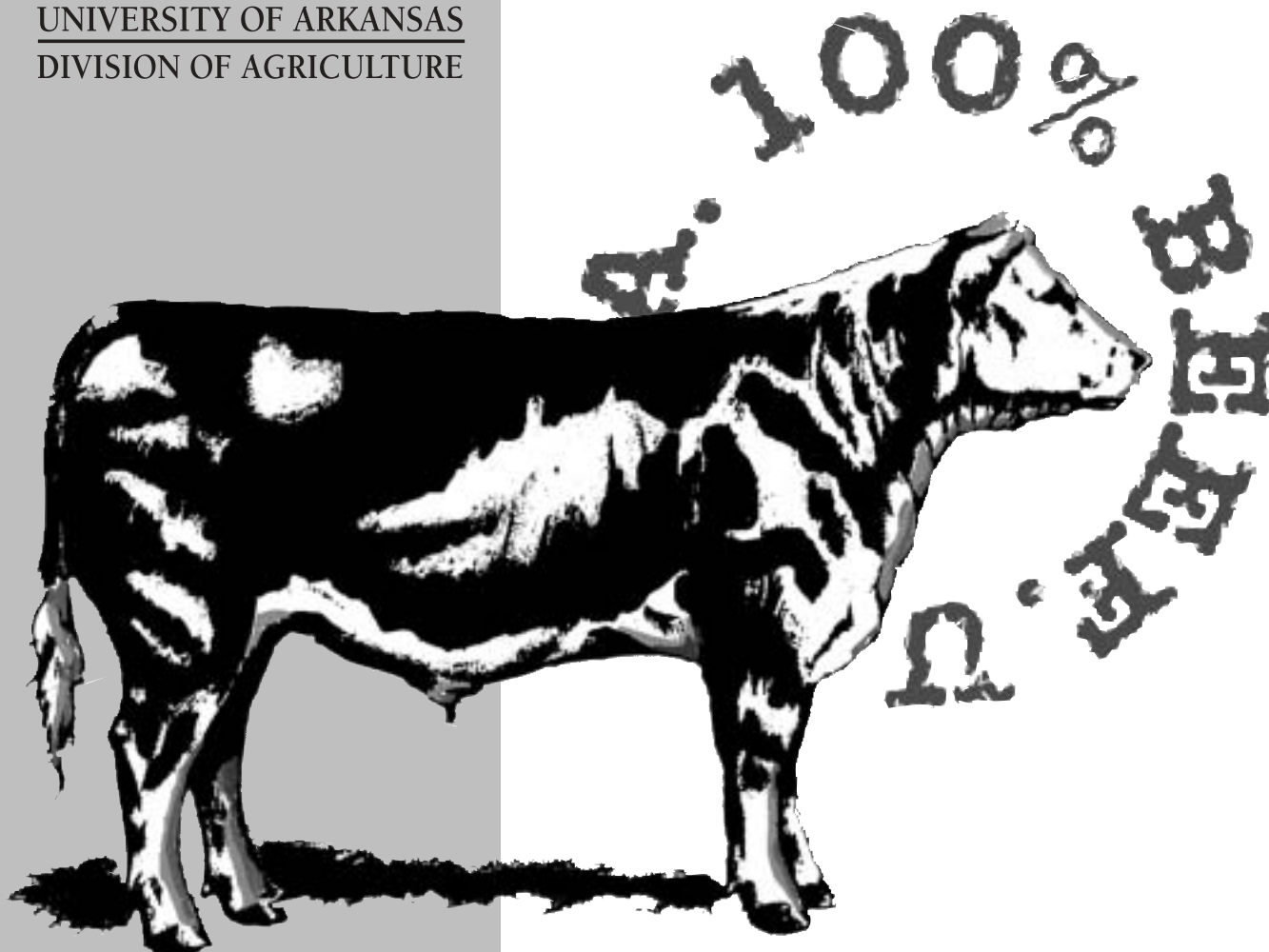


UofA
UNIVERSITY OF ARKANSAS
DIVISION OF AGRICULTURE



An Analysis of Beef Cattle Conformation

COOPERATIVE EXTENSION SERVICE

University of Arkansas, United States Department of Agriculture, and County Governments Cooperating

Dr. Brett Barham

Extension Livestock Specialist
Cooperative Extension Service
University of Arkansas Division of Agriculture

Steven M. Jones

Extension Specialist - Livestock - 4-H
Cooperative Extension Service
University of Arkansas Division of Agriculture

Dr. Tom R. Troxel

Section Leader, Extension Beef Cattle Specialist
Cooperative Extension Service
University of Arkansas Division of Agriculture

Acknowledgment is given to Dr. Stan McPeake as an original contributing author of this publication. Design of original publication by Julie Thompson.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Director, Cooperative Extension Service, University of Arkansas. The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, religion, gender, age, disability, marital or veteran status, or any other legally protected status, and is an Equal Opportunity Employer.

