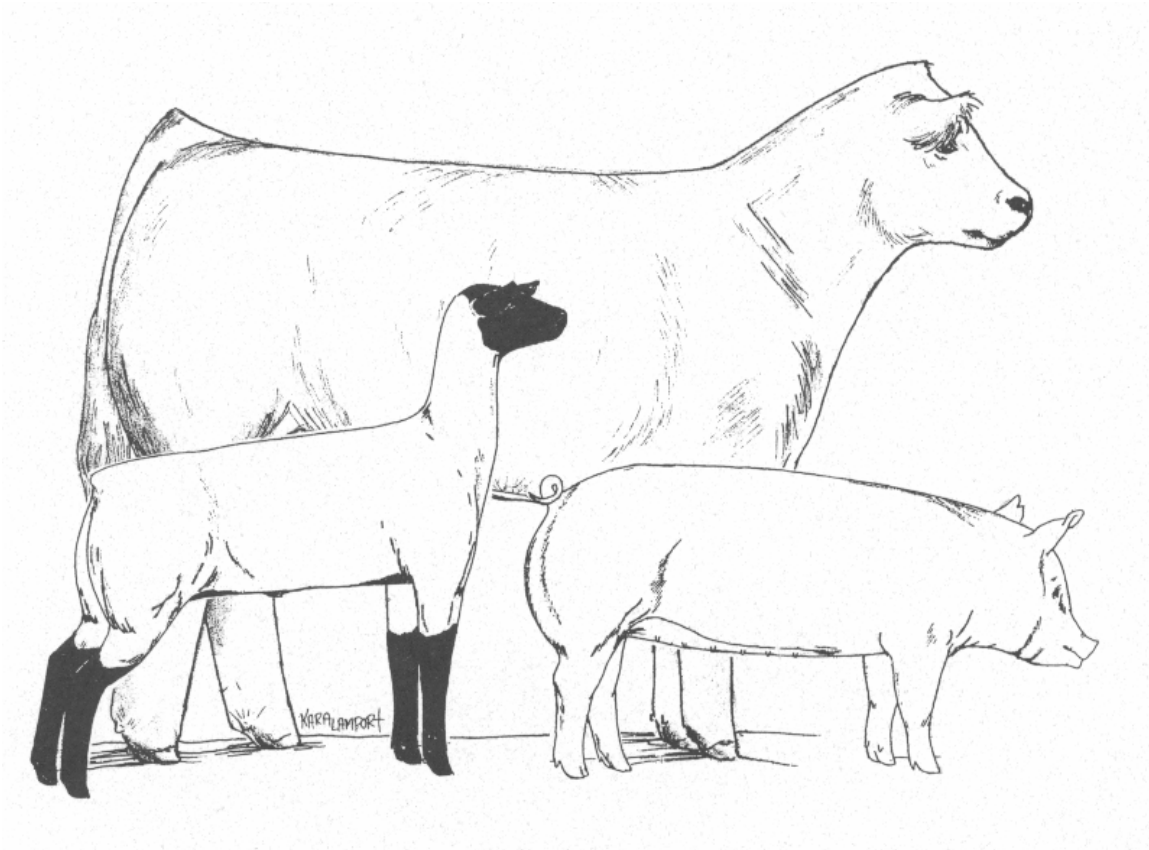


**South Dakota State University
Livestock Judging Manual
Designed for
4-H Seniors and Experienced Judges**



**Second Edition
South Dakota State University**

College of Agriculture & Biological Sciences
Department of Animal & Range Sciences

SOUTH DAKOTA LIVESTOCK JUDGING MANUAL

Introduction2

Livestock Judging

A Class of Livestock.....3

Placing Card.....4

Develop a System for Evaluation4

Parts of the Animal.....4

External Parts of Beef Cattle.....5

External Parts of Sheep6

External Parts of Swine.....7

Selection

Beef Cattle8

Ideal Breeding Heifer.....9

Ideal Market Steer12

Hog Selection.....13

Ideal Market Hog14

Ideal Breeding Gilt.....16

Sheep.....17

Ideal Breeding Ewe18

Ideal Market Lamb.....19

Oral Reasons..... 20

Evaluation..... 20

Organization 20

Presentation 22

Words or Phrases to Avoid 23

Voice Presentation 24

Reasons Format..... 24

Note Taking 25

Example Oral Reasons 26

Terminology..... 29

Utilizing Livestock Performance Data . 36

Beef Performance Data 36

Sheep Performance Data 37

Swine Performance Data 38

Example Performance Scenario 39

Live Animal Evaluation 42

Beef Cattle Grading..... 42

USDA Yield Grades 43

USDA Quality Grades..... 45

Swine Grading..... 48

USDA Quality Grades..... 48

Lamb Grading..... 50

Glossary..... 51

Author:

Kelly Bruns
 Instructor, Livestock Judging Team Coach
 Department of Animal & Range Sciences
 South Dakota State University, Brookings.

Acknowledgments:

The author is grateful to his secretaries Betty Knutsen and Rozanne McGrath for their untiring aid in assembling this manual and making it a reality. Without their help, this manual could not have been published. The illustrations are the fine work of Kara Lamport, Hecla, SD and Dr. Roger Hunsley, alumnus of South Dakota State University and Secretary of the American Shorthorn Association.

Preface:

The author prepared this manual for anyone who is confronted with learning the fundamentals of livestock judging. The author is cognizant of the fact that portions of this manual will soon become outdated as selection standards change. The author realizes that some coaches may not agree with some of the suggestions made in this manual. This is only natural, and it is important for students to follow the advice of their coach to remain successful.

Edition:

This edition is designed for students who have experience in livestock evaluation and would like further education on reasons. Edition 1 1997. Edition 2 2003 YD4H 402-03.

INTRODUCTION TO LIVESTOCK JUDGING

To be able to effectively evaluate breeding and market animals is highly important in the animal industry. Livestock producers and breeders evaluate livestock on their potential to produce high quality, efficient breeding animals as well as saleable offspring. Order buyers, feeders and packers evaluate livestock on their ability to convert feedstuffs into red meat for the consumer. These groups of people are trying to relate the “form” of the animal with the “function” for which it is intended to serve. One can readily see the economic importance of this activity. Thus, when we judge livestock we differentiate among “superior,” “average,” and “inferior” livestock. We are looking for the most desirable animals to fit our particular needs.

While the modern breeder combines performance records with live judging when selecting breeding animals, the same traits that indicate high merit in slaughter animals are also important in the selection of breeding stock. The evaluation of animal structure and breeding soundness is necessary in selecting breeding animals.

Livestock judging is an art developed through patient study and long practice. To be a good livestock judge you must:

- Know the parts of the animal and their location.
- Know which parts are most important for meat and breeding stock production and the most desirable conformation for each part.
- Visualize the ideal animal.

- Make keen observations and compare them to the ideal.
- Weigh the good and bad points of each animal.
- Develop a system of analyzing and examining animals so important points are not overlooked.
- Determine which animal fulfills a particular need and selection priority.
- Combine performance records with visual appraisal.

