

Structural Conformation

Cindy Kinder, Extension Educator

Goal (learning objective)

Youth will learn about structural differences in livestock and the importance of structural correctness.

Supplies

- The animal parts poster in the Ohio Learning Lab Kit (either specific species or all species). Check with your local extension office on the availability of the kit and to check it out.
- Photocopies of the following handouts (enough for group):
 - Handout 1 - *Beef Resource Handbook*, chapter 2, pages 2-10 through 2-15
 - Handout 2 - *Goat Resource Handbook*, chapter 2, pages 22-26
 - Handout 3 - *Sheep Resource Handbook for Market and Breeding Projects*, chapter 2, pages 11 and 14-16
 - Handout 4 - *Swine Resource Handbook for Market and Breeding Projects*, chapter 3, pages 3-2 and 3-7 through 3-14
- Meeting location with enough space to run a foot-race

Pre-lesson preparation

This activity can be conducted for a specific species or all species

- Review structural differences in the beef, goat, sheep, and swine resource handbooks (see handouts)
- Review conformation terminology

Lesson directions and outline

There are many tools available to help with animal selection. They include things such as animal weights,

actual performance data and expected progeny differences. While these tools are helpful visual appraisal is still a key tool in animal selection. Animals, just like people, need to be able to walk and run in order to perform different functions. By taking a good look at the animal you will be able to recognize if they can travel to food, water and shelter comfortably as well as move away from harm.

Conducting the activity (DO)

1. Ask volunteers to distribute the handouts.
2. While working through the structural faults, have the members stand and adjust their legs so they mimic each fault.
3. Once all the leg structures have been explained, ask for volunteers to represent the different “structural faults”
4. Have volunteers run a relay race with that structural fault (three or four at a time)
 - While members are waiting to run, they can practice walking around with their structural faults. For example, running on tippy toes would be the post-legged structure. Running with heels together would be the splayed-footed structure. Have volunteers experiment with walking with those structures for 5 minutes.

What did we learn? (REFLECT)

- Ask: What are common structural faults in livestock?
- Ask: Have you seen animals with any of those faults?
- Ask: Relay race volunteers: was it easy to run the foot-race? If you had to walk all the time that way how would you feel? What hurts?
- Ask: Why is structural correctness important?

Why is that important? (Apply)

- Ask: If your animal is hurting, how often would they get up to eat and drink? As your animal gets heavier, how would they feel?
- Ask: Relay race volunteers: was it easy to run the footrace? If you had to walk all the time that way how would you feel? What hurts?

Resources

Ohio State University Extension. (n.d.). Learning Lab Kits. Beef, Sheep, Swine, and Goat. Available from: <http://www.ohio4h.org/books-and-resources/learning-lab-kits>.

Ohio State University Extension. (2011). Selection. *Beef resource handbook* (pages 2-10 through 2-15).

Ohio State University Extension. (2008). Choosing an Animal. *Goat Resource Handbook* (pages 22-26).

Ohio State University Extension. (2011). Selection: The First Step. *Sheep resource handbook for market and breeding projects* (pages 11 and 14-16).

Ohio State University Extension. (2000). Your Very First Step - Selection. *Swine resource handbook for market and breeding projects* (pages 3-2 and 3-7 through 3-14).

University of Tennessee Extension. (2013). Module 5 Swine. *Livestock judging guide*. Available from: [https://extension.tennessee.edu/henderson/Documents/%2713%20Livestock%20Judg%20Guide%20Module%205%20Swine%20\(1\).pdf](https://extension.tennessee.edu/henderson/Documents/%2713%20Livestock%20Judg%20Guide%20Module%205%20Swine%20(1).pdf)

The Ideal Breeding Heifer



Ideal Breeding Heifer

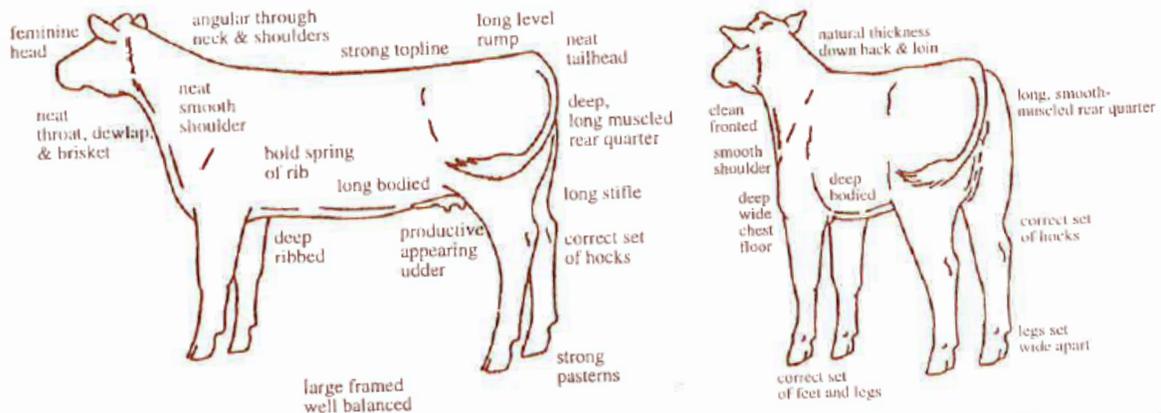
- 5.5-7.0 frame score
- Extra capacity and volume
- Structurally correct
- Feminine

(Figure 2.03)

Describing the Ideal Heifer

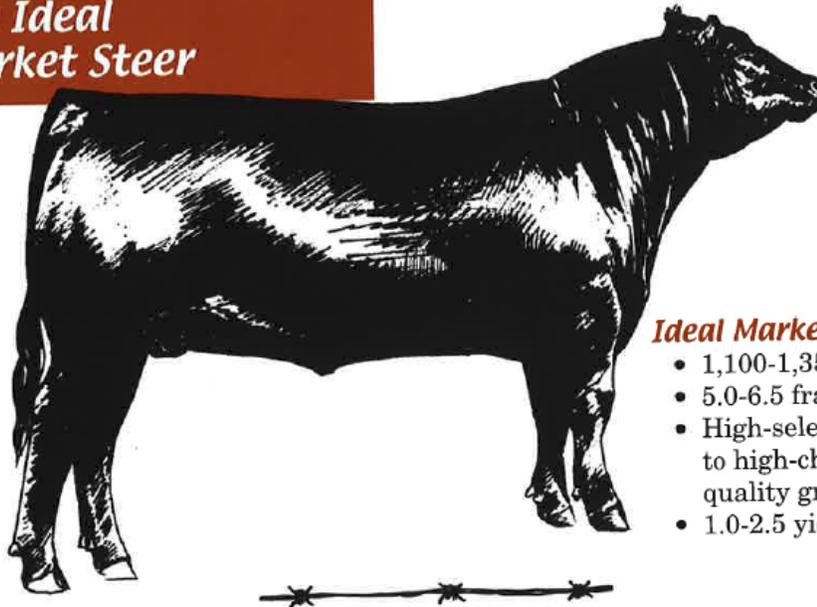
(Figures 2.03 and 2.04)

- Feminine head
- Neat throat, dewlap, and brisket
- Angular through neck and shoulders
- Neat, smooth shoulder
- Strong topline
- Long, level rump
- Smooth tailhead
- Deep, long smooth muscled rear quarter
- Long stifle
- Correct set of hocks
- Strong pasterns
- Productive appearing udder
- Long-bodied
- Bold spring of rib
- Deep-ribbed
- Large frame, well balanced
- Natural thickness down back and loin
- Legs set wide apart
- Correct set of feet and legs
- Deep-bodied
- Deep, wide chest floor
- Clean-fronted



(Figure 2.04)

The Ideal Market Steer



Ideal Market Steer

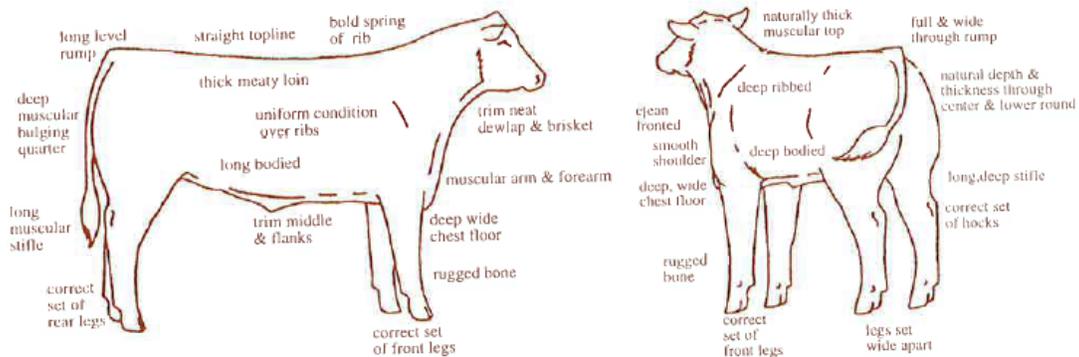
- 1,100-1,350 pounds
- 5.0-6.5 frame score
- High-select to high-choice quality grade
- 1.0-2.5 yield grade

(Figure 2.05)

Describing the Ideal Market Steer

(Figure 2.05 and 2.06)

- Long, level rump
- Straight topline
- Bold spring of rib
- Thick, meaty loin
- Uniform condition over ribs
- Trim, neat dewlap and brisket
- Muscular arm and forearm
- Deep, wide chest floor
- Rugged bone
- Correct set of front legs
- Trim middle and flanks
- Long-bodied
- Correct set of rear legs
- Long, muscular stifle
- Deep, muscular bulging quarter
- Naturally thick, muscular top
- Full and wide through rump
- Natural depth and thickness through center and lower round
- Long, deep stifle
- Correct set of hocks
- Legs set wide apart
- Smooth shoulder
- Clean fronted
- Deep-ribbed
- Deep-bodied



(Figure 2.06)

Structural Differences

- **Splayfooted or Knock Kneed**—When viewed from the front, the knees are close together and the feet toe out away from each other. This problem is often seen in extremely light-muscled, narrow-chested cattle when the legs are naturally set too close together.