An Analysis of Beef Cattle Conformation

The foundation of animal production is in the breeding herd. Effort should be made to select those animals that possess long life with high reproductive efficiency, efficient conversion of feed into meat, a type or pattern that will produce desirable carcass composition and performance capabilities.

The ability of the individual to meet these requirements is due to heredity and environment. Today, production records are used to determine the genetic potential of an animal and that animal's response to the environment. Records, however, do not tell the complete story. Physical characteristics of the animal are still important.

The animal has many features that aid in predicting its value in the breeding herd. It takes training of the eye and mind to detect and evaluate these features so that one animal can be measured against another. This comparison enables us to select the animal which will best fit into a profitable breeding program.

Visual evaluation is still an important part of the selection process.

Visual evaluation is still an important part of the selection process. It can be a good indicator of the frame size, muscle and body structure, predisposition to waste, feet and leg structure and breed character.

There is also a direct relationship between the appearance of a breeding beef animal and its reproductive efficiency, a critical factor in the success of a purebred or commercial operation. Breeding cattle must reproduce regularly over a long period of time to be economically productive. In recent years beef cattle improvement has not paid as much attention to the visual signs of reproductive ability as other physical characteristics. Before discussing visual appraisal factors, however, one must have a knowledge of the parts of a beef animal.

The following characteristics of a beef animal should be visually appraised and then combined with production records and pedigree analysis to do an effective job in selecting beef animals:

Body Structure

The neck of a beef animal should be moderately long, an indicator of growth. The loin and rump should be long, wide and level causing the animal to be long and strong in its top. Extremely short-bodied and short-legged cattle are associated with excessive fat and inefficient growth rates. Excessively long-legged and long-bodied cattle are associated with late maturity and low quality grades.

The round of beef cattle should be deep and wide when viewed from the rear, with the widest portion about midway between the tailhead and hock. The shoulder should be well muscled and free of coarseness. Extremely heavy, open shoulders can cause calving difficulties. A beef animal should be moderately trim in its rear flank, underline and brisket to prevent

excessive waste. At the same time, it should show good depth of body, indicating body capacity. The chest floor, as well as spring of ribs, should exhibit width, indicating body capacity and overall productiveness. Adequate width between front and hindlegs also indicates good body capacity and muscling.

Muscling and Muscle Structure

Bulls – Thick, heavy and long muscling is desired and indicated by length and size of muscling in the forearm and gaskin areas and width and bulge of muscling in the stifle area as viewed from the rear and side. Width between the hindlegs, both standing and walking, is also a muscling indicator. Thickness, length and bulge of muscling in the back, loin and round indicate muscling from the anatomical regions which contain the highest priced wholesale cuts. Length of muscling is largely determined by length of bone. If muscling is thick and bulging in one area of an animal's body, the animal is usually heavily muscled throughout. Animals with extreme muscling, to the point of being impaired in movement or appearing double-muscled, should not be selected.

Females – Muscling in females should be long, smooth and of moderate thickness. Short, coarse and bulky muscling is usually a sign of poor reproductive efficiency and low milking ability.

Soundness of Feet and Legs

For cattle to travel and remain sound during a long productive life, they must have a correct set of feet and legs. Legs should be squarely set under the four corners of a beef animal and be reasonably straight. The shoulders should not be too straight, a steep shoulder is a good indicator of leg problems. Animals which exhibit signs of being post-legged, knock-kneed, splay-footed, sickle-hocked, bucked-kneed or with short straight pasterns should not be selected. The animal's movement should be free and easy as opposed to uncoordinated, slow or stiff and restricted. Animals with uneven, small, curled or twisted toes and/or crooked feet usually become lame.

Frame or Skeletal Size

In recent years, measurements for height have been used as a descriptive supplement in many herd testing programs. Adjusted weights and weight ratios accompanied by linear measurements for height have added another dimension to evaluating the fat-to-lean ratio. No one frame size for an animal will be best for all feed resources, breeding systems and markets.

Frame size indicates growth and is an indirect indicator of the composition, or fat-to-lean ratio, of beef animals. Large-framed animals are leaner at a given weight than are small-framed individuals. Frame size is related to slaughter weights at which cattle should attain a given amount of fat thickness.

Medium-sized cows (1,000–1,200 lbs. after weaning of calf) are the most desirable because they offer the best combination of efficiency and marketability in the calves they produce. Small-sized cows (less than 1,000 lbs.) are usually efficient (calf weaning weight/cow weight), but they produce calves with less growth potential. Large-sized cows (greater than 1,200 lbs.) are not as economical because of higher body maintenance requirements.