A Class of Livestock

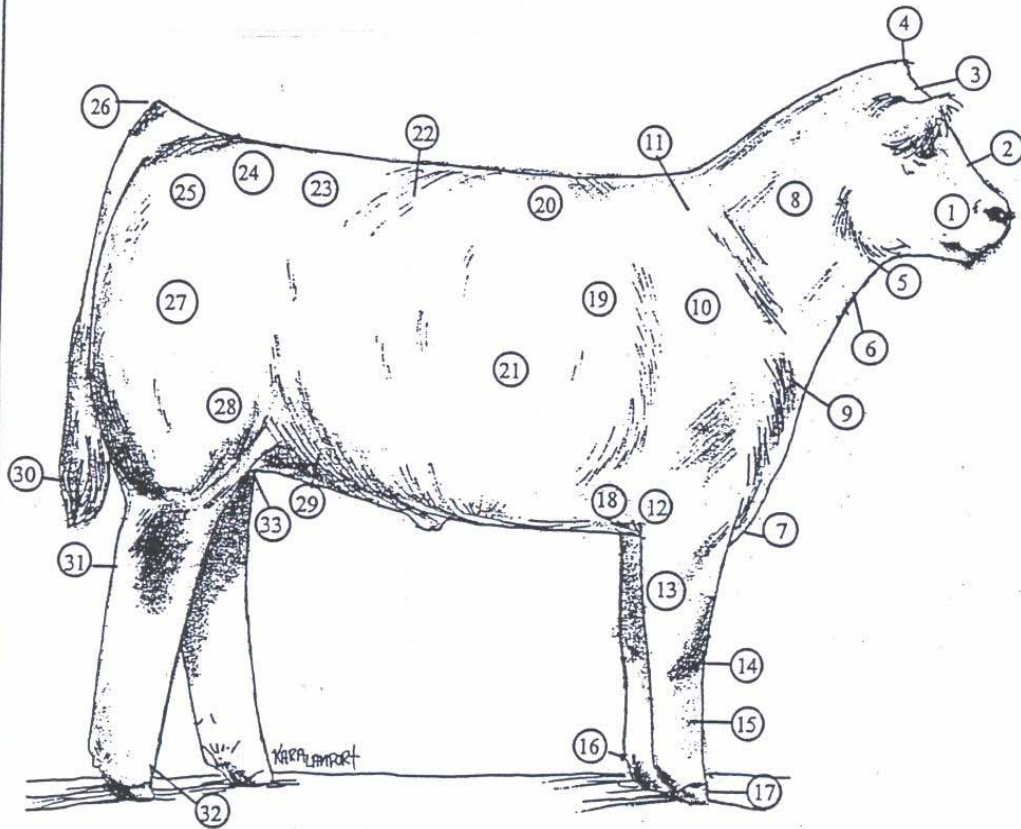
A class of livestock generally consists of four animals. In breeding classes they usually are of one particular breed, sex, and age group. In market classes, however, there may be a combination of breeds and sexes. A livestock judging contest is simply a collection of various classes of livestock.

A case where more than four animals are used is when a student is judging a cull/keep class. Eight animals are used and a student would need to decide on which animals they would like to keep or cull.

As you approach a class of livestock, you will probably be told to turn your back toward the class and to label your placing card. Do not begin judging until you are told to start. Once “time is in” on the class, you will probably have 10 to 15 minutes to judge the class. With 2 to 3 minutes remaining in a class, you can mark your placing card. Always double check your placing on your card before turning it in to the group leader.

External Parts of Beef Cattle

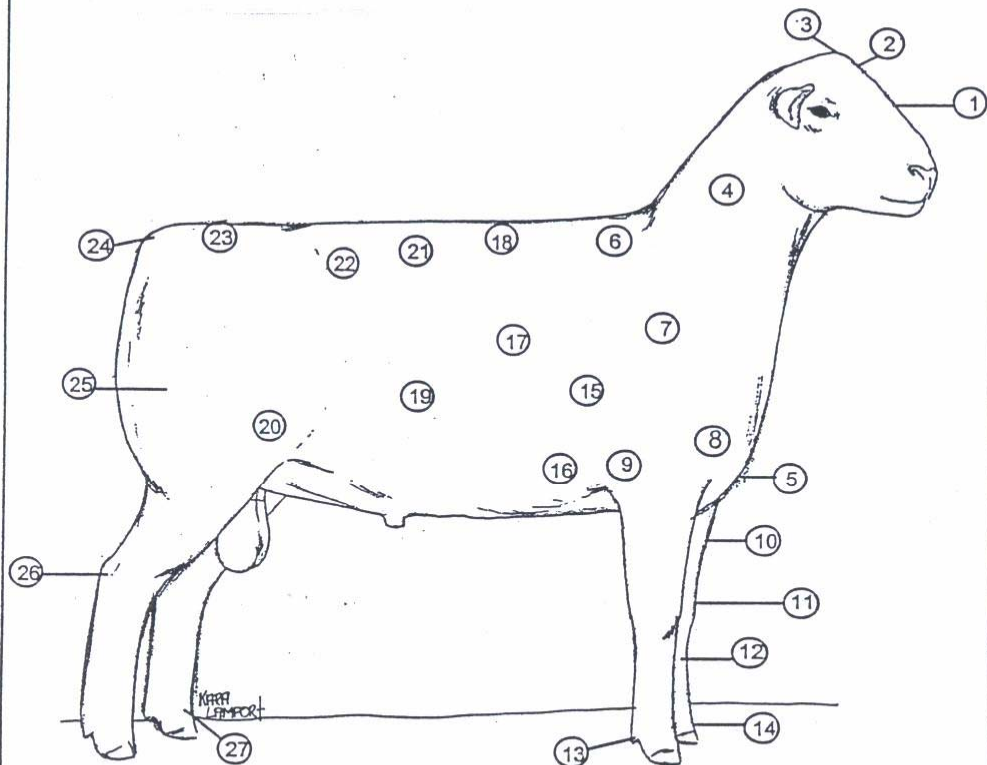
Figure 1



- | | | |
|----------------------|-------------------------------|--|
| 1. muzzle | 13. forearm | 25. pin bone |
| 2. face | 14. knee | 26. tailhead |
| 3. forehead | 15. cannon | 27. quarter |
| 4. poll | 16. dewclaw | 28. stifle |
| 5. throat | 17. hoof | 29. rear flank |
| 6. dewlap | 18. lower forerib, fore flank | 30. switch |
| 7. brisket | 19. forerib | 31. hock |
| 8. neck | 20. back or top | 32. pastern |
| 9. point of shoulder | 21. rib | 33. udder (cow, heifer)
cod (steer)
scrotum (bull) |
| 10. shoulder | 22. loin | |
| 11. top of shoulder | 23. hook or hip | |
| 12. elbow | 24. rump | |