- **Pigeon Toed or Bowlegged**—When viewed from the front or rear, the knees set too far out, causing the toes to turn inward.

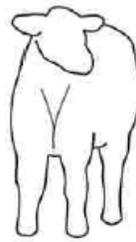
- **Cow Hocked**—When viewing the hind legs from the rear, the hocks are turned inward or are placed too close together, causing the toes to turn outward.

- **Buck Kneed**—When the calf is “over at the knees,” or buck kneed, full extension of the knee cannot occur. When observed from the side the legs appear slightly bent. This is usually seen in cattle that are too straight in the shoulder.

- **Calf Kneed**—This is the other extreme, the opposite of buck kneed, where the calf stands “back at the knees” when viewed from the side.

- **Sickle Hocked**—When viewing the rear legs from the side, the hock has too much angle or set, causing the steer to stand too far underneath himself. Often these calves will droop excessively from hocks to pins.

- **Postlegged**—The hock has too little angle or set. The calf is too straight through the joint, resulting in very stiff, restricted movement because of the lack of flexibility. More cattle become unsound because of being postlegged than sickle hocked.



correct



knock kneed or splayfooted



bowlegged or pigeon toed



correct



cow hocked or splayfooted



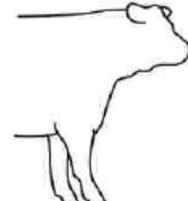
bowlegged or pigeon toed



correct



buck kneed



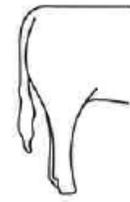
calf kneed



correct



sickle hocked



postlegged

(Figure 2.07)



Evaluation of Breeding Cattle

When evaluating breeding cattle, several important characteristics must be examined. Body composition, frame size, structural correctness, sex character, and overall balance must be considered when evaluating a breeding animal. Traits that contribute to productivity and longevity must be emphasized. (Figures 2.08a and 2.08b)

Volume and Capacity

Current emphasis is placed on animals with more three-dimensional (length, width, and depth) volume and capacity, natural muscling, and fleshing ability.

Traits that contribute to this include:

- spring of rib
- depth of rib
- width of chest
- more natural thickness and shape down the top
- thickness of quarter
- width and depth of stifle



(Figure 2.08a)

Frame Size

Modern breeding cattle must exhibit adequate growth for their age. Skeletal height in relationship to age contributes to the animal's overall frame score. Cattle should be above average in height but not extremely tall, and should possess extra length of body. Traits that are desirable in regard to frame score are:

- above average hip height (frame score 6.0-7.0)
- extra length of body
- long rump
- above average weight per day of age

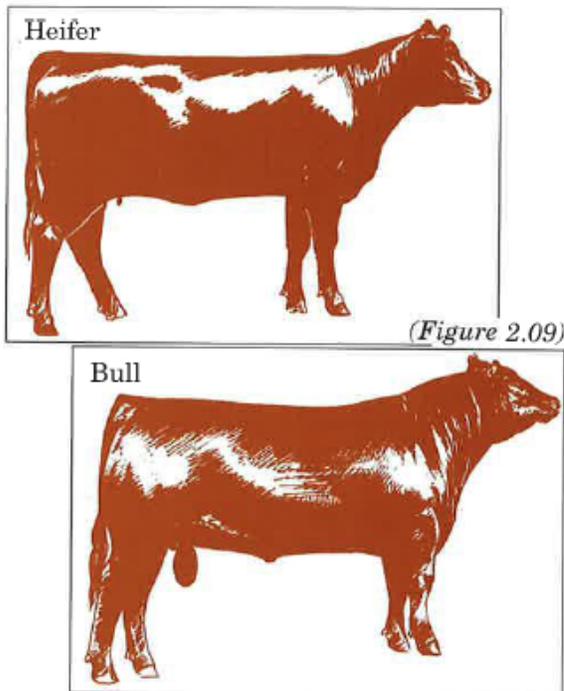
Structural Correctness

Animals that are more structurally correct will be better able to withstand the rigors of pasture conditions and thus increase their odds of being productive for longer periods of time. Structural correctness is emphasized more in breeding cattle than in market cattle. Look for animals that have the following characteristics:

- stand squarely on front and rear legs
- heavy boned
- move with a long, reaching stride
- level from hooks to pins
- possess adequate set (flex) to the hocks
- proper slope to the shoulder
- large round foot with deep heel



(Figure 2.08b)



(Figure 2.09)

Sex Character

Differences in sex character are important when judging breeding cattle. There are important differences between females and males. (Figure 2.09)

Femininity is exhibited by a long, refined head that is sharp about the poll. Females should possess a long, trim neck and be smooth about the shoulders.

Masculinity is exhibited by a long head that is slightly broader between the eyes and flatter about the poll. Males should be long necked and display a crest of the neck. Testicular development should be evident and increase with maturity.

Balance

Traits that relate to balance contribute to the overall appearance of an animal. Characteristics that are considered desirable include:

- straightness of lines
- strong topped
- level rump
- smoothness of shoulder
- clean and trim brisket
- balanced underline

Evaluation of Market Cattle

When selecting and evaluating market cattle, 4-H members must keep in mind the purpose of these animals. The primary function of market animals is meat production. Therefore, traits such as muscling and finish are emphasized. Frame size and structural correctness are examined but to a slightly lesser degree than in breeding cattle. (Figures 2.10a and 2.10b)

Muscling

Modern market cattle should exhibit extra muscling down their top and through their quarter. These are the areas from which the high-priced cuts come. Traits that are found in the ideal market steer include:

- natural thickness down the top
- muscular loin
- long, level rump
- wide through the center of the quarter
- wide, deep stifle

Finish

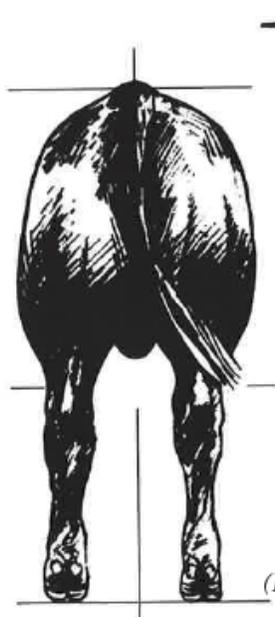
Finish refers to the amount of fat cover a market animal possesses. An ideal market animal should have the minimal amount of body fat and still be able to reach the Choice quality grade. Desirable traits in regard to finish include:

- smooth and uniform fat cover over ribs
- uniform depth of body
- freedom from fat patches around tailhead
- no excessive fullness in brisket

Frame Size

Current trends in market cattle frame size have shifted toward moderation. Market cattle should have enough frame to enable them to reach an acceptable market weight (1,100-1,350 lbs.) at 12-18 months of age. Acceptable traits for today's frame size include:

- moderate hip height (frame size 5.0-6.5)
- extra length of body
- long rump



(Figure 2.10a)

Structural Correctness

While it is not emphasized as greatly as it is with breeding cattle, structural correctness is an important selection criteria when judging market animals. As with breeding cattle, look for animals that:

- stand squarely on front and rear legs
- heavy boned
- move with a long, reaching stride
- nearly level from hooks to pins
- possess adequate set (flex) to the hocks
- have a proper slope to the shoulder



