Judging The Carcass Class

When you judge a carcass class, you do the same thing as the graders.

You look for the carcass or carcasses which will grade Canada A or higher. You place the carcasses in order from highest to lowest quality.

The steps you should follow are:

1. Determine the maturity. You can determine this by looking at the amount of the ossification or hardening of the bones.

2. Check the colour of the muscle and fat. Look for bright red meat and white or amber fat cover.

3. Check the amount of muscling by looking between the 12th and 13th ribs.

4. Check the amount of marbling and fat cover.

Look for a carcass that has ample red meat. The muscles should be large and bulging with the appropriate amount of fat cover. The muscles should be long and tapered where they attach to the bones and full and thick in the middle. Check to make sure the meat is firm and "bounces" back when you press into it. Remember that muscle is firm and fat is soft.

Place the class from most desirable to least desirable according to how you think the carcasses would be graded. For more information on the Canadian grading system and producing a top quality carcass, consult Beef Project Manual, Unit #17 - The Beef Carcass, or check www.beefgradingagency.ca.

More About Beef

Let's learn a few simple rules about beef cattle. You can apply these to judging both market animals and breeding stock. Circle "Truth" or "Not".

Tell Me – "Is this a Truth … or Not?"

Rule #1	Cattle grow and develop in a genetically determined way. We cannot change the composition of cattle.	Truth	or	Not
Rule #2	Muscle and fat are laid down evenly over the body of the beef animal.	Truth	or	Not
Rule #3	Of the three components of lean yield (bone, muscle and fat), bone changes the least from one animal to the next.	Truth	or	Not
Rule #4	Muscles are always located in the same place on each animal. These muscles always have a similar size and shape in proportion to the animal.	Truth	or	Not

Rule #5   An animal lays down all its muscle before laying   Truth   or   Not
                 down fat.

Yes, all of the rules are truths. Let's take a closer look at each of these rules to help you
understand how the beef machine works.

Rule #1

We cannot change the composition of cattle. Mother Nature
designed cattle to grow and develop in a genetically
determined way. This is true for all cows, steers, heifers and
all breeds. Cattle deposit fat in the brisket area and not in the
forearm area. There will never be any muscle development in
the brisket and there will never be any fat on the forearm.

In any animal, there is a priority of nutrients. This means that
as the animal takes in nutrients, or feed, these will first be
used in the most important areas - this is maintenance. The
most important is for the nerves, the least important is for
fat. Once all of the important needs have been met, then the
animal will lay down fat.

Rule #2

Muscle and fat are developed evenly in the beef animal.
This means that muscle is laid down the same rate
all over the animal, regardless of where the muscle is
located.

The proportions of one muscle type to the next are
the same from one animal to the next. You know this
because your beef animal should have symmetry and
balance of all parts to function properly.

One steer could be bigger and show more muscle
expression than another, but both would have exactly
the same proportions of forearm muscle to round
muscle. This is important to understand. When
someone says " this steer showed more muscle
expression in the high priced cuts", you know that if
that steer is well muscled in the hind quarter, then it is
well muscled over his entire body.

This same principle applies to fat. Fat accumulates in
certain places on the beef animal. It accumulates in

these locations at the same rate. Look at the brisket, flank and twist. By determining the amount of fat your animal is carrying in any of these three places, you can predict the amount of total fat on your animal. A very fat cow will also have fat in the pin bone, a very fat bull will also accumulate fat in the neck of the scrotum.

Rule #3

Of the three components of lean yield (bone, muscle and fat), bone changes the least from one animal to the next. The amount of bone or size of skeleton as a percentage of the total weight varies very little between cattle of similar height or weight.

You can tell if animals have a similar skeletal structure by looking at the areas where there is only bone. Look at the cannon bone. If two animals have the same length of cannon bone, they have a similar size of skeleton because the length of the cannon bone is always a constant percentage of the whole skeletal size.

This will help you if you see two steers - one that looks taller and heavier and another that appears smaller and lighter. When you look at their cannon bones, you find that the cannon bones are the same length. This tells you that they have the same size of skeleton. What could account for the difference you see in their size and weight? It must be either muscle or fat.