External Parts of Sheep

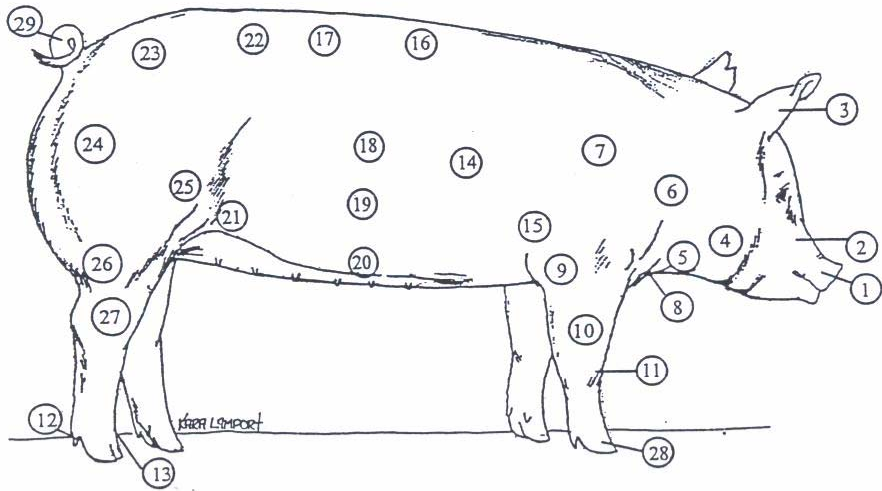
Figure 2



- | | | |
|----------------------|-------------------|----------------|
| 1. face | 10. forearm | 19. middle |
| 2. forehead | 11. knee | 20. rear flank |
| 3. poll | 12. cannon | 21. loin |
| 4. neck | 13. dewclaw | 22. hip |
| 5. breast | 14. foot | 23. rump |
| 6. top of shoulder | 15. forerib | 24. dock |
| 7. shoulder | 16. lower forerib | 25. leg |
| 8. point of shoulder | 17. rib | 26. hock |
| 9. elbow | 18. back or top | 27. pastern |

External Parts of Swine

Figure 3



- | | | |
|----------------------|--------------------|-----------------------|
| 1. snout | 11. knee | 21. rear flank |
| 2. face | 12. dewclaw | 22. ham-loin junction |
| 3. ear | 13. pastern | 23. rump |
| 4. jaw | 14. rib | 24. ham |
| 5. jowl | 15. forerib | 25. stifle |
| 6. neck | 16. top or topline | 26. base of ham |
| 7. shoulder or blade | 17. loin | 27. hock |
| 8. chest | 18. side | 28. foot or toes |
| 9. elbow | 19. middle | 29. tail |
| 10. forearm | 20. underline | |

BEEF CATTLE SELECTION

The ideal beef animal is a combination of many factors. Emphasis has been put on a variety of different traits over the past 40 years changing the cattle from small, overly fat cattle to a bigger more muscular cattle. As a judge of beef cattle, it is important to note a balance of traits that needs to be selected to have a well-balanced animal that is proportionately correct.

Cattle, both breeding and market, should first be structurally sound. Figure 4 depicts the ideal breeding female. Note the straightness of lines, yet she possesses the correct angulation to her shoulder, hip, hock and pasterns. These correct angles will allow the heifer to move in a fluid manner, taking a long, free, easy moving stride. If the lines where the bones are were straighter, then the animal would be restricted in its movement. Cattle that are extremely straight move on a short stride and set their feet down hard. Feet and leg placement should be square on a large hoof. Figures 5 and 6 illustrate the correct leg and feet set as well as common abnormalities. Extremely curved legs are also called sickle hocked because they resemble a sickle. Sickle hocked cattle tend to walk underneath themselves and are uncoordinated in their movement. Bowlegged cattle have hocks that point outward and also move on a short stride. Cattle that are cow hocked are in at their hocks and their feet point outward. Abnormalities of the front legs are also important. When an animal has incorrect leg and feet placement, this affects their movement greatly. These animals often hold their head lower and move on a short stride.

Female Design

A female should possess those characteristics that are ideal to a female. The neck is long and thin with a feminine head. Her body has a broody appearance with well sprung ribs.

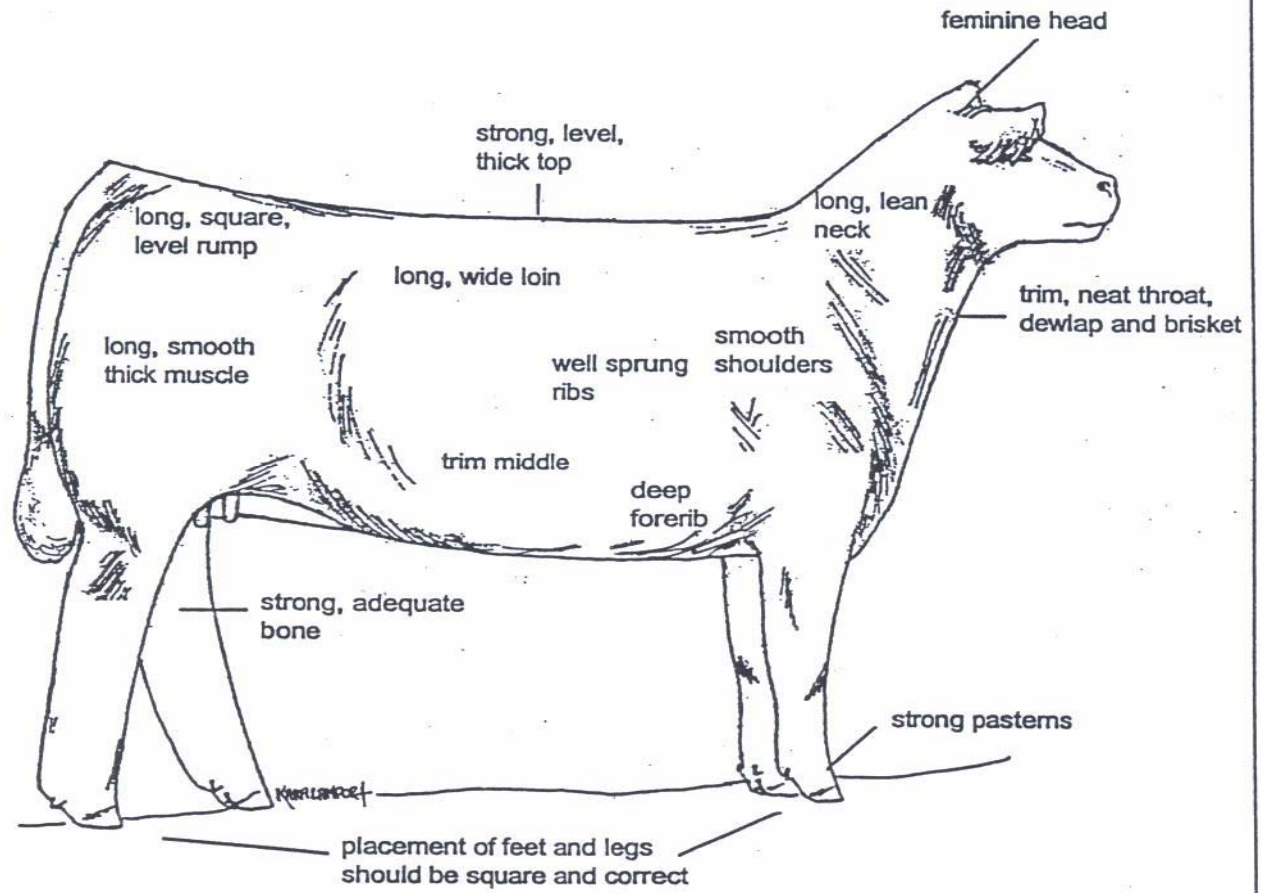
Females should have a correct amount of muscle. Far too often some cows are bred to have excessive amounts of muscle and become very coarse in their appearance. These females often do not milk as well and may not have the longevity of cows which are more feminine. Females should flesh easily on an adequate amount of feed and not be narrow or hard fleshing cattle.