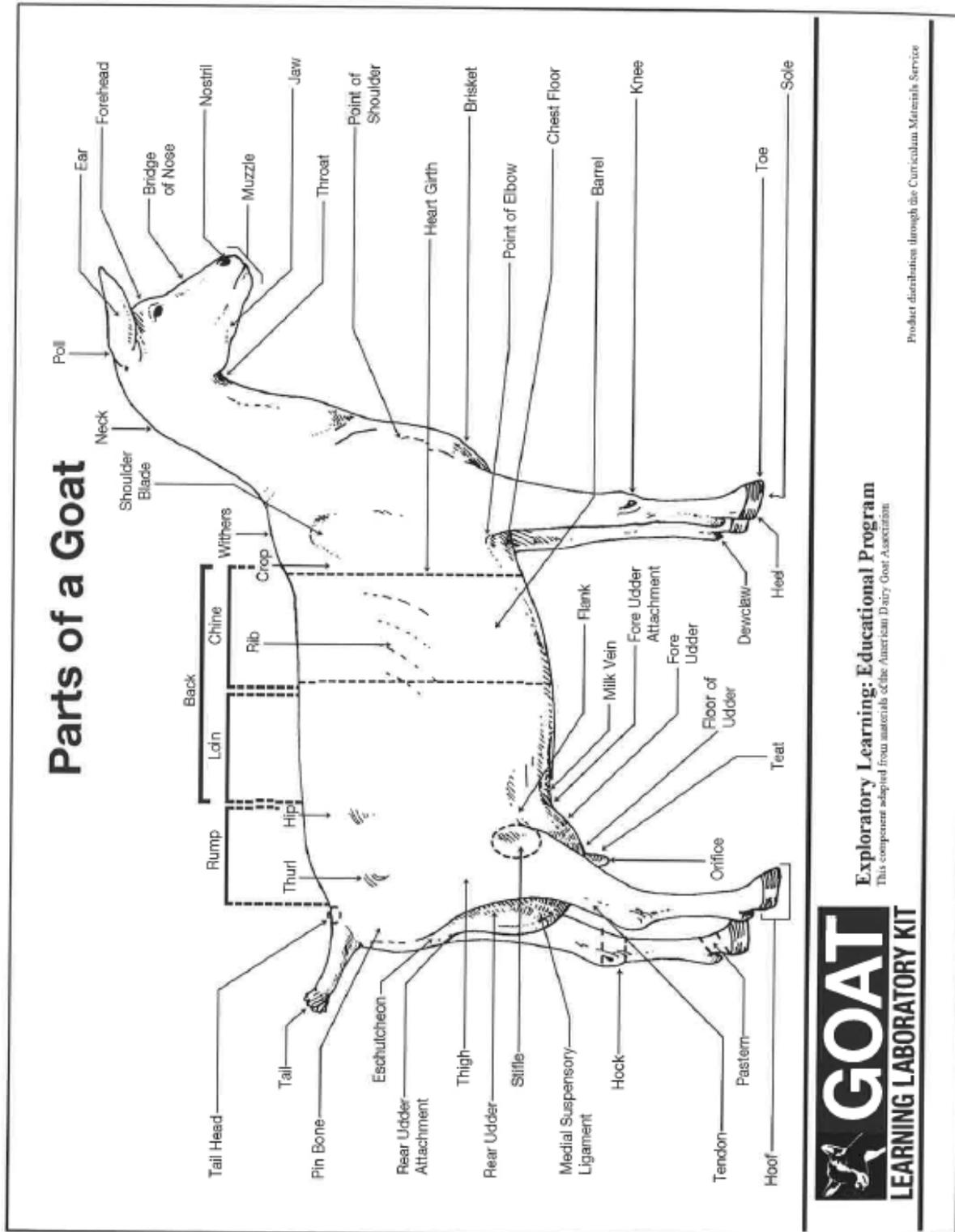
(Figure 2.10b)

For more information on the selection of beef animals, refer to the *Pennsylvania 4-H Livestock Judging Manual* that can be found at www.ohio4h.org/publications or the *Ohio 4-H bulletin 103R Beef, Sheep and Swine Selection and Evaluation*. This publication can be purchased at your local Ohio State University Extension office or go to <http://estore.osu-extension.org>.

Ohio residents receive the best price when they order and pick up their purchases at their local Extension office.

Evaluation of Feeder Calves

The selection and evaluation of feeder calves is very similar to that of market cattle. Keep in mind the feeder calf will eventually become a market animal so meat production should be emphasized. One significant difference when evaluating feeder calves is that finish, or fat cover, is not a priority. In fact, excessively fat feeder calves can be an indication of small frame size or very early maturity.



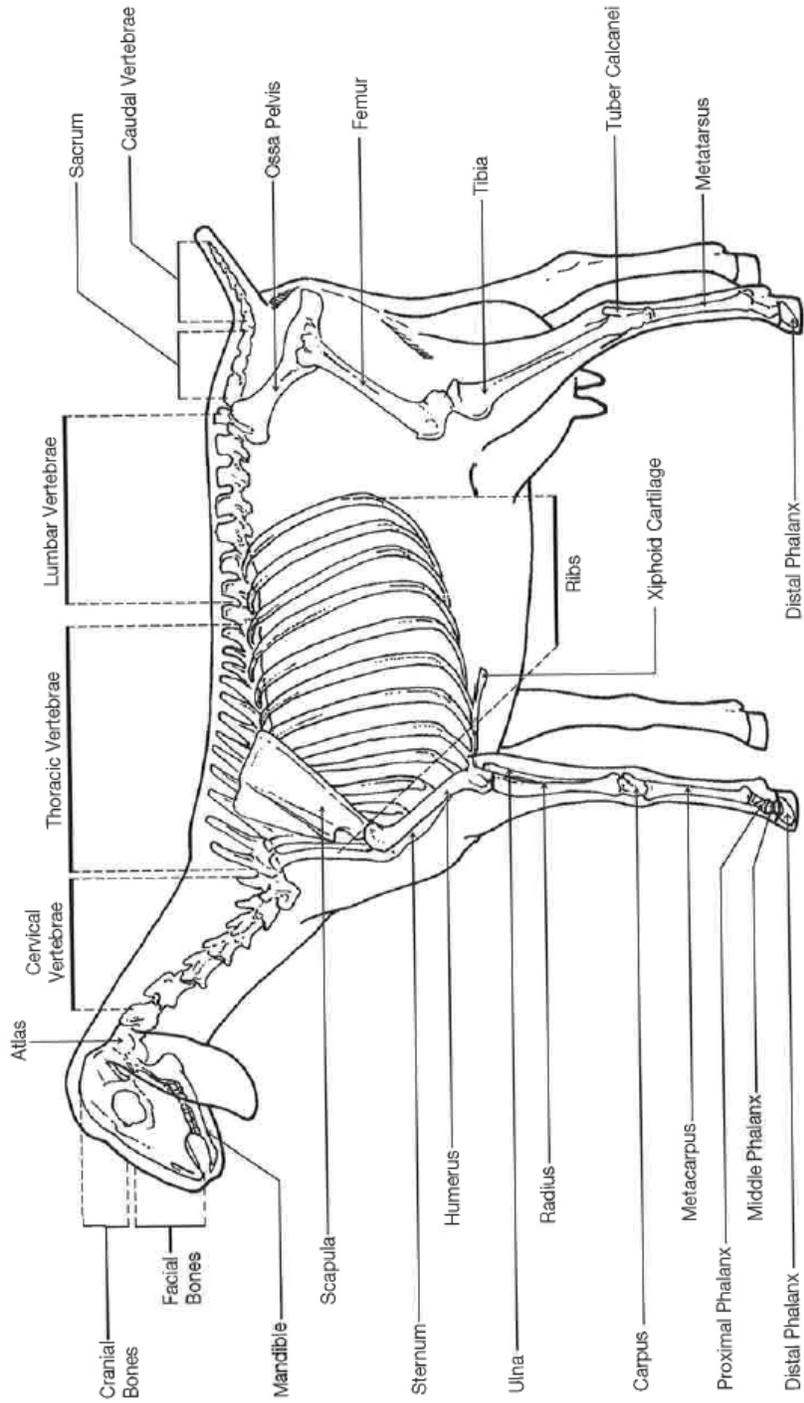
GOAT LEARNING LABORATORY KIT

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Goat Skeletal System



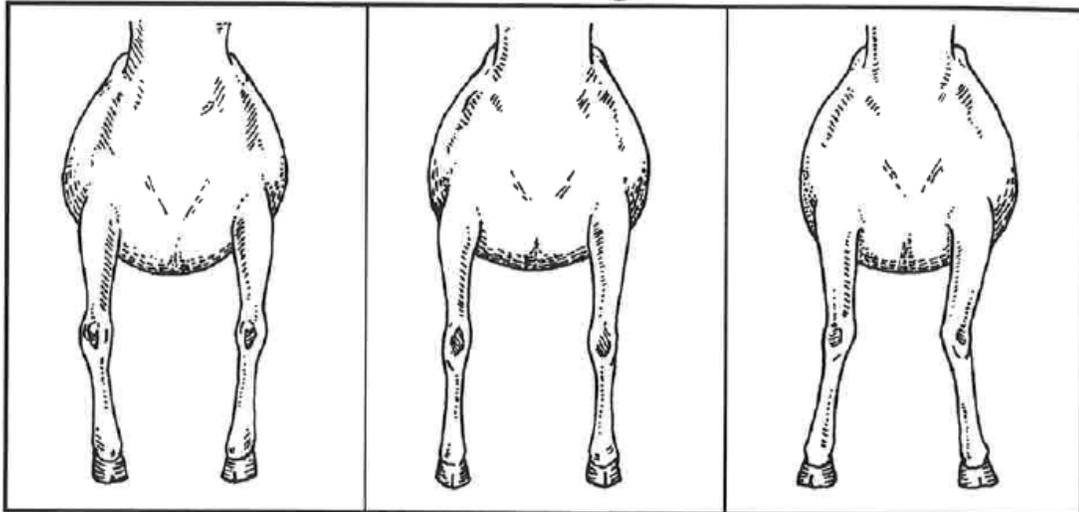
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Goat Feet and Leg Structure (Part I)