Reproductive Soundness

Bulls – Mature bulls should show masculinity with a burly, masculine head with coarse hair and a heavy jaw. They should show a crest or heavy muscling in the neck and shoulders indicating effects of the male hormone, testosterone. The testicles should be well-developed and properly balanced in relation to the age and size of the bull. The scrotum and testicles should be a minimum of 30 centimeters in circumference on a 12-month-old bull to indicate adequate reproductive ability. Although bulls with Brahman breeding will exhibit a more pendulous sheath, the sheath in bulls should be as clean and tight as possible. The bull should indicate adequate libido or sex drive.

Cows and Heifers – Females should show femininity with lean refined heads and long, narrow and clean necks. Their overall body shape should be slightly angular, with a slight skin fold shown by the dewlap down the throat and in the brisket area. The shoulder blades will extend to the top of the vertebrae, giving a lean appearance to the top of the shoulders. The shoulders will be moderately muscled and clean. A productive cow will have a broad chest and large spring of ribs, indicating adequate body capacity. Females should be wide and long from hips to pins and deep from pins to the stifle joint, indicating calving ease. The widest portion of the fertile cow should be in the midrib. A fertile female will have a level top line, as opposed to a high tailhead. The udder should be strongly attached with a level floor and teats should be proportional to body size.

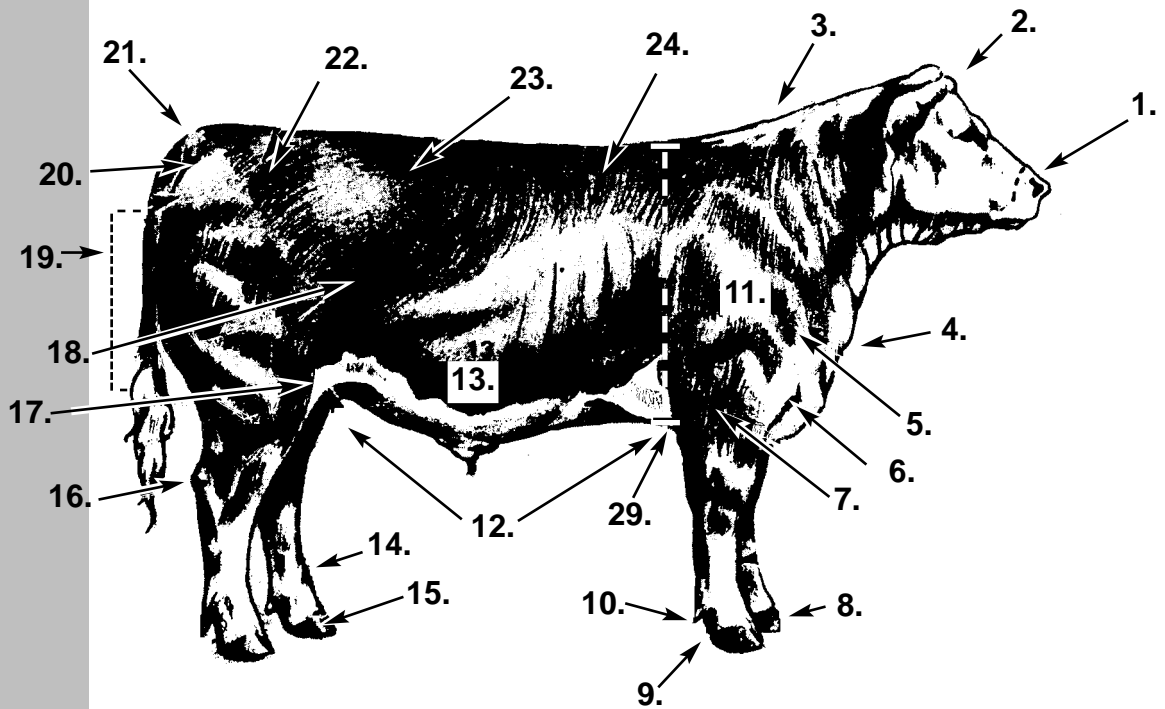
Predisposition to Waste

The degree of finish or fat on an animal will vary depending on the amount it is being fed and the season. Bulls should naturally show an even, thin distribution of fat, even when being fed heavily or during the nonbreeding season. Excessively fat bulls will usually lack libido. Indications of predisposition to excessive waste are large amounts of loose hide in the dewlap or brisket, excessive depth in the flank and loose hide in the twist.

Cows or heifers should never be fed to excessively fat conditions. Fatty tissue is deposited in udders and around reproductive organs, resulting in reduced milk production and reproductive rates. Females will normally deposit more fat in the brisket, along the underline, and over the ribs and back than bulls, especially during their dry season. This is an advantage, if not excessive, because these cattle will require less feed during the winter, as opposed to poor-doing or hard-fleshing cattle.