Market Animal Design

Just as breeding cattle have changed and progressed over the years, market cattle also have changed from cattle that were excessively fat in the 50's, to excessively large-framed cattle in the early 80's, to a more modestly framed, muscular steer of the 90's. The ideal market steer (Figure 7) should be a stout, fast growing animal that is heavy muscled and carries a minimum amount of outside fat. From the side, the ideal steer should be free of extra leather in the throat area and have a clean, neat brisket and dewlap. The middle should be trim with a clean, long underline. The flank should not be excessively tight, nor should it be excessively deep as some judges prefer it "today". Extra depth and excessive fullness to the flank is nothing but waste fat. The animal should have a muscular forearm, a thick, strong muscular top, and a long, level, wide rump. The quarter should be long and deep with flare and expression throughout. Structural correctness should be emphasized just as it is in a breeding animal. Market animals should move in a free, easy manner and stand square and straight on their feet and legs. The object of all market animals is to produce a carcass that results in the maximum amount of lean red meat yield, with a minimum amount of waste fat. Ideal carcass characteristics are described in the beef grading section.

Ideal Breeding Heifer

Figure 4



Feet and Leg Placement

Figure 5. Rear Leg Set



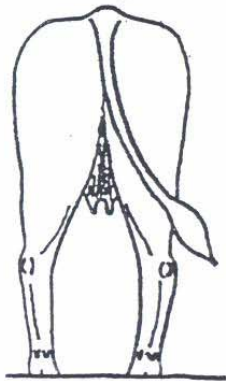
Extremely straight
(posty)



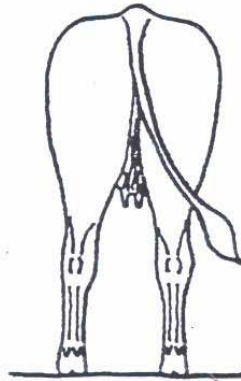
Correct



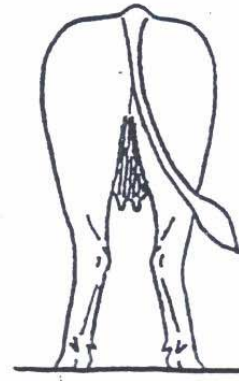
Extremely curved
(sicked)



Bowlegged



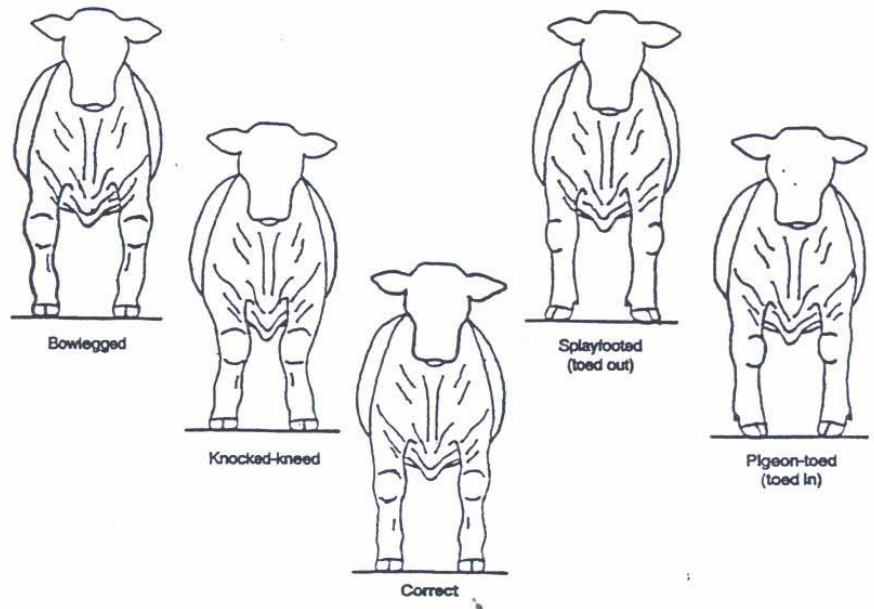
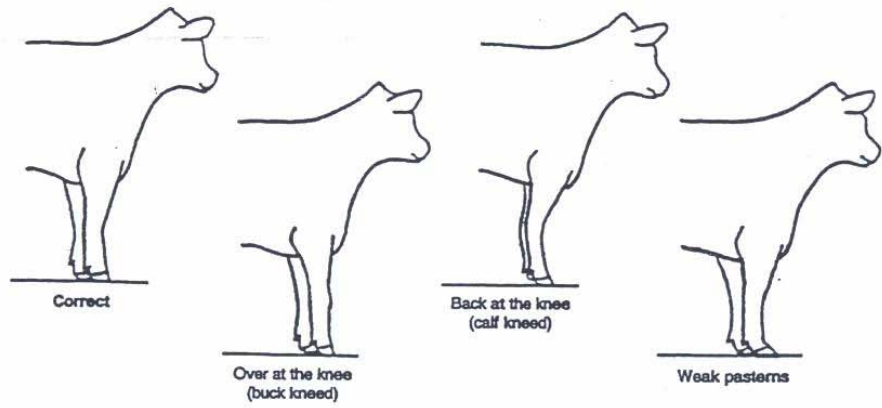
Correct