Front Legs

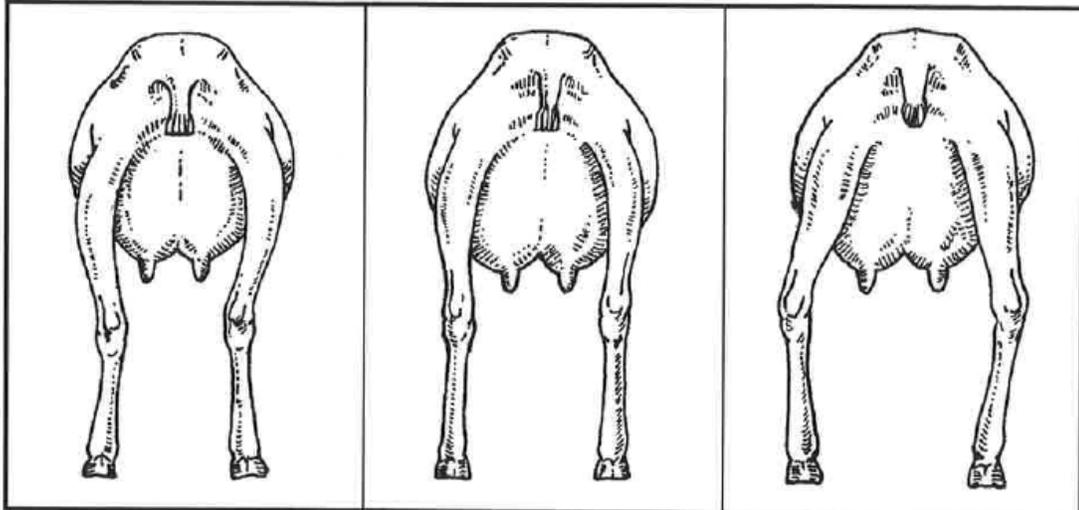


Buckled Knees

Ideal

Knock-Kneed

Rear Legs



Close at the Hocks

Ideal

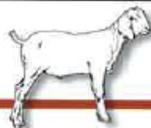
Bowlegged

 **GOAT**
LEARNING LABORATORY KIT

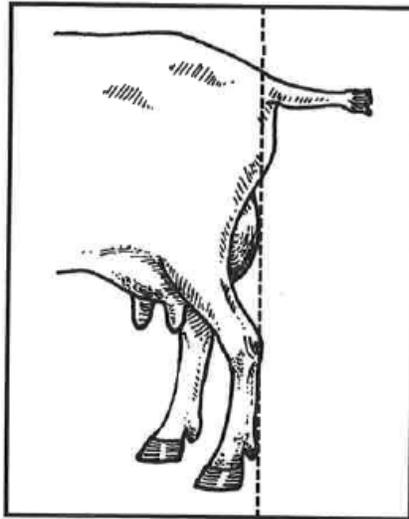
Exploratory Learning: Educational Program

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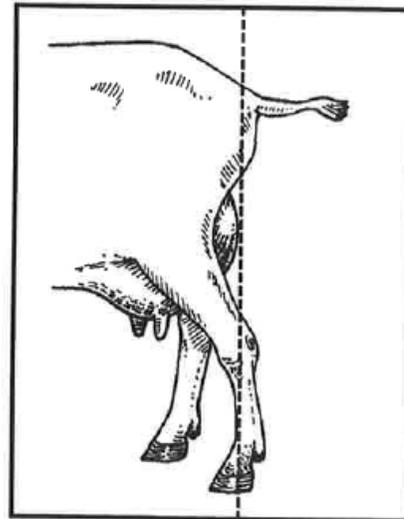
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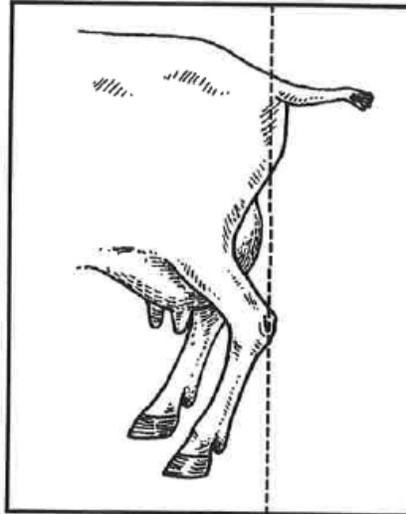
Goat Feet and Leg Structure (Part II)



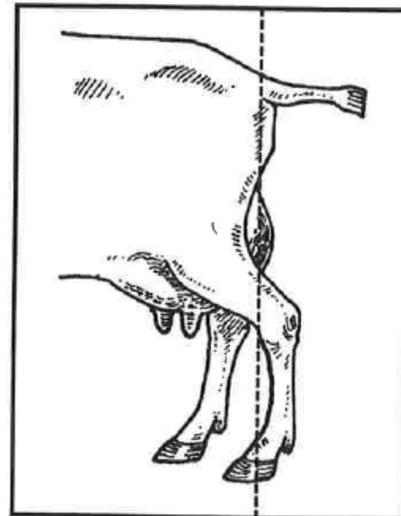
Ideal Rear Legs



Post-Legged



Sickle-Hocked



Weak Pasterns

 **GOAT**
LEARNING LABORATORY KIT

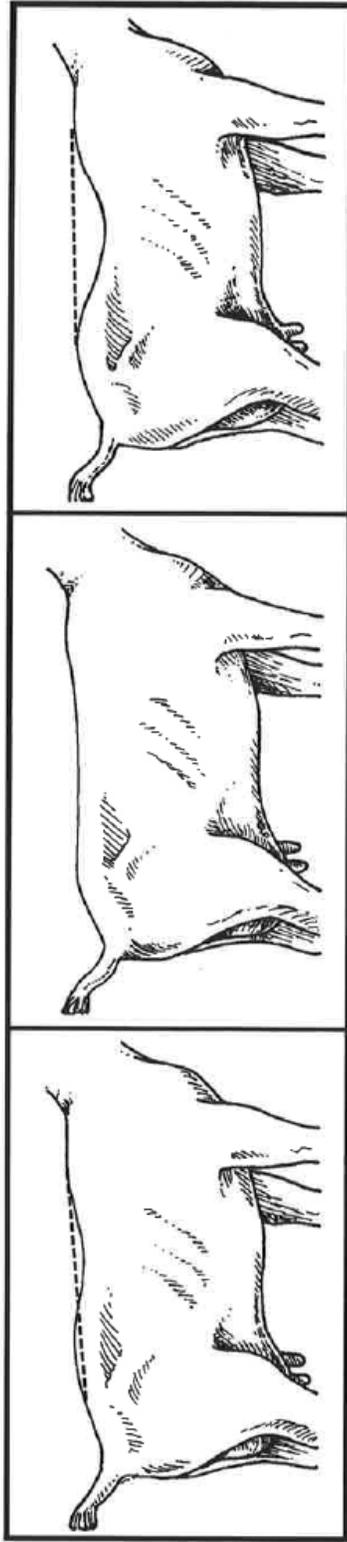
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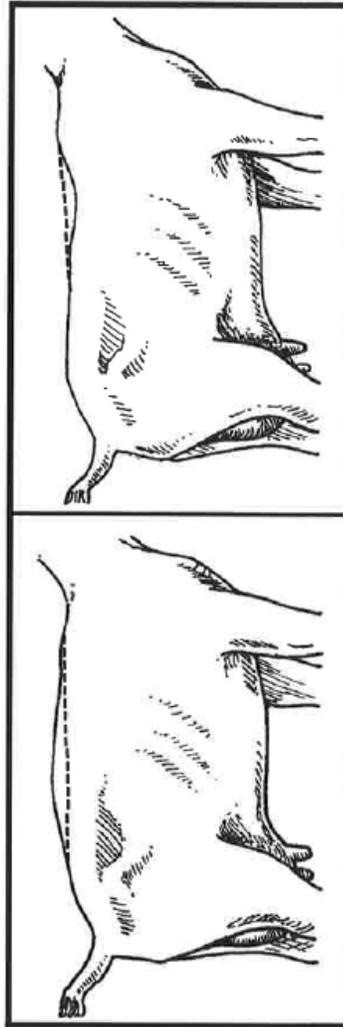
Goat Topline Structure



Wavy Back

Ideal Back

Sway Back



Roached Back

Weak in the Chine



Exploratory Learning: Educational Program

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Judging Market Lambs

The main points to consider in judging market lambs are structure, type, muscling, and finish. (See Figures 3 and 4.) Evaluation of carcass merit is an estimate that measures the relationship between finish and muscle.

Parts of the Lamb

To be successful in raising and selecting sheep, you should know the names of the various parts of the animal and their locations on the animal's body. Using industry-accepted terms helps you know what to look for and to accurately describe an animal's traits (Figure 1).