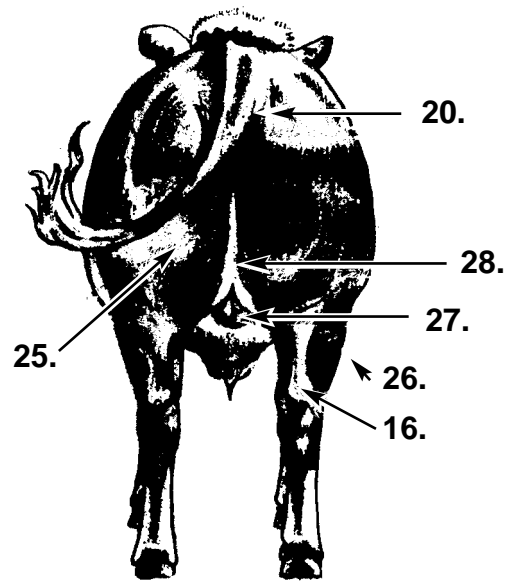
100% BEEF





Parts of the Beef Animal (Steer)

- | | |
|----------------------|---------------------|
| 1. Muzzle | 16. Hock |
| 2. Poll | 17. Stifle joint |
| 3. Crest (neck) | 18. Stifle muscle |
| 4. Dewlap | 19. Quarter (round) |
| 5. Point of shoulder | 20. Pins |
| 6. Brisket | 21. Tailhead |
| 7. Forearm | 22. Rump |
| 8. Hoof (toe) | 23. Loin |
| 9. Pastern | 24. Rib |
| 10. Dew claw | 25. Inside of round |
| 11. Shoulder | 26. Gaskin |
| 12. Flank | 27. Cod |
| 13. Belly-middle | 28. Twist |
| 14. Cannon (shank) | 29. Heart girth |
| 15. Hoof (foot) | |



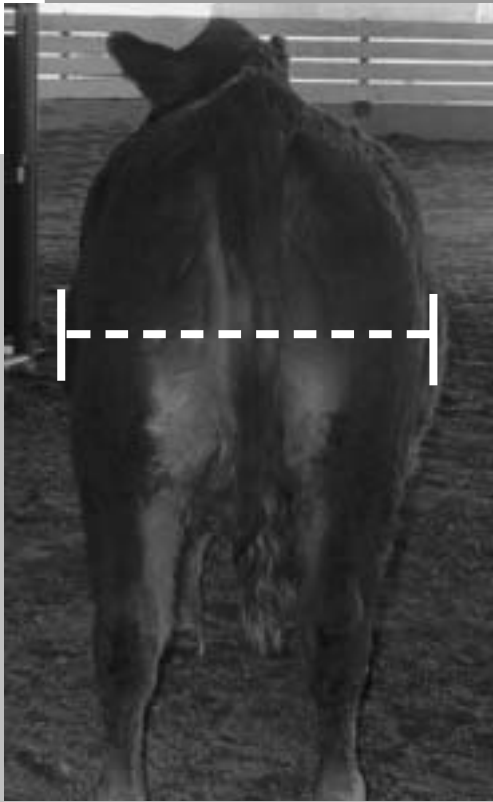


Figure 1.

A modern feeder steer. Note the heavy muscling in the rear quarter and overall trimness.

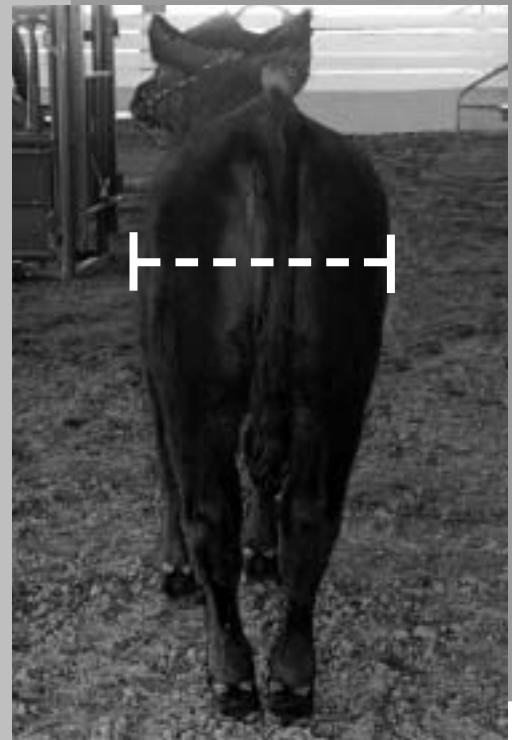
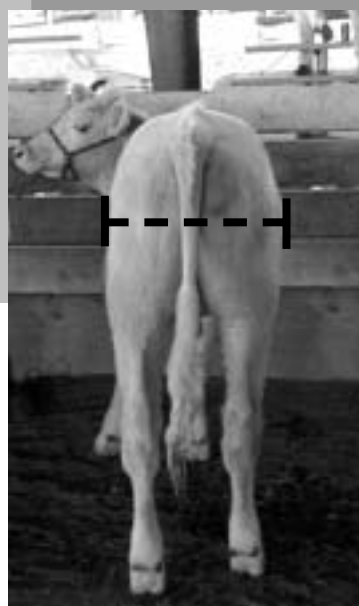


Figure 2.