Cow hocked

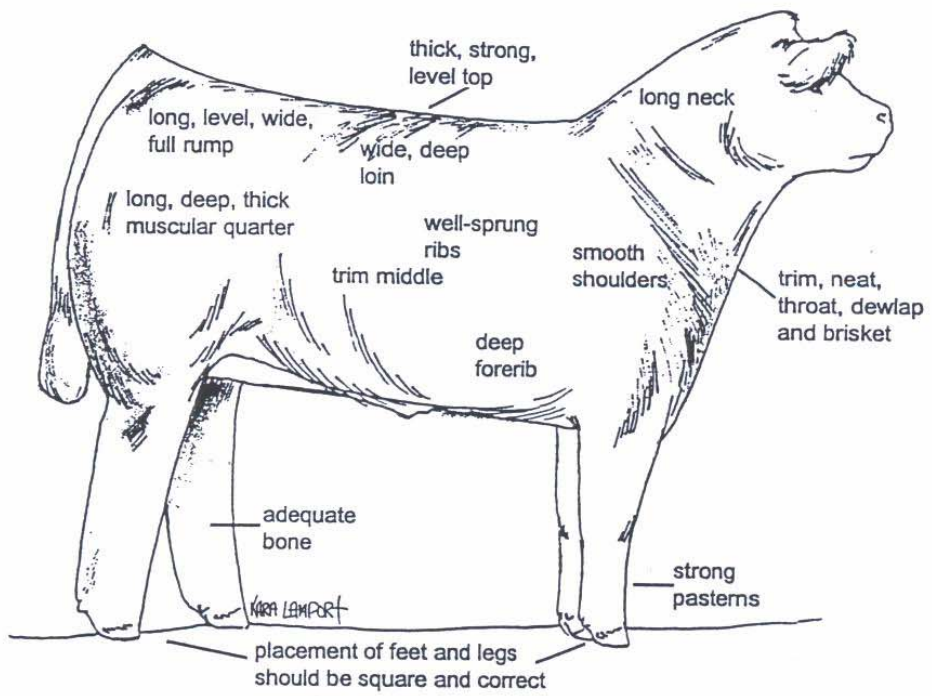
Feet and Leg Placement

Figure 6. Front Leg Set



Ideal Market Steer

Figure 7



HOG SELECTION

The ideal market hog combines muscle and leanness in a large skeleton. The hog should gain fast so that it produces a maximum amount of muscle and minimum amount of fat from 240 lb. to 260 lbs. at 140-160 days of age.

Figure 8 illustrates the distinguishing characteristics of the ideal market hog. Points of importance that can be used as indications of muscling and finish are labeled. The ideal market hog should be lean and free of excess condition. From the side, the ideal market hog should be trim through the lower one-third and have a prominent shoulder blade. It should have a muscular forearm and a level top with a long, square rump. The ham should be long and deep with a muscular shape. The skeleton should be wide with feet and legs set square with proper angulation to the joints and ample cushion to the pasterns.

The ideal market hog should have a muscular, lean shape of top. Hogs that are both lean and muscular will possess a "butterfly shape" with a groove down the middle of their topline. The shape of the ham on a lean, muscular hog will be expressive with bulge and flare throughout the center and lower portion of the ham. The hog will also stand wide with exceptional width of base.

Figure 9 illustrates the rear view of four hogs and a description of each. Hog A has the shape of a lean, muscular hog as mentioned above. He has the characteristic groove down his top to signify extreme leanness as well as muscularity. Hog B is an excessively fat barrow that has a round, wide top unlike the square lean shaped top of Hog A. Hog B has a smooth appearance, which is a good indication of excess condition. He also has less muscle expression than Hog A since he is flatter through the center and lower portion of the ham. Animal C possesses a somewhat lean shape of top

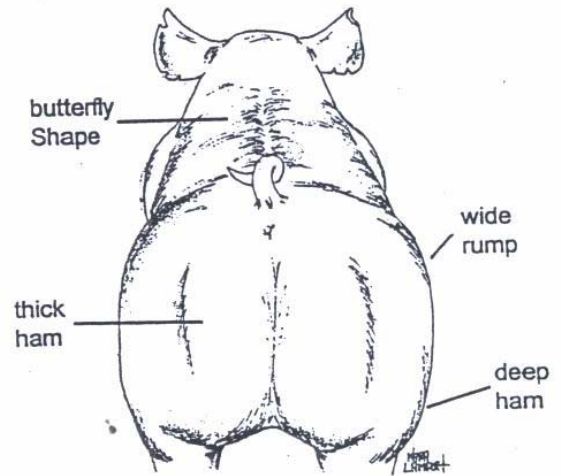
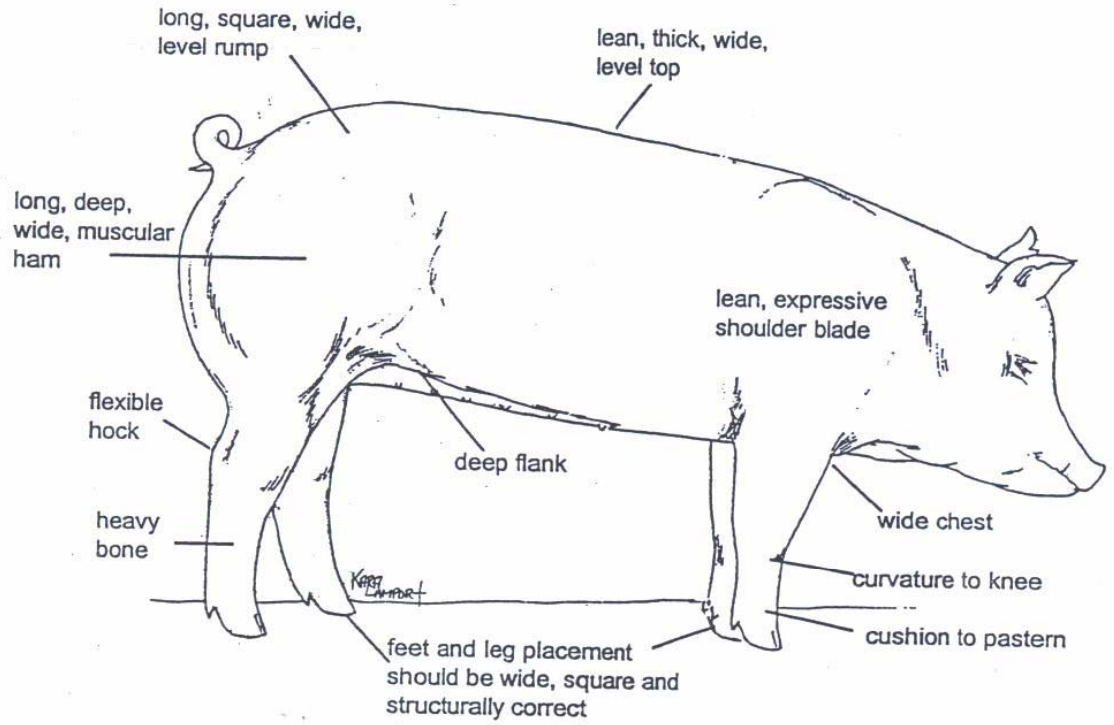
but has very little muscle development throughout. The hog is extremely narrow based as well as being narrow throughout with no definition and shape to his muscle. Hog D is both excessively fat and light muscled. Hog D represents hogs that are light muscled and heavily conditioned. This type of hog has a wide top with a narrow base. There is no shape or expression of muscle throughout the ham or top.

Judging breeding gilts is done in much the same manner as market hogs. Gilts should be lean and muscular and have a fairly large skeleton. More emphasis is put on selecting gilts that are structurally sound without sacrificing muscle and leanness. Performance must be considered when selecting breeding animals. Gilts that are large scaled and fast growing are a top priority. Figure 10 depicts an ideal breeding gilt. Note the leanness she possesses in combination with her depth and spring of rib. She is a nicely patterned gilt that is well balanced and proportionately correct with a feminine neck and head.