Rule #4

Muscles are always located in the same place on each animal. These muscles always have a similar size and shape in proportion to the animal. They do not increase in number or size or change location as the steer grows or gains weight. Double muscled steers are an exception to this.

This is an important point to remember because looking for the amount of red meat on an animal while the animal is still alive can be very difficult. If you know that the muscles covering the rump of the beef animal are long and tapered, you know that a square, flat hind end cannot be composed of entirely muscle because these muscles are rounded and tapered, not flat and square. The rump must have an appreciable amount of fat on it to make it look square. Remember, muscle is round - fat is square.
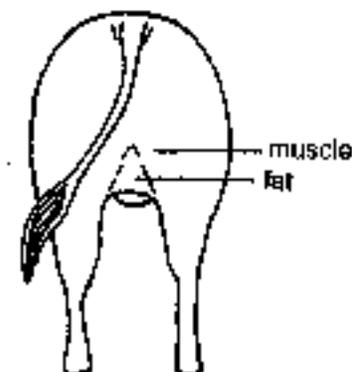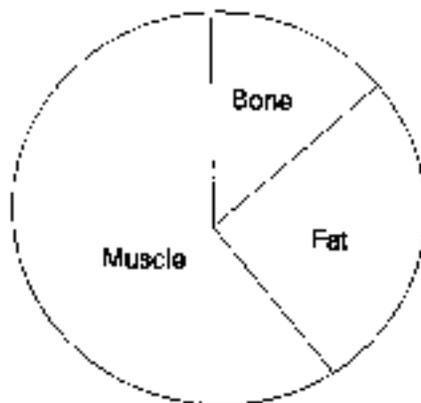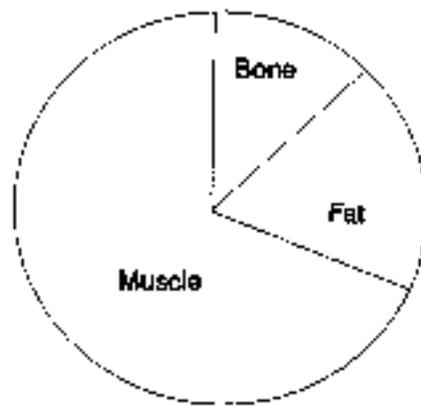
The same goes for the twist area. All beef animals are cut up in the twist. The muscle located in the twist is long and flat and cuts up high into the hip. If your live steer is full in the twist most of the way down to the hock, you know that this area must be filled with fat as muscles do not and never will develop in that fashion.

Rule #5

Animals grow and develop in a set way. They always lay down muscle before they lay down any significant amount of fat. So you know that if you find much fat on a market ready steer, his muscles are not going to grow any more. He will just keep getting fatter.

Never think that a fat steer is going to develop more muscle - he has already developed all the muscle he is going to.

Both of these steers have finished developing muscle. If you continue to feed them they will lay down more fat, but no more muscle or meat.
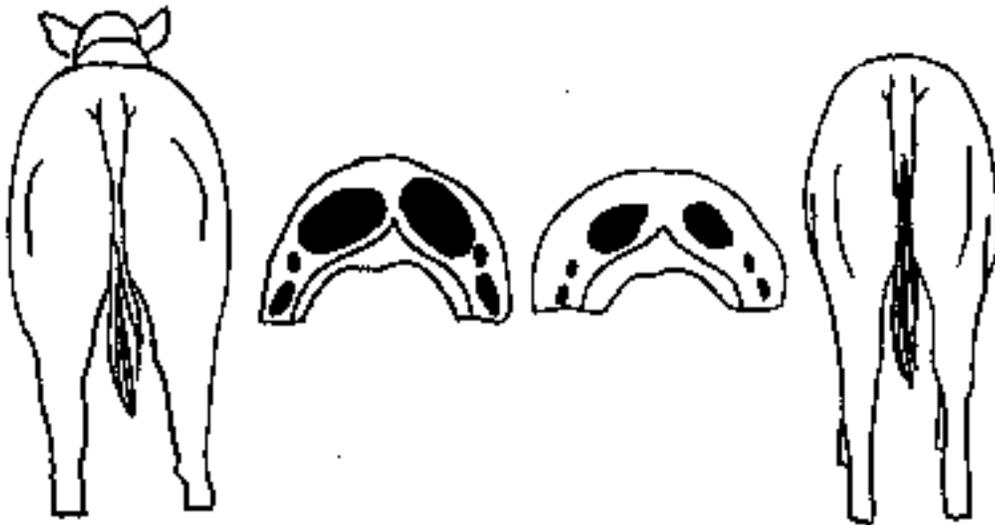
Judging The Market Animal