A moderately muscled feeder steer.

Figure 3.

A lightly muscled feeder steer.



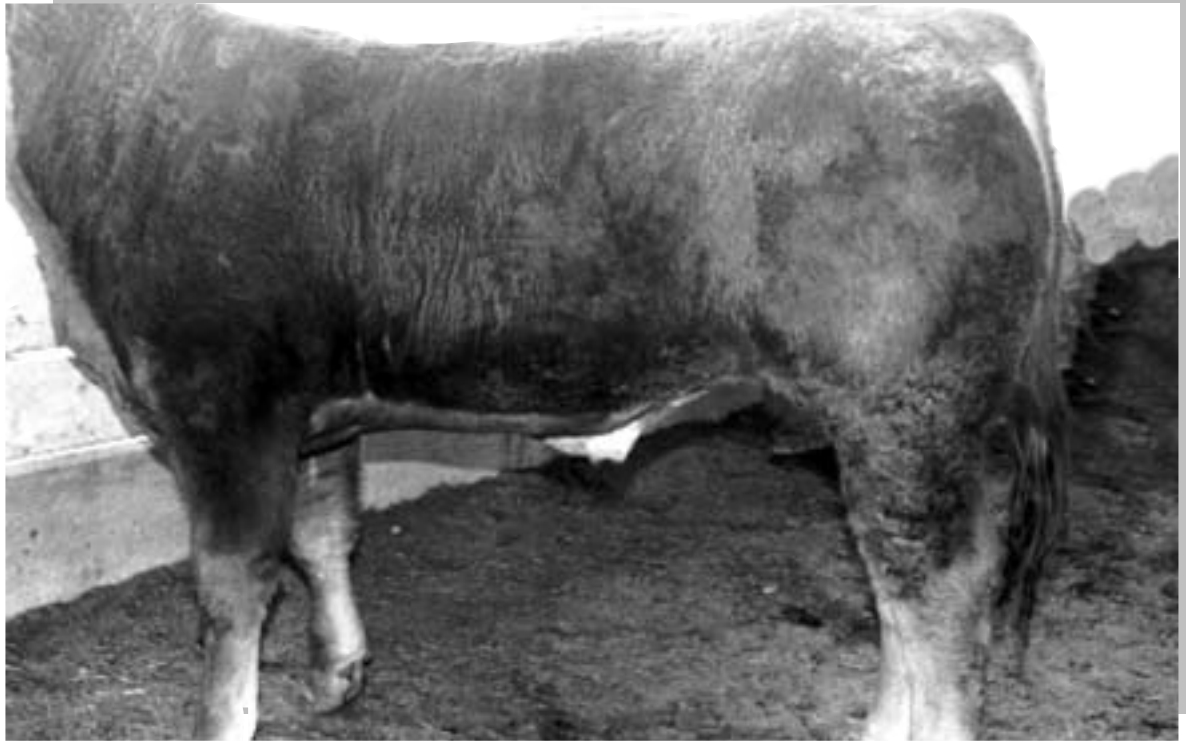


Figure 4. A heavily muscled feeder steer. Note how the muscle bulges in the rear quarter and carries into the lower leg.



Figure 5. A moderately muscled bull.



Figure 6.

A lightly muscled feeder steer.