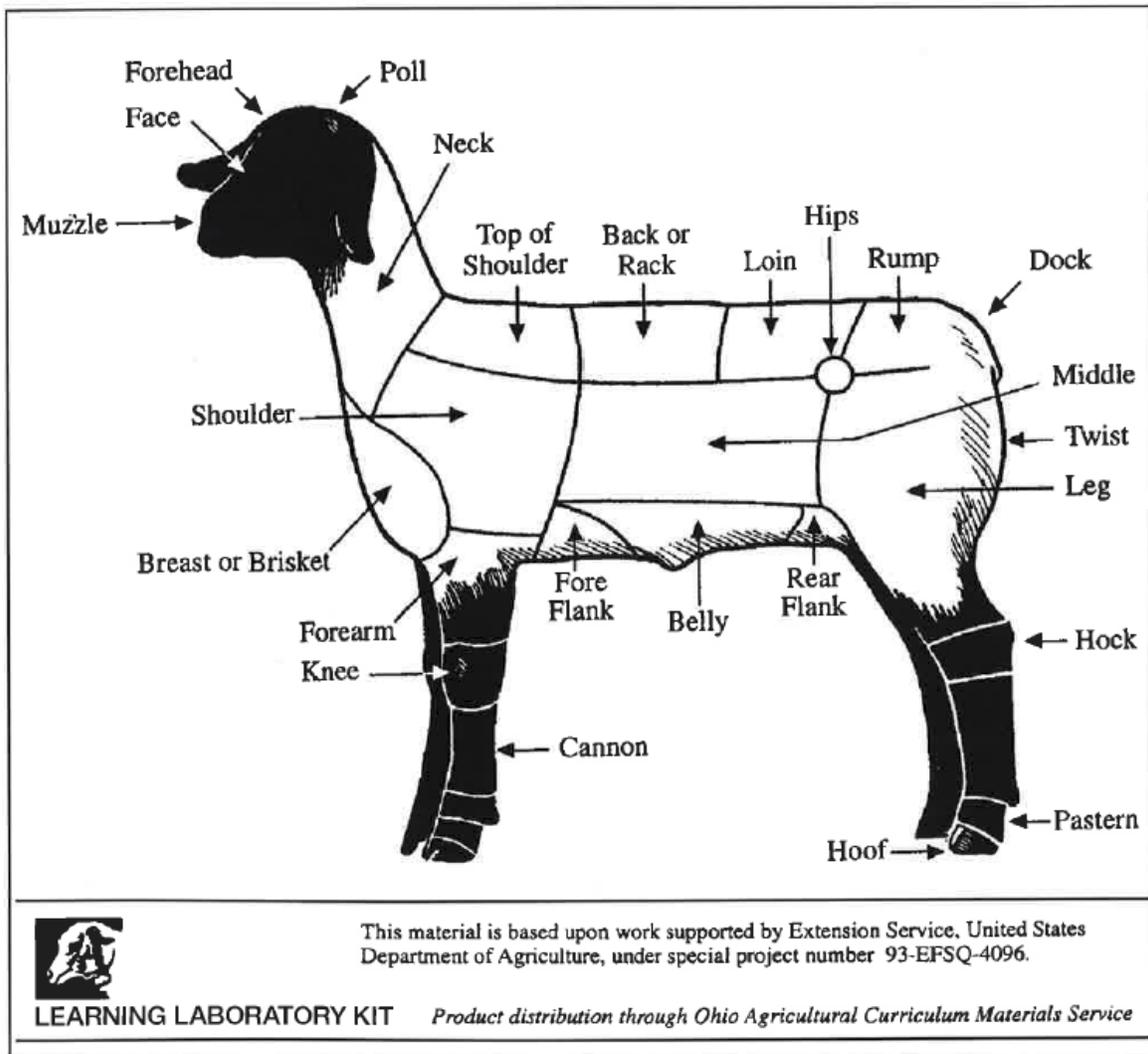


Figure 1
Parts of a Sheep

Conformation

An ideal market lamb is one that combines weight and frame, correctness, natural muscling, and trimness. The ideal market lamb weighs between 115 and 140 pounds, has adequate frame, is long-bodied, and is clean and trim throughout the front end and middle. Look for a strong, level topline. Your lamb should be especially long and level through the loin and rump (hindsaddle) standing on a sound, structurally correct set of feet and legs (Figure 3).

Balance

This is the proportion of body parts. The lamb should be strong-topped and level-rumped, with a long neck and head. It should also be clean and trim (Figure 3). Muscling should be uniform from shoulder getting progressively thicker through to dock.

Capacity

The body capacity should be moderately deep and square, with the ribs sprung wide throughout

the chest cavity. The depth should continue the length of the animal's body in a uniform manner from the fore flank to the rear flank (Figure 3). Body capacity is important for maintaining health, intake of feed, and adequate reproductive volume.

Muscle

The ideal market lamb should exhibit extra muscling through its top, hindsaddle, and leg. These are the areas from which the high-priced cuts of meat come from. An indication of muscling is thickness through the center of the leg. When viewed from the rear, the lamb should stand naturally with its legs wide apart. Natural thickness over the top will be visible with a slightly rounded appearance and good width, length, and depth of loin. There should also be good width and length of rump (Figure 4) and muscle expression in the forearm.

NOTE: Natural muscle is round, not square. If the animal is starting to square up over the loin edge, an assessment of over fatness should be made.

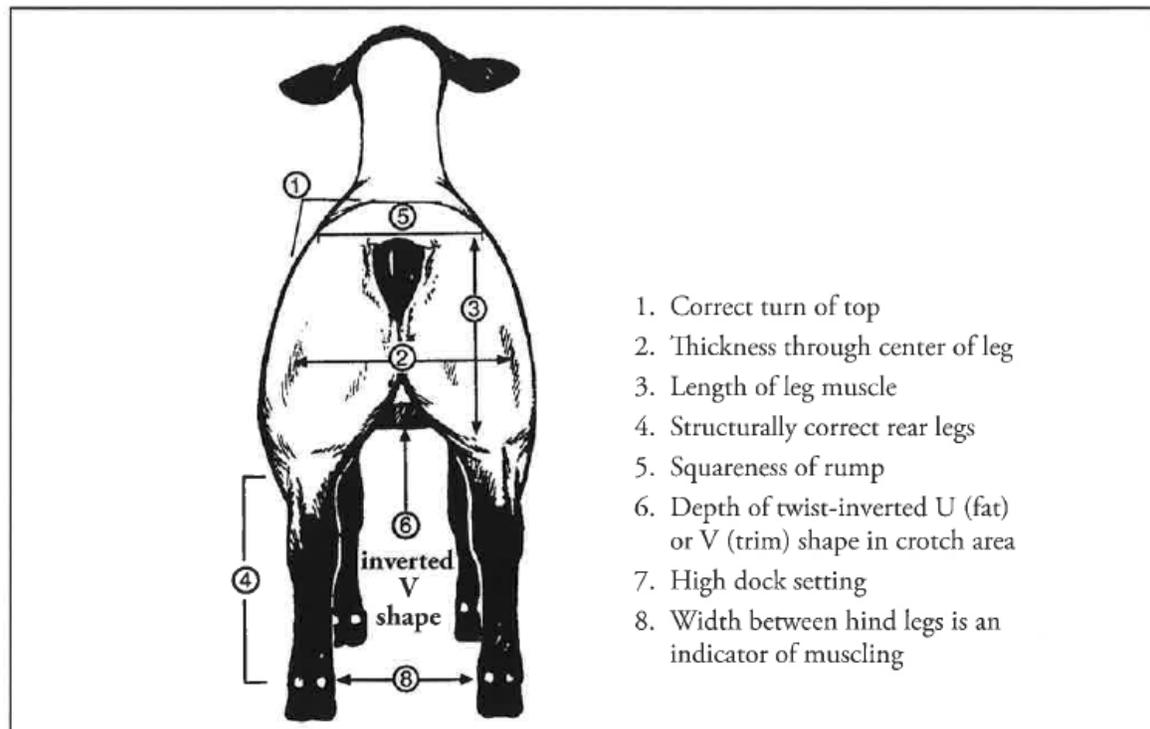


Figure 4

Structural Soundness

Skeletal correctness in feet, legs, and mouth should be evaluated when selecting a lamb for your project. The lamb should be evaluated on the move as well as being held by someone and being braced if possible. This gives you an idea of how the lamb will look to the judge at the fair whether the lamb is being held or on the move. Evaluate the structural soundness from the ground up.

Forelegs

The correct placement of the foreleg (Figure 5) has a vertical line from the point of the shoulder to the ground and divides the leg into two equal halves. The line splits the knee, fetlock, and foot.

Calf-kneed (Figure 5) is when the knee is bent slightly backward. A lamb can also have weak pasterns (Figure 5). Buck-kneed (Figure 5) is when the knee is bent slightly forward.

A splayfooted (Figure 5) lamb has toes that point outward. As the lamb walks, the foot will “dish in” toward the other limb. A pigeon-toed animal (Figure 5) is the reverse of one that is splayfooted. The toes point inward and the animal will paddle or “wing-out” as it walks. A knock-kneed lamb (Figure 5) has knees that are set too close together. Often, an animal will be both knock-kneed and splayfooted.