When you judge market steers, you are trying to visually assess the lean yield in an animal that is still breathing, walking and dragging its owner all over the ring!

There are three components influencing lean yield. These are bone, muscle and fat. Your first place animal should be the one with the highest lean yield. This will be the one with the highest percentage of lean meat compared to bone and fat. How can you find this animal?

There are some fairly accurate steps you can take to estimate the lean yield if you first understand how a beef animal grows and develops. The idea is to "undress" the steer with your eye to see the meat parts. Your difficulty is trying to "see through" the fat and hide in order to evaluate the meat that is underneath.

The five rules gave you a quick lesson in cattle biology. Let's now relate this to judging a class of steers.

The most important thing to find in market animals is a desirable degree of finish, or amount of fat covering. Graders look for the fat between the 12th and 13th rib. Obviously, we cannot check that area in a live animal but we can look at other areas that indicate fat amount. The challenge you is to identify which is fat and which is muscle.

There are five key areas where you should check for the amounts of fat and muscle. These are the brisket, flank, twist, rump and forearm. Let's take a close look at each of these key areas.
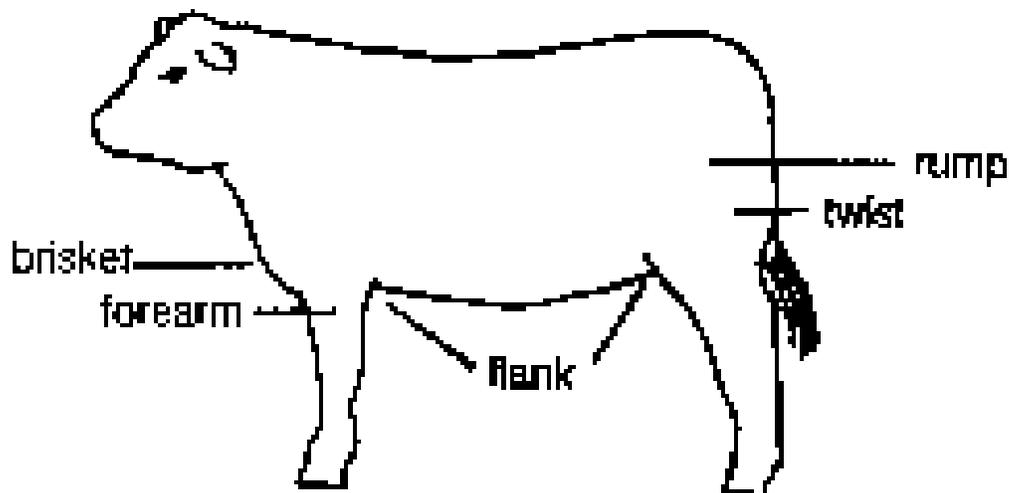
The Brisket (view from the front and the side)

The brisket is located underneath the breastbone. The breastbone has very little muscle over it just the tips of two long and narrow muscles. Therefore, if the brisket is deep and full it must be full of waste fat not muscle. If there are fat deposits here, there will be deposits of waste fat in other areas of the carcass.