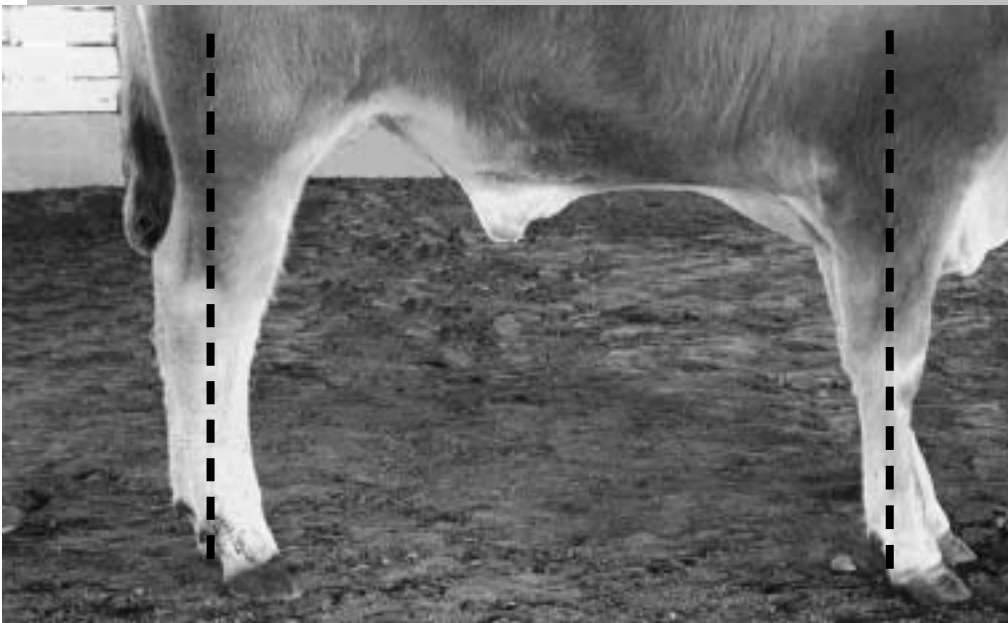


Figure 7.

A feeder steer that is structurally correct. Note how the feet and legs are square under each corner of the animal's body.



Figure 8.

A feeder steer that is post-legged. Notice that the leg has very little curvature at the hock.

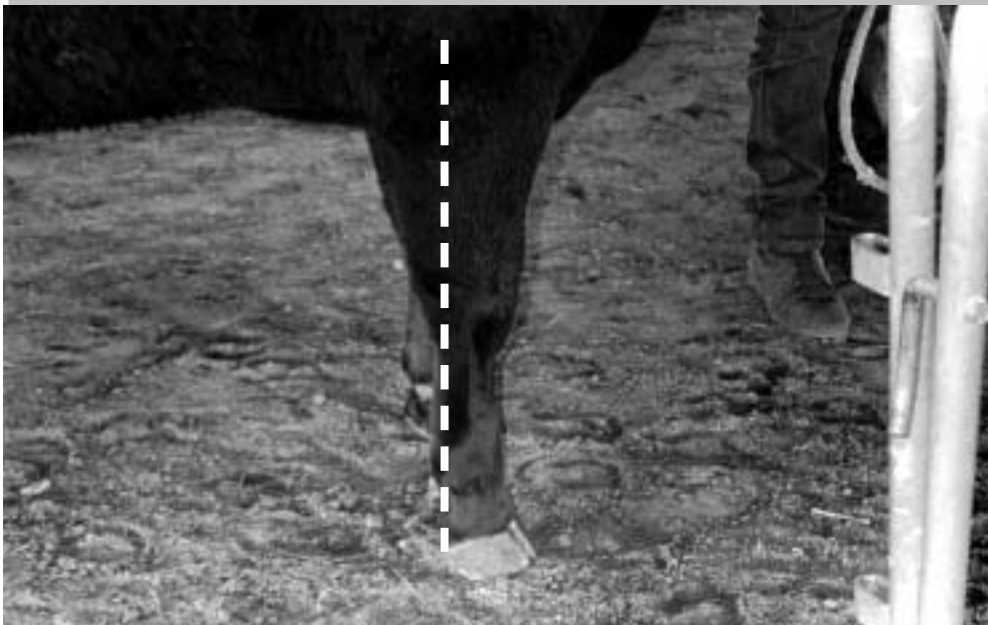


Figure 9.

A feeder steer that is buck-kneed. Notice the over-extension of the knee forward.



Figure 10.

A feeder steer that is sickle-hocked. Note the extreme curvature or bend in the rear hocks and cannon bone.



Figure 11.

A feeder steer that is calf-kneed. Notice the position of the front feet and knees. The front feet are extended forward while the knees are pulled back.

BEER
%
OOI

Figure 12.

A bull that is toed-out on his front feet. The front feet are rotated to an outward position.



Figure 13.

A feeder steer that is cow-hocked. The hocks are pulled inward causing the back feet to rotate outward.