Underline quality in gilts is extremely important. Gilts having large litters of pigs need functional underlines to support their offspring. Gilts should have at least six functional teats on each side, but more are desired. The teats should be small and finely textured, not large or coarse. The underline should be evenly spaced throughout. Teats that are crowded and not evenly spaced may hinder milk production. The underline should also reach forward, starting as far forward on the gilt as possible. Abnormalities of the underline also include pin, blunt and inverted nipples. Pin nipples are very small teats that take the place of a functional teat. Blunt teats are flat and coarse. Inverted teats point upwards instead of downwards and don't develop. Pin, blunt, and inverted teats are all unfunctional and undesirable.

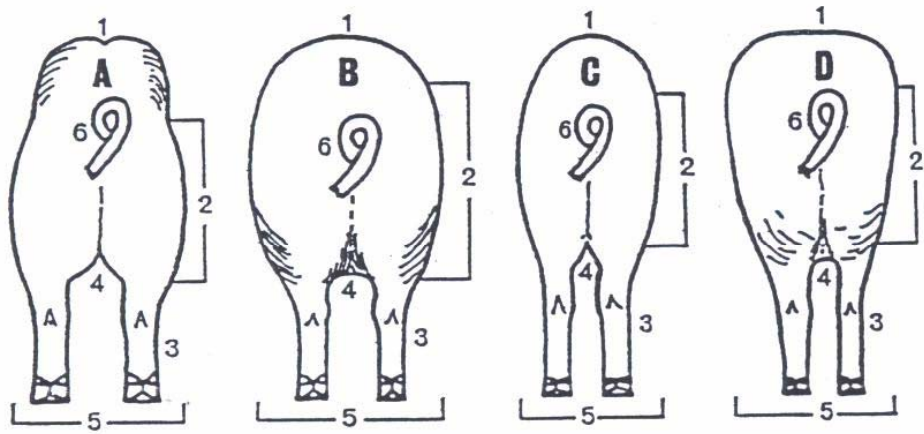
Ideal Market Hog

Figure 8



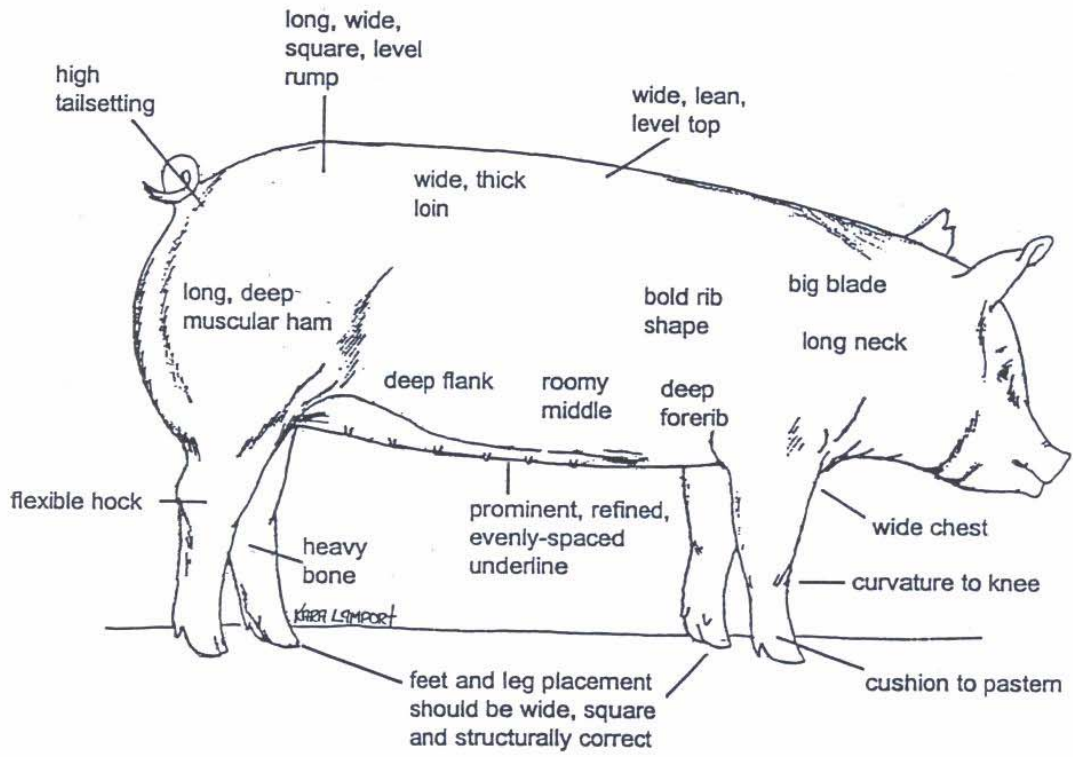
Rear View of 4 Market Hogs

Figure 9



Ideal Breeding Gilt

Figure 10



SHEEP SELECTION

To become extremely proficient in sheep judging can sometimes be difficult. Many different opinions, from breeders and judges alike, concerning the ideal type of market lamb or breeding sheep exist. In the last 20 years there has been an effort to make sheep larger. Some breeders have sacrificed muscle, structural soundness, and breed character for simply larger sheep. In some instances, this has resulted in breeding sheep that are narrow and less efficient or “hard doing”.

To master the art of judging sheep you must consider a balance of the following traits: structure, size, natural fleshing ability or volume, sex & breed character, muscle, finish, and wool quality. The proper balance of the above traits is dependent on the specific purpose of the sheep they produce. When judging sheep, like any other livestock, it is important to select for animals that are proportionately constructed, matching the correct amount of frame with muscle and volume.