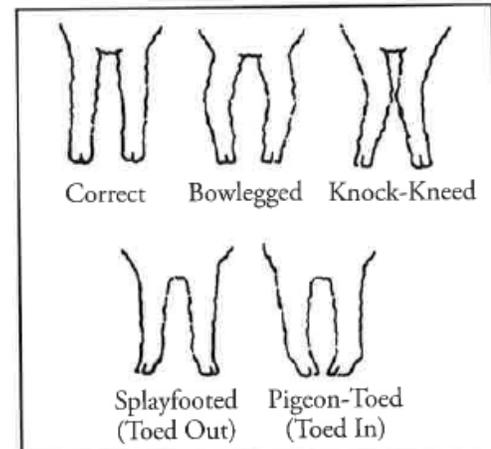
A bowlegged animal (Figure 5) has the opposite condition of a knock-kneed lamb.

Hind Legs

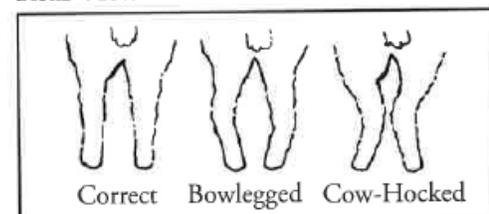
A correctly set hind leg depends on the angle at the hock joint that is formed by the gaskin and cannon bone. Try to visualize a straight edge that touches the pin bones, as illustrated in Figure 5. If the straight line appears to touch the rear edge of the cannon bone, the lamb will have the proper set to the hind leg. This will be true even if the feet are placed more forward or behind the “line.”

Leg Descriptions and Illustrations

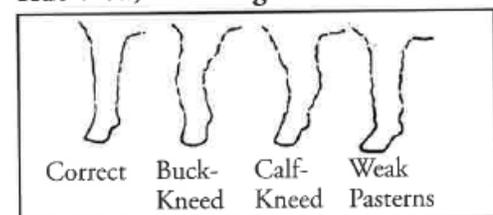
Front View



Rear View



Side View, Front Legs



Side View, Rear Legs

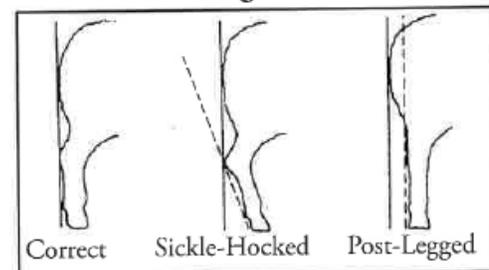


Figure 5

After viewing several lambs, you will soon realize that the angle at the hocks varies. The greater the degree to which this angle varies, the more incorrect the animal is and the more serious the fault (Figure 5).

The sickle-hocked lamb (Figure 5) has too much set or angle at the hock. In horses, this defect causes curbing, a bony growth on the back of the hock that develops because of strain on the joint. This can occur in sheep, but rarely does, because a sheep does not strain the hock to the same extent as a horse.

A more serious fault is a hind leg that is too straight, or post-legged (Figure 5). This condition changes the angulation of the bones at the hock and the stifle joint and shortens the stride. The patella (knee cap) at the stifle joint may be displaced resulting in a stifled, lame, unsound animal.

Figure 5 illustrates the proper set to the hind leg when the animal is viewed from the rear. Figure 5 shows a cow-hocked lamb. With this condition, the hocks are too close together, the cannons are not parallel and the toes deviate extremely outward. A lamb with this defect has an unsightly, inefficient gait.

A lamb can also be bowlegged off the hind legs (Figure 5).

Sheep Jaw Structure

(See Figure 6.)

- A. Undershot (Parrot-mouth)—in this situation the lower jaw is too short.
- B. Overshot (Monkey-mouth)—the lower jaw is too long, and the teeth are in the front of the upper mouth pad.
- C. Normal mouth—the top and bottom jaws are properly aligned. Note that the incisor teeth are flush with the pad on the upper jaw.

Unsound mouth diagrams such as A and B are inherited traits that interfere with the sheep's ability to gather food.

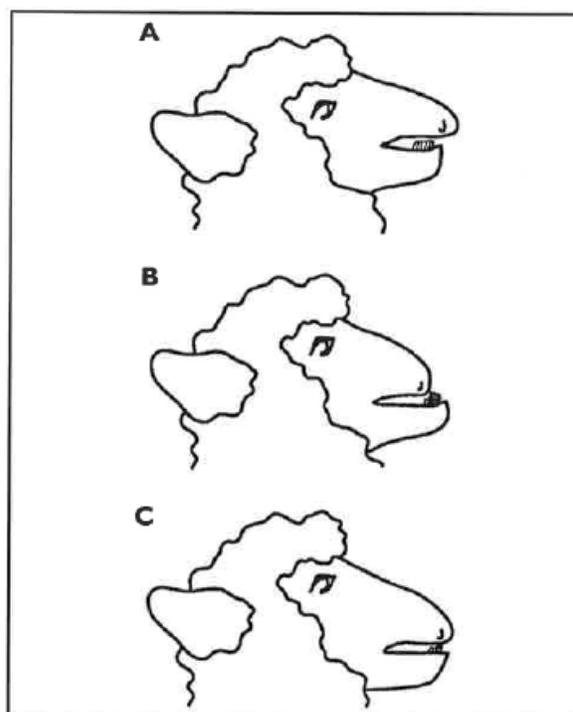


Figure 6
(North Central Region Extension
Publication #300)

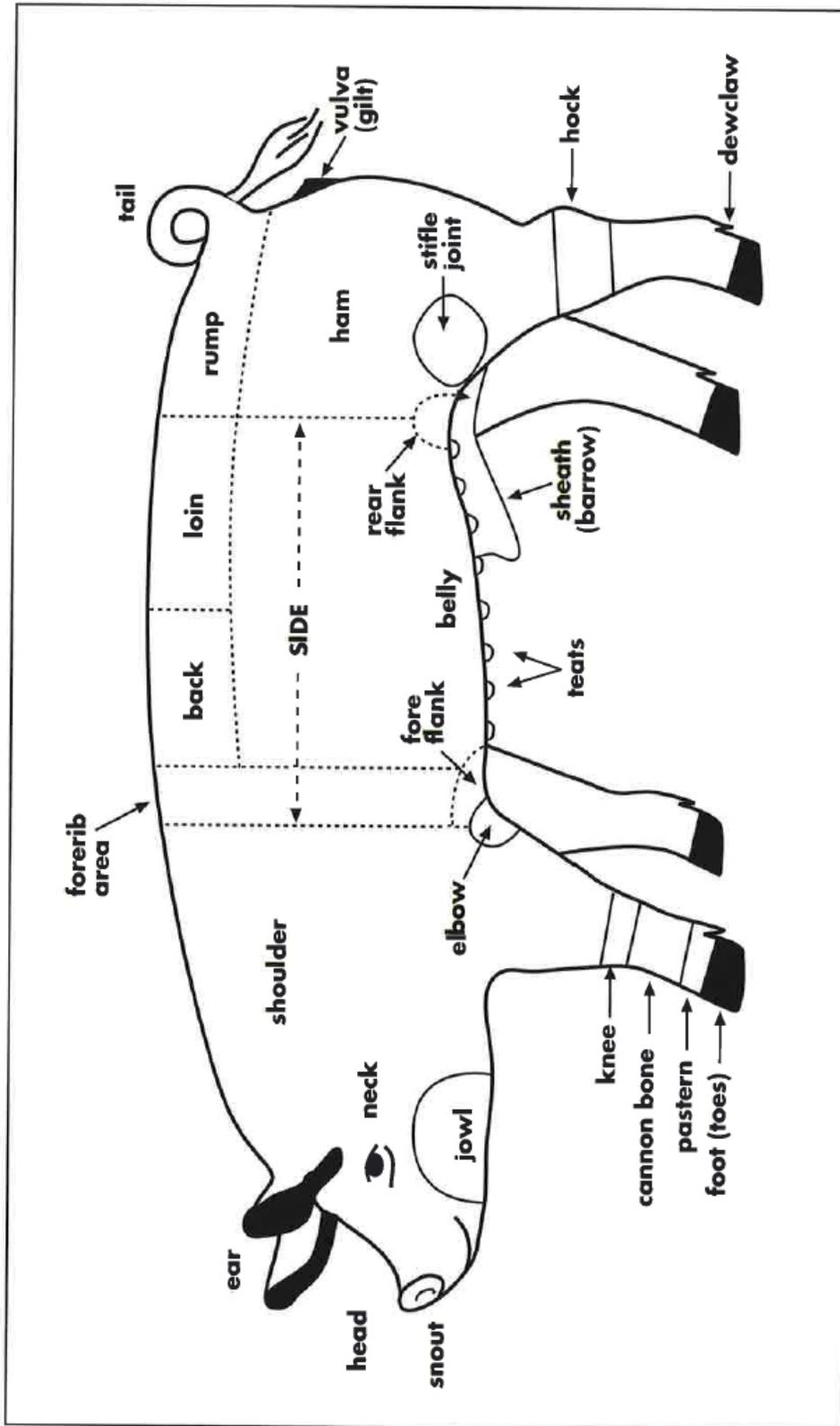
Finish

Correct finish is important to determine the cutability (retail value) of a lamb. Finish is the amount of external fat on a lamb. To determine the amount of finish, handle the lamb over the backbone and ribs. Excessive prominence of the backbone and ribs shows a lack of finish. Too much finish is present when you cannot feel the backbone or ribs by normal handling methods. Correct finish is 0.15–0.25 inches of backfat. Desirable traits in regard to finish include: smooth and uniform fat cover over the ribs; no excessive fullness in breast; a uniform fat cover of 0.15–0.25 inches.