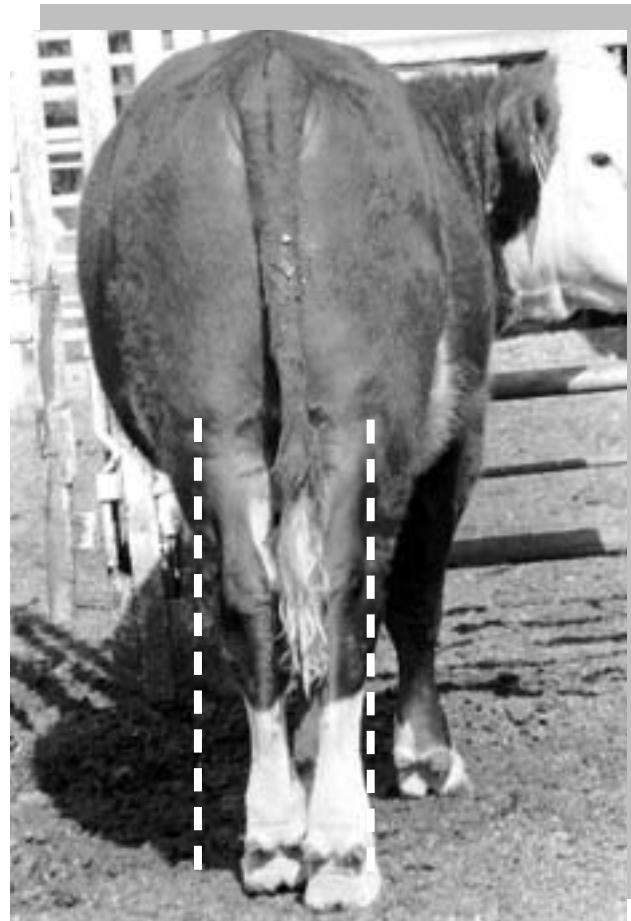
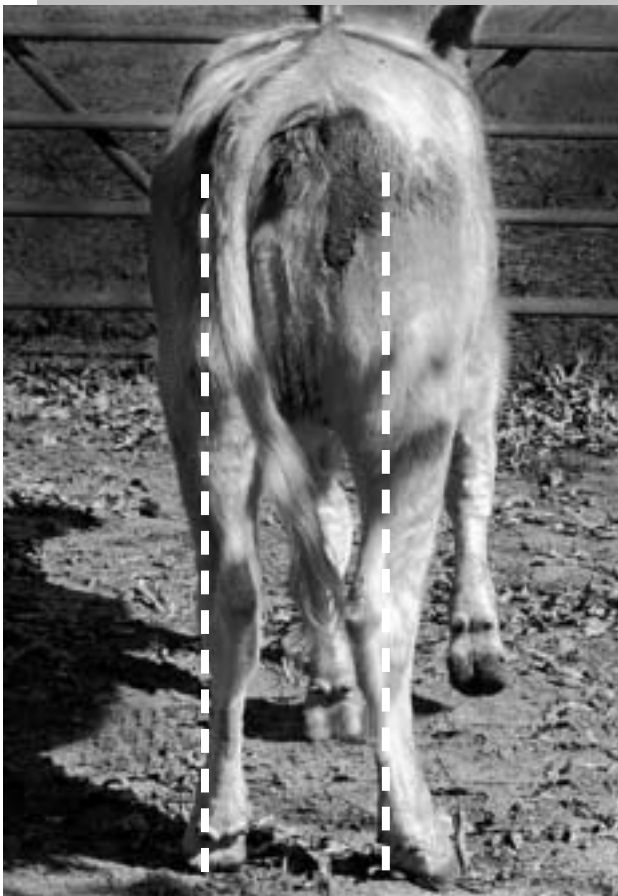


Figure 14. A feeder steer that has a narrow stance in the rear legs.