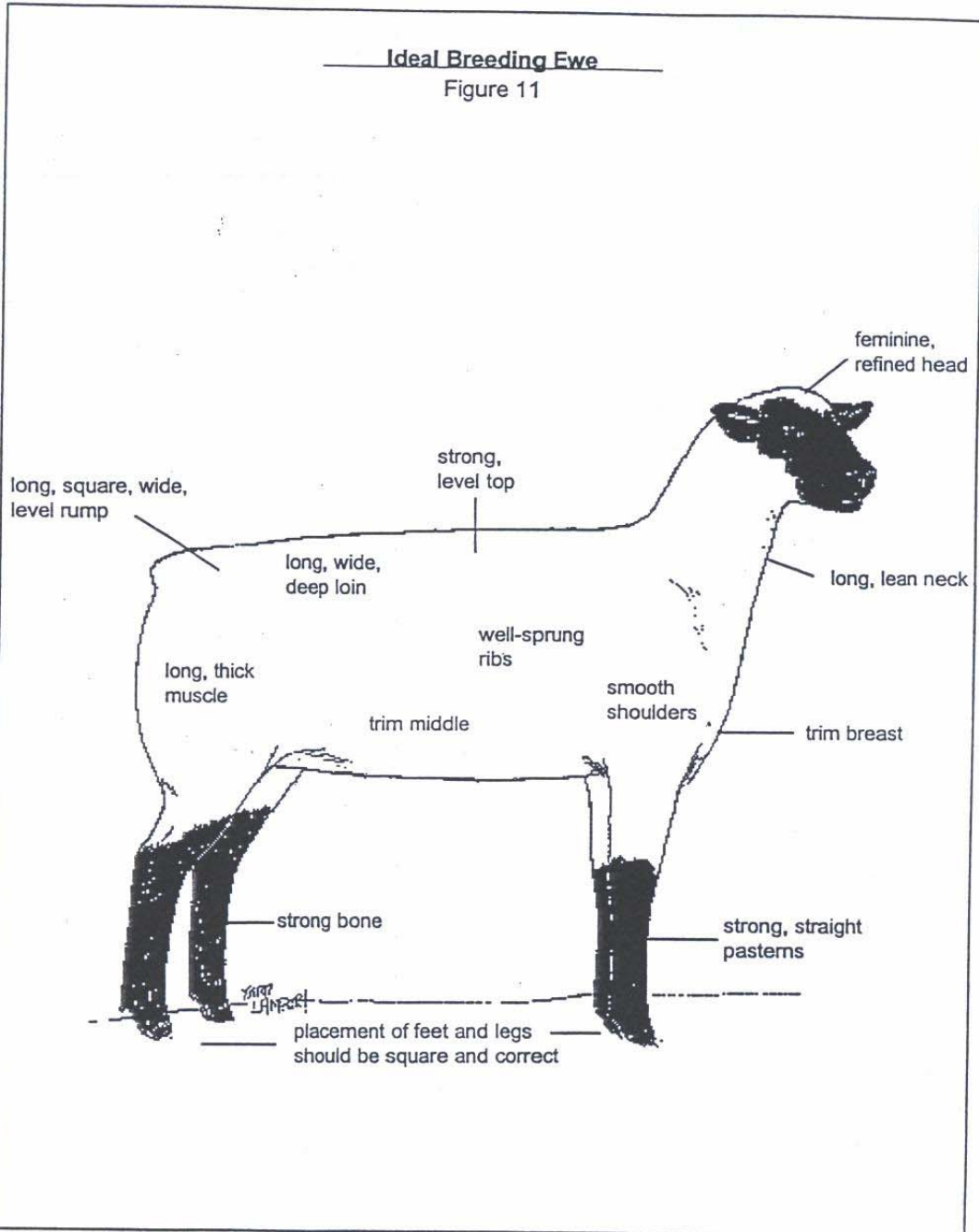
The ideal breeding sheep (Figure 11) should be structurally correct. Her feet and legs should be placed square with an adequate amount of width between them. She should be heavy boned with a large foot. Like breeding cattle, correct angles of the skeleton are important for proper movement. A breeding ram or ewe should have exceptional sex characteristics. Breed character is also very important. The head is a good indicator of proper breed type as well as femininity or masculinity. Descriptions of proper breed type for various

types can be viewed at the South Dakota State University livestock judging website at <http://ars.sdstate.edu>. Judges should acquaint themselves with the ideal characteristics of each breed, taking into account the head, muzzle, ears, and legs. Proper fleece characteristics for a specific breed should also be understood. The body of a sheep should be long, as the highest priced cuts come from the rack and loin. Length is also a good indicator of future growth. A short-necked sheep that is low fronted is usually early maturing and won't develop into a large breeding sheep. A strong, level top with ribs that have spring and arch is important. The loin should be wide and deep with a long, square rump that is wide. The muscle pattern should be smooth, not tight and coarse.

The ideal market sheep (Figure 12) is one that yields a high amount of boneless trimmed retail cuts. The lamb should be trim and free of excess condition. Indicators of condition are the breast, the middle, and over the ribs and top. The ribs and top should be firm to the touch, indicating a combination of muscle and trimness, not soft resulting in excess condition. Lambs should have a muscular top with a deep loin. The rump should be square and level, with a wide, muscular appearance. The leg of the lamb should be muscular and firm to handle with an ample amount of shape and expression. Lambs should be stylish and well-balanced. A trim, muscular lamb that is structurally correct is the basis of balance. Length of body and front are important factors when analyzing style and balance.

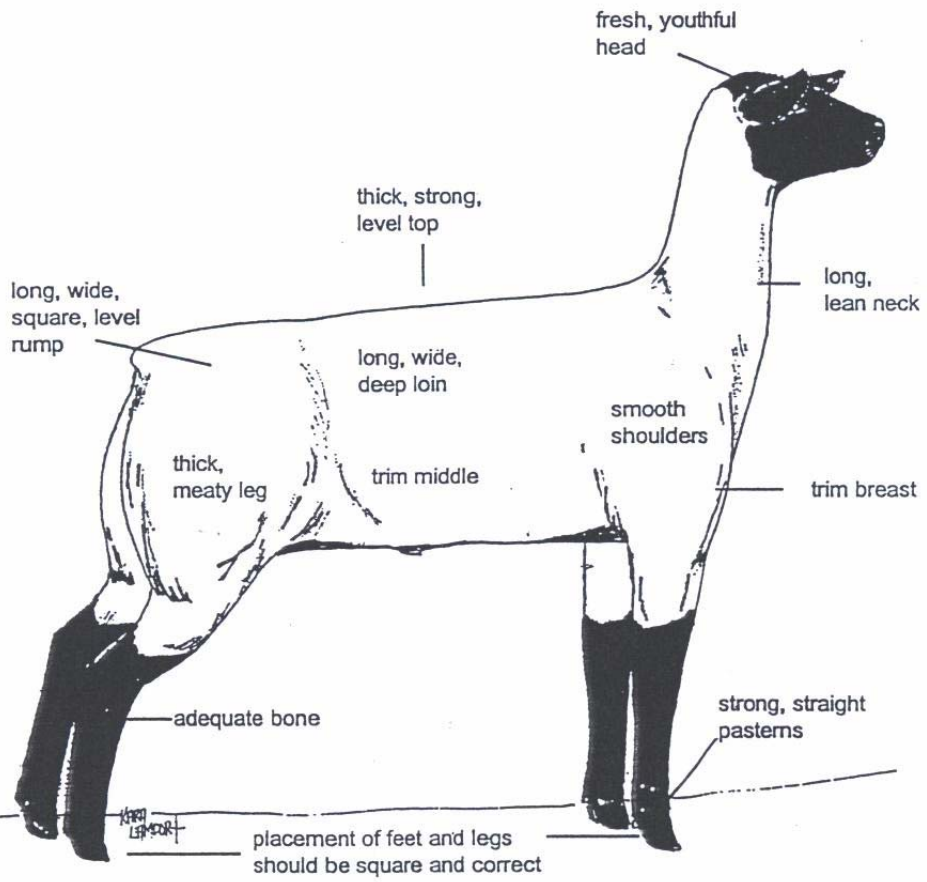
Ideal Breeding Ewe

Figure 11



Ideal Market Lamb

Figure 12



ORAL REASONS IN LIVESTOCK JUDGING

Oral reasons are an important part of livestock judging. Many students are reluctant to give oral reasons. Although giving oral reasons at first may be difficult and frustrating, with hard work and many hours of practice it can be mastered.