Ideal Steer

Overfat Steer
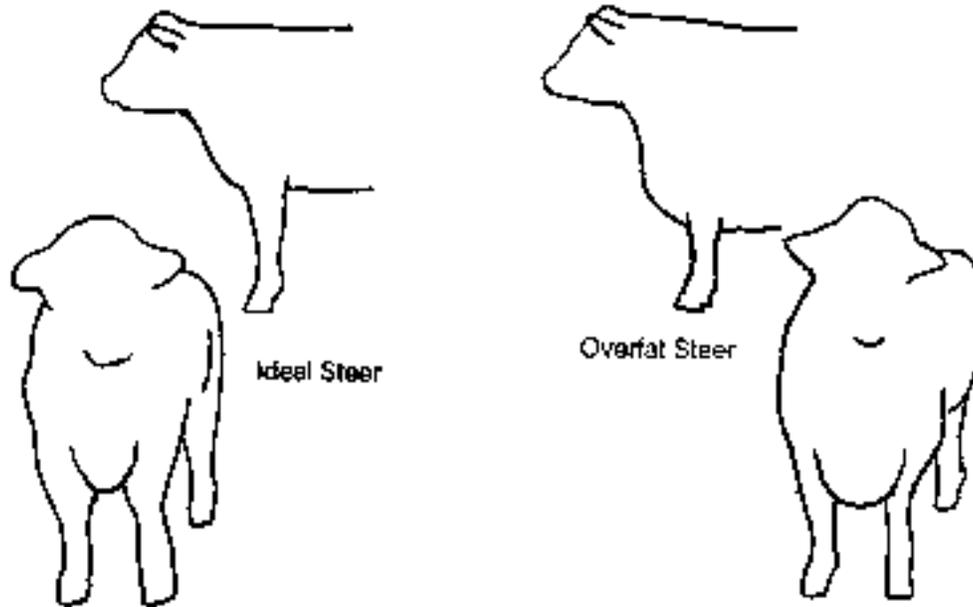
The Flank (view from the side)

If we look at the muscular structure of the beef animal in the flank area, we can see that there is no muscle or meat there at all. There is also no bone or skeletal structure. It is an area of skin and tough connective tissue. If the flank is deep and full, what could account for this? Nothing but fat. If there is fat here, then there will be other deposits of waste fat in the carcass, because the flank is the final place the animal deposits fat.

Ideal Steer

Overfat Steer

The Forearm (view from the front)

Examination of the forearm will give you an indication of how well muscled the animal is all over. Look at the forearm because no fat ever accumulates here. It is composed entirely of muscle and bone. If the forearm is bulging and muscular, the animal will have well developed muscles all over its body because, as we already know, muscle develops evenly.

Ideal Steer

Overfat Steer
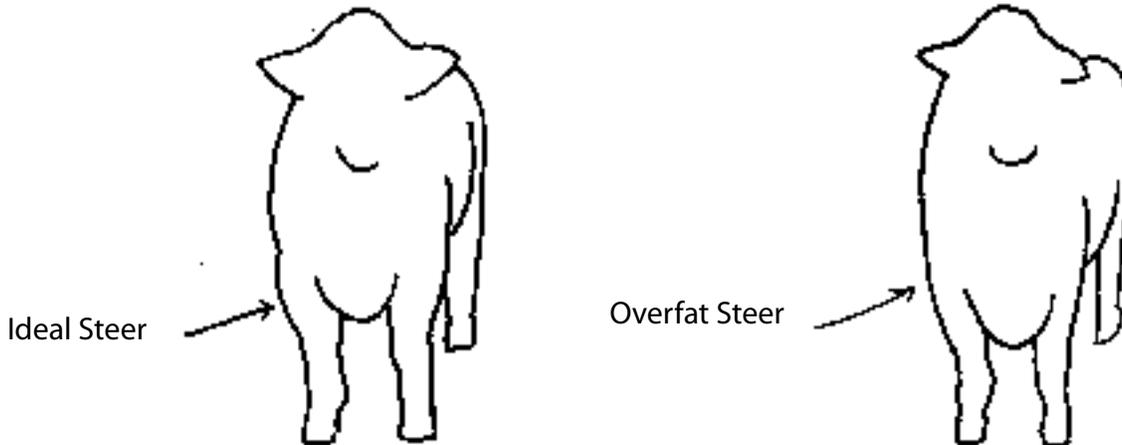
The Twist (view from directly behind)

A deep, full twist indicates fat, not muscle. If your steer is full all the way down to the hock, this must be fat because the muscles do not extend all the way down to the hock.

Ideal Steer

Overfat Steer