Finish or Condition is evaluated in the:

- sternum
- over backbone and loin (12th and 13th rib)
- lower forerib
- flank
- upper rear rib
- twist

The measurement over the 12th and 13th rib is the only measurement used in the current USDA yield grade equation.



SWINE
LEARNING LABORATORY KIT

This material is based upon work supported by Extension Service, United States Department of Agriculture, under special project number 93-EFSQ-4096
Product distribution through the Ohio Agricultural Curriculum Materials Service

Figure 3.1
Parts of the pig

Breed Associations

Breed	Name of Association	Address
Duroc Hampshire Landrace Yorkshire	National Swine Registry/United Duroc Association /Hampshire Swine Registry/ American Landrace Association/ American Yorkshire Club	P.O. Box 2417 W. Lafayette, IN 47996-2417 765/463-3594 (phone) 765/497-2959 (fax)
Berkshire	American Berkshire Association	P.O. Box 2436 W. Lafayette, IN 47996-2436
Chester White	Chester White Association	P.O. Box 9758 Peoria, IL 61612-6320
Poland China	Poland China Record Association	P.O. Box 9758 Peoria, IL 61612-6320
Spotted Swine	Spotted Swine Breeders	P.O. Box 9758 Peoria, IL 61612-6320
Tamworth	National Tamworth Swine Association	200 Centenary Road, Winchester, OH 45697
Hereford	National Hereford Hog Record Assoc.	Route 1, Box 37 Flandreau, SD 57028-0037

Size Consideration/ Structure

Regardless of breed chosen, it is very important when selecting your project pigs to select ones at the right weight and size. If a pig is to weigh 240 pounds by fair time, a 60 pound pig needs 100–110 days to attain that size. Forty pound pigs need 125 days. Select a weight that is appropriate to the amount of time you have from project start until fair time. Expect the average growth rate for a feeder pig to be 1.5–1.75 pounds daily gain.

When selecting size, don't forget to consider frame size as well. Frame size plays an important part in the weight of your pig. If you have a large framed barrow or gilt, it can carry 240–280 pounds much easier and better than a smaller framed animal. The smaller framed pig will appear to be fatter.

Selecting the Right Type of Pig

Selecting pigs of the right type can be a difficult task because 40–60 pound pigs will not show the differences in body shape that larger pigs do. However, by developing a checklist of characteristics you need to consider for project selection, you can more accurately assess the potential of the project animal.

This list includes:

1. Breed of parents
2. Breed type/appearance
3. Performance history of parents
4. Visual observation and measurement of performance of relatives at 230–260 pounds (Figure 3.2)
5. Carcass evaluation of relatives



Figure 3.2
Monitor Swine Performance

Get a picture of a past champion market hog from a county or state fair. Memorize how that ideal market hog is designed. Keep in mind this “ideal” type of pig so you can look for its characteristics as much as possible (Figure 3.3).

Characteristics You Should Look For

Conformation

This refers to the general body shape of the pig as determined by its framework or skeleton and muscle structure. A large-framed, longer-sided pig will grow and reach a heavier market weight faster, yielding a carcass with more total muscle than that of a small-framed, shorter-sided pig. Poor management, improper feeding or poor health will prevent either type of pig from developing to its genetic potential.

Muscle

The ideal muscle pattern in today’s meat hog is long, thick, and smooth. This muscle structure can best be observed by viewing the ham (Figure 3.4). Also, because this muscle structure is somewhat loose, the pig is able to move more freely off his front and rear legs.

FIGURE 3.3 APPENDIX

IDEAL MARKET HOG DESIGN



Image from *Livestock Judging Guide* by Neal Smith, University of Tennessee 2013.

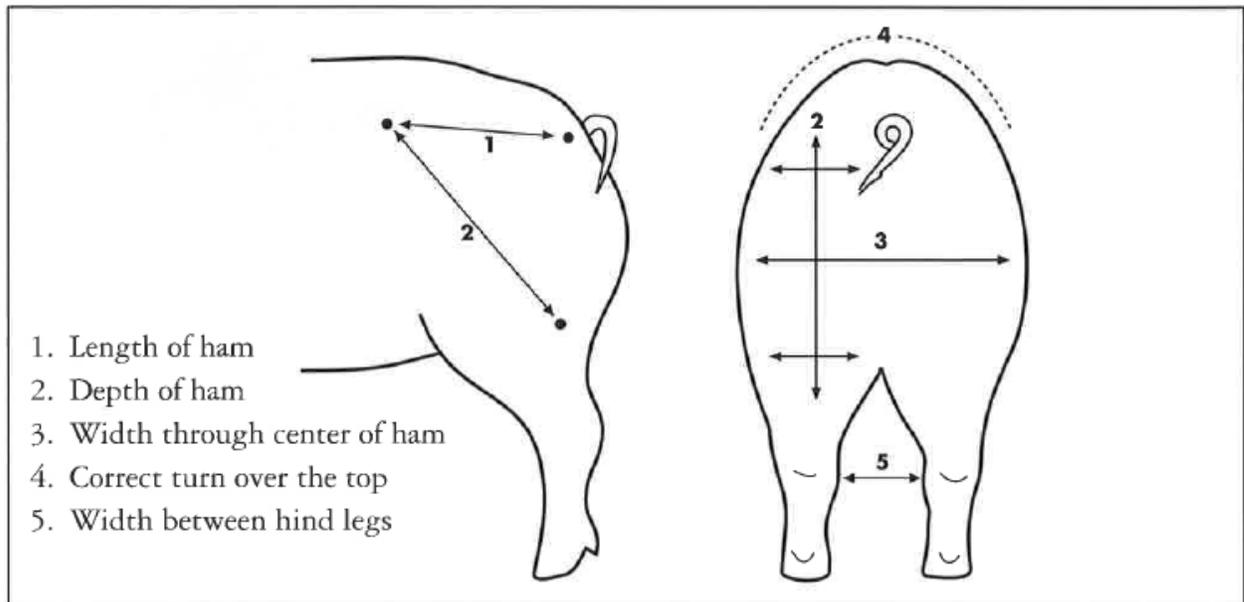


Figure 3.4
Points to consider in appraising muscling.

Don't confuse type of muscling with the amount of muscle. There is a need for an adequate amount of muscling in the ham and loin region, but it must be long and smooth rather than tight and round. Some extremely thick-muscled pigs may carry an inherited defect known as the Porcine Stress Syndrome (PSS), which contributes to stress susceptibility. When a stress-susceptible

(PSS) pig is excited by movement or fighting, he will begin to tremble and go into shock and may even die. If PSS pigs do not die, they will have carcasses that will yield pale, soft, watery pork. Also, because PSS pigs are often short and steep in their rump structure, females may have more difficulty giving birth. (See Figure 3.5, 3.6, 3.7.)

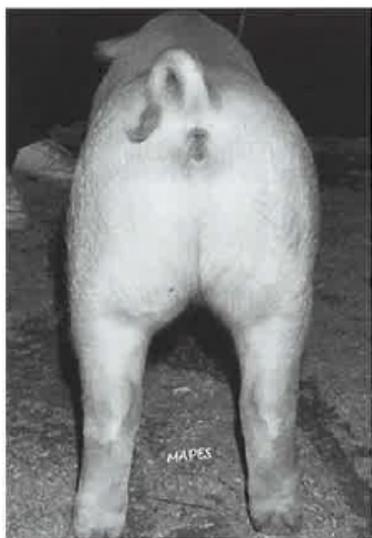


Figure 3.5
Light Muscled



Figure 3.6
Round Muscled

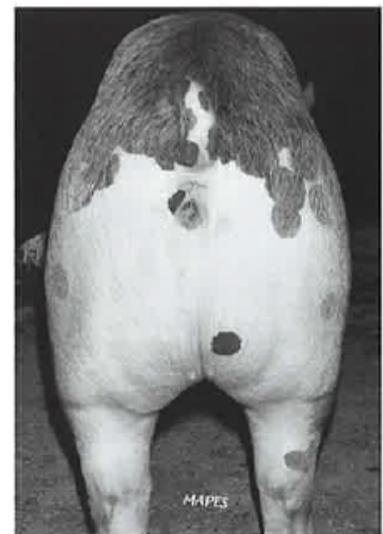


Figure 3.7
Ideal Muscled

Fat

Fat has been identified as the pork industries' number one enemy. Fat is a primary concern in our health conscious society. Also, fat is costly to the pork producer because it takes 2½ times the amount of feed to produce a pound of fat versus a pound of lean. (Compare Back Views of Figures 3.8 and 3.9)



Figure 3.8
Fat Market Hog (Back View)



Figure 3.9
Lean Market Hog (Back view)

A small amount of fat is desirable in market hogs, but a large amount is not. Backfat is the best indicator of total fatness of hogs. Other areas that are good indicators of excess fat that can be observed easily include: lower ham region; area over the loin edge; jowl; middle; elbow pocket; behind the shoulder.