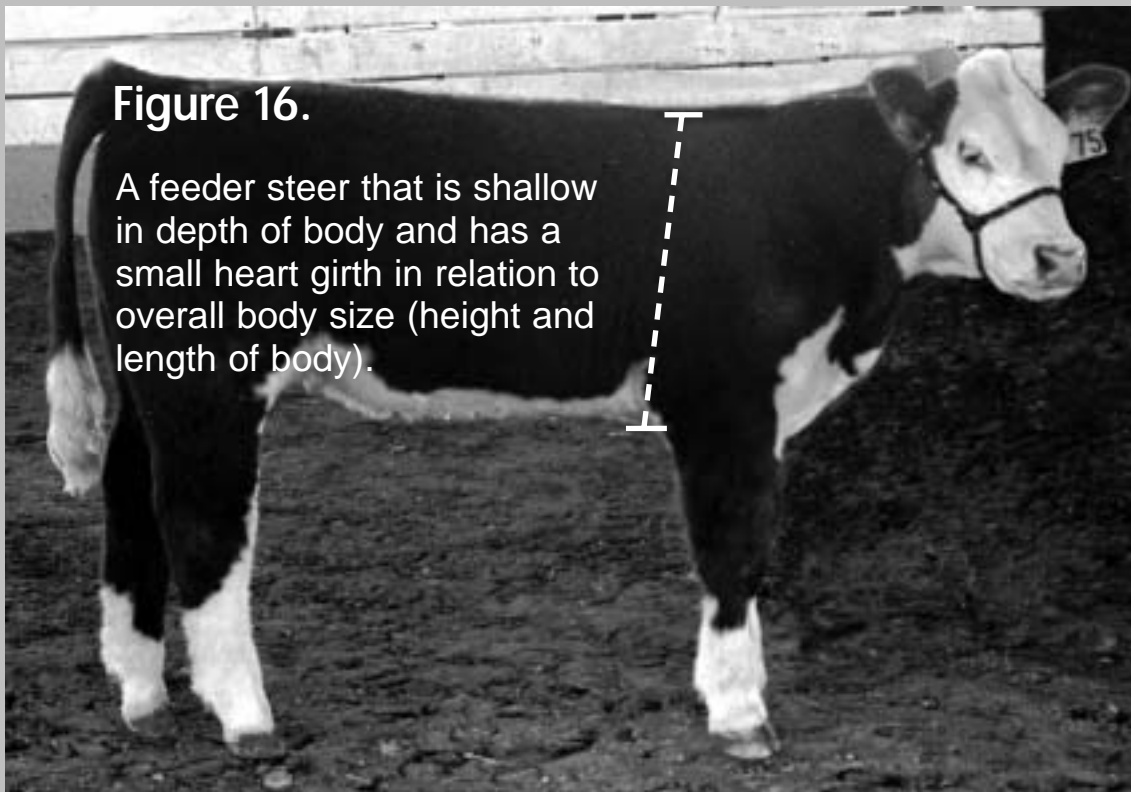
Figure 15.

A steer that exhibits width of loin.



Figure 16.

A feeder steer that is shallow in depth of body and has a small heart girth in relation to overall body size (height and length of body).



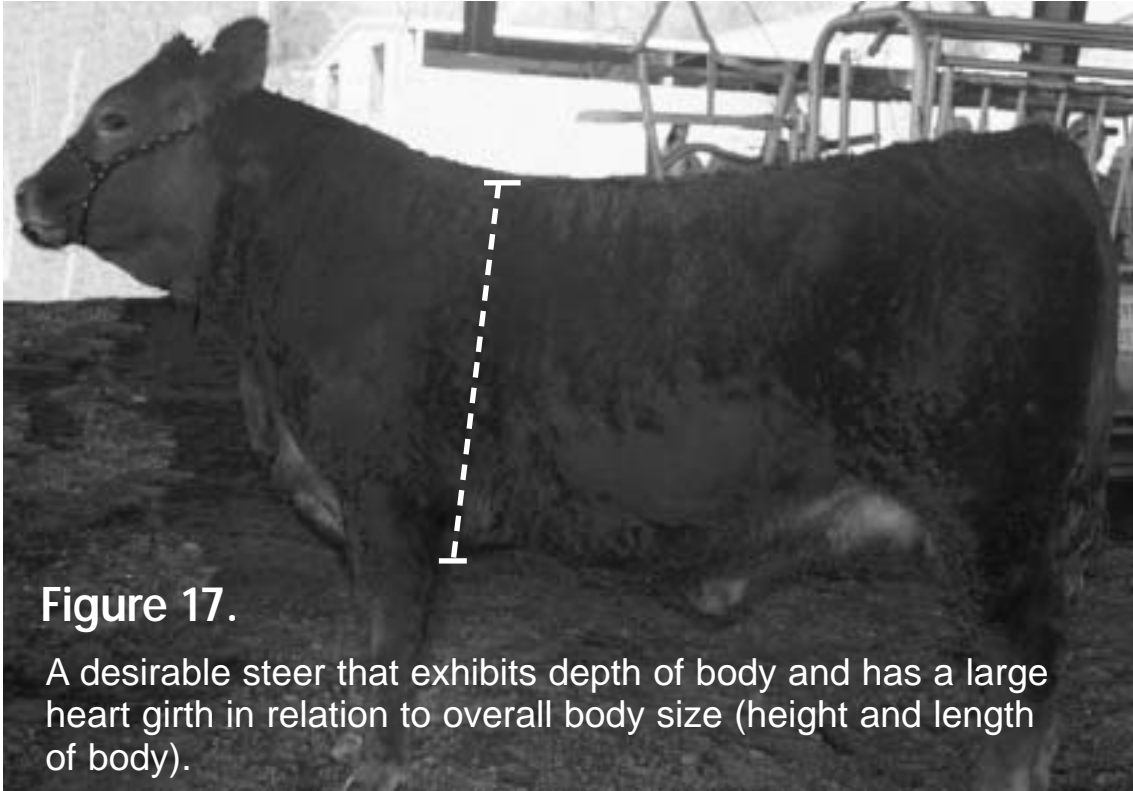


Figure 18.

A bull that is deep bodied, structurally correct and heavily muscled.