Structure

In today's confinement rearing of hogs, structural soundness is a necessity. Because of the demand for sound, fast growing, durable and efficient breeding stock, the seedstock producers must produce livestock that adapts to a confinement system in the breeding pens, farrowing crates and finishing floors. Hogs with good structural soundness can adapt to these conditions and produce quality carcasses.

Following are brief descriptions of general and particular characteristics of sound structure in hogs.

It takes several features to ensure soundness. Basic body design on a structurally correct hog includes a relatively flat top, level rump, high tail setting, and a sloping, angular shoulder position, which provides a shock-absorbing effect when walking or standing.

Some particular points important to structural soundness include the following:

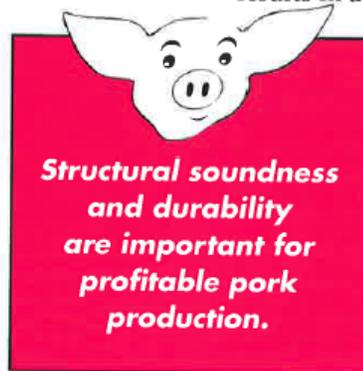
- When the shoulder is too straight, pressure is applied at the shoulder joint and at the knee joint. Because the knee joint offers the least resistance to pressure, the front legs buckle over. Thus, the front legs should angle out of the shoulder into a long, sloping pastern.
- Normal rear leg placement is best described as hocks slightly flexed,

bending into a flexible pastern. This allows the various joints to absorb shock equally.

- The toes should all be evenly sized to allow for more stability on the floor surface. Even toe surface wear occurs because of even weight distribution.
- Larger size of bone is desirable and important for ruggedness and durability, but, not at the expense of structural correctness.
- Desirable movement can best be described as freedom of movement with body weight distributed equally on eight toes.
- Front legs should reach forward with a long, loose stride. A pig will be able to freely raise his head and snout higher than the arch in the center of his back if the skeletal structure is correct. Short, choppy front leg movement appears to be associated with straight shoulders, steep pasterns and strongly arched tops.
- Desirable rear leg action is viewed from the side as long, loose strides with good cushion in both the hock and pastern areas.
- A sound structured market pig should be able to place its rear foot in approximately the same location that the front foot had been, as viewed from the side while walking.

Structural Soundness

Structural soundness and durability are important for profitable pork production in modern, intensive systems. Study the *undesirable* boar in Figure 3.10. He is steep rumped. The hip (E), stifle (F) and hock (G) lock in a straight line position with each step. This results in more shock to each joint during movement. Also, this boar can be expected to move with a stiff, shuffling gait off his rear legs. Two other structural problems are the top being arched too high and the shoulder blade (A) set in a straight line over the front leg bones. Thus, walking puts stress on the point of the shoulder (B), the knee (C) and the front pastern (D). Sometimes, the pressure will make the knee buckle or remain in a bent position.



Compare the *desirable* structure of the boar in Figure 3.11 to the undesirable boar in Figure 3.10. Observe the more level top line; the longer, more level rump; and the more sloping, angular shoulder blade position (A). The front legs appear to curve slightly backward at the knee (C), and the pasterns (D) slope at about a 60 degree angle. This angularity of the front skeletal structure results in a shock-absorbing or cushioning effect as the boar strides on a hard surface. The rear leg joints also are set with more angle than on the undesirable boar. Notice, too, that the desirable boar appears to stand wider based, with more room between the forelegs. This boar can be expected to move with more action and flexing of knees and hocks.

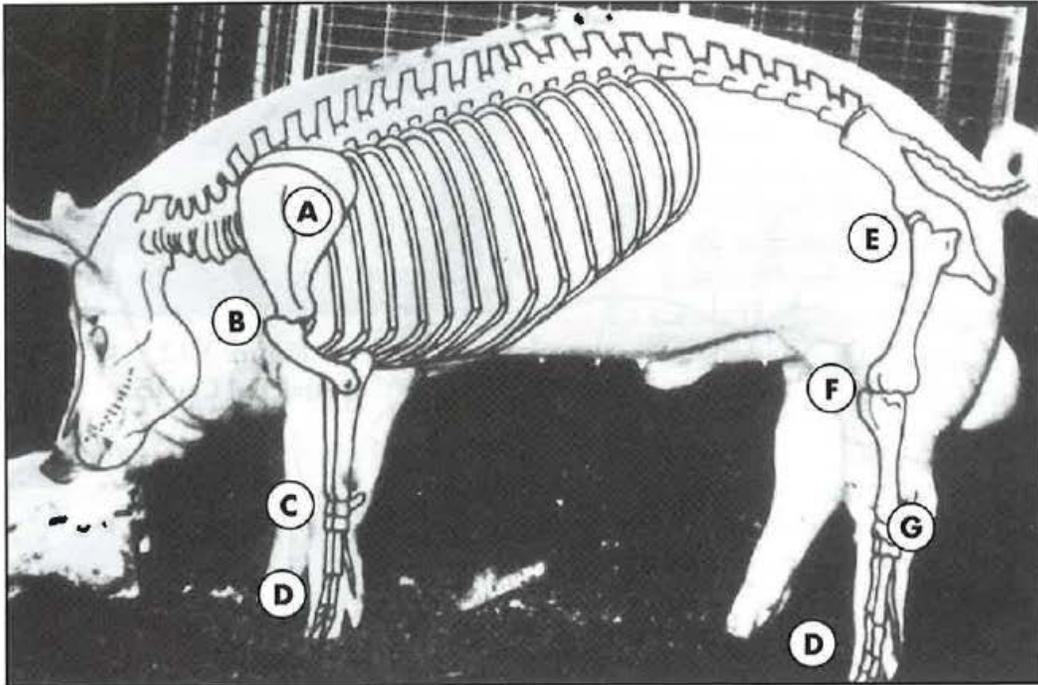


Figure 3.10
Undesirable Structure

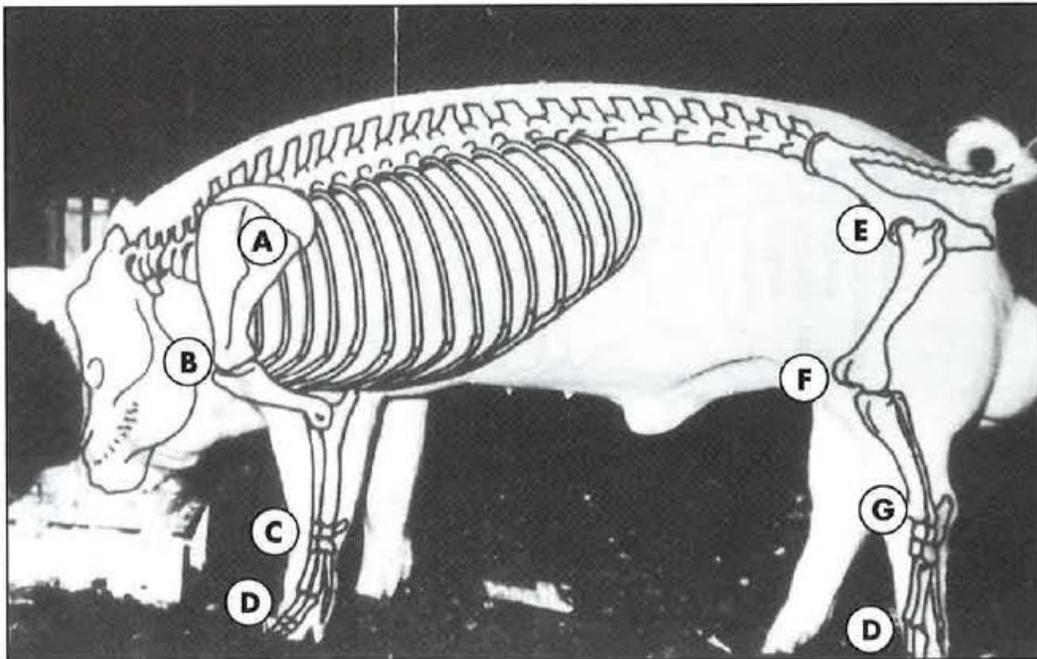


Figure 3.11
Desirable Structure

Capacity

The body cavity should be moderately deep and square, with the ribs sprung wide throughout the chest cavity. The depth should continue the length of the animal's body in a uniform manner from the forerib to the rear flank. Body capacity is important for maintaining health, intake of feed, and adequate reproductive volume (Figure 3.12, 3.13).

Balance

Balance is the proportion of body parts. The pig should be strong topped and level rumped, which allows it to move out freely off its rear legs. (Figure 3.13)



Figure 3.12
Restricted Capacity



Figure 3.13
Large Capacity, Well-balanced