Why are oral reasons so important? First of all, in most senior college livestock judging contests, oral reasons make up 40% of the total points. Thus, proficiency at reasons will improve your score in contests. Second, giving reasons involves important skills. Public speaking skills, persuasive technique, organizational skills, and the ability to think on your feet will improve with practice in giving reasons.

This section focuses on the procedure as well as many details of preparing and presenting oral reasons in a livestock judging contest. Also attached are several sample sets of oral reasons narratives. They may help give you some ideas on how to prepare and present your oral reasons.

How a Set of Oral Reasons are Evaluated

Many different styles of reasons are practiced. Virtually all can be successful if used properly. Style is not the most important factor as long as reasons are **accurate, concise, and conversational**.

When aiming for high scores on oral reason sets, the most important qualities to strive for in evaluating a set of oral reasons are:

- Accuracy of statements presented.
- Completeness - all important points must be discussed.
- The ability to emphasize the most important differences between two animals.

- A complete vocabulary of livestock-related terms.
- Variation in the use of descriptive terms (avoid repetition).
- A conversational tone of delivery.
- A sincere, emphatic and persuasive delivery.
- Use of correct grammar.
- Use of pauses and voice inflection for emphasis.
- Volume that is appropriate for the size of the room and for remaining conversational.
- A logical, organized format that is easy for the listener to follow.
- Proper eye contact.
- Correct posture.
- Absence of distracting movements.

How do I organize my reasons?

Reasons should be presented in a manner so that the reason taker can follow the class description. The organization of your thoughts prior to presenting your reasons is very important. However, accuracy is by far the most important quality in evaluating reasons. The value of accuracy can be largely lost unless reasons are presented in an easily followed manner. It is important to note that a set of reasons is not a discussion of each animal separately, but rather a comparison of the top, middle and bottom pairs of animals.

There are two main methods of organizing the details on a pair of animals:

Prioritization – most important differences first, leaving the minor differences to the end; or **anatomically** – front to rear or vice versa.

Anatomical organization is probably the easiest method for beginning judges to master. However, most senior colleges use the prioritization method because it better explains their respective placing, since the reason giver is telling the most important traits first.

An example of prioritization type of reasons is as follows: In the middle pair, I preferred the advantages of muscle as well as eye appeal found in 2 over 3. The black steer was simply (1) **heavier muscled**, as he handled with more expression of muscle down his top and had more width to the center part of his quarter. Additionally, he was a (2) **nicer profiling** steer that was smoother shouldered and especially cleaner fronted. He also was more (3) **structurally correct** in that he was leveler from hooks to pins and stood squarer and straighter behind than 3.

Regardless of the method of presenting oral reasons, it is important that the presenter be accurate and easy to follow. It is equally important that the presenter not use a large number of terms in close succession. Such an example might be: 2 is a **thicker, longer, taller, cleaner fronted, straighter topped steer**. As one can imagine, the terms are being spoken so quickly that the listener **cannot** possibly comprehend everything that was said. The example should be broken into two sentences. **Two is a longer bodied steer that is thicker made. Additionally 2 is nicer balanced, as he is cleaner fronted and straighter lined.** It is important to note that conjunctive words are used to help tie sentences together. If used properly, they can help you move smoothly from one part to the next. It is important to note that overuse of conjunctive

words can cause the set of reasons to be excessively wordy. However, when used properly, they add to the smoothness of the set. Listed below are some more commonly used conjunctive words.

- Additionally...
- In addition to...
- Also...
- Plus...
- As well as...
- Furthermore...
- This, coupled with...
- More importantly...

In addition to conjunctive words, transition can also aid the presenter in delivery of his/her set of reasons. Transitions are simply a way of moving smoothly from one section of the reasons to another. Transitions should be done as simply as possible while still maintaining a smooth transition that is grammatically correct. Excessively wordy transitions are strongly discouraged. It is also important not to be redundant or use double transitions.

Listed below are some simple words to use when moving into a grant:

- I grant...
- I recognize...
- I realize...
- I admit...

When moving from a grant to a criticism you may try this example: I realize that 2 is a straighter lined steer that is cleaner fronted, (however or but) he is (move to criticism) the lightest muscled steer of the four.

To move into a criticism we may also use:

- I realize that 1 is ..., nevertheless I used him in the top pair over 2 because ...
- (However or But) I fault 2 and left him second...
- (However or But) I criticize 3 and left him third because he is...

Transitions can also be used to move from faults/criticisms into pair comparisons.

- Despite this, I still prefer 2 over 3 in the middle because...
- However, in the middle pair, I used 2 over 3...
- Still in the bottom pair I preferred 2 over 3...

Reasons should be clean and free of verbal garbage as much as possible. However, properly used, transitions can be effective. As a reminder: don't be redundant, be creative and original, yet conversational.

HOW DO I PRESENT MY REASONS?

The biggest mistake many contestants make is trying to memorize their reasons from their notes. The notes on each reasons class are to be used as reminders as to how each animal looked. Notes should also be used to help the participant place the class. By listing the good and bad points of each animal, one can properly weigh the good from the bad. It is critical that any student interested in livestock judging be able to develop the skills required to recall a class of livestock. If a student is familiar with the terminology and can picture the class in the mind while presenting the reasons, then notes are not needed.

If your set of reasons is good and properly delivered, it will be perceived as a persuasive explanation and logical discussion. In addition you will be thought of as a confident and knowledgeable stock person.

Consider the following tips when making your presentation:

- Be prompt when it is your turn. However, if you get caught short of time between sets, ask the official for more time if you really need it. The official may or may not give you the extra time.

- Contestants are allowed two minutes for a set of reasons, but to score high they should usually be shorter. It is rare to observe a class that requires more than 90 to 105 seconds to be completely and accurately described. Inaccurate statements cost points and redundancy is considered poor style; thus, the student is advised to be concise and minimize all unnecessary comments. Almost anyone can discuss a class if given a long time and no pressure. Superior reason givers are those who can do so in 90 seconds.
- Enter the room confidently, but do not act arrogant.
- If the officials offer you a placing card, thank them, check to make certain that the card is yours, check your placings, and place the card behind your back before beginning.
- Try not to stand too close to the official. Between 8 and 10 feet is about right depending on the strength of your voice and the size of the room.
- Stand with your feet at shoulder width and both hands behind your back.
- Vary your delivery. Use pauses and voice inflection to emphasize main points.
- Use facial expression to add emphasis to key points. You may use slight head gestures, but be aware that other body movements may be distracting.
- If a pair is very close, be certain to give several advantages to the lower placing animal.
- Try to visualize the class of animals as you give reasons. This will become easier through practice.
- Avoid mixing up numbers of animals.

- Use class comparisons when appropriate. For example, when granting describe the second place heifer as “the most **structurally** correct heifer in the class,” if that statement is accurate. This is more complete than simply granting that the animal is more correct than the first place heifer. Similarly, it may be appropriate to criticize the second place animal as “the smallest framed heifer in the class” even though you do not place her last.
- Introduce your set of reasons with the name of the class exactly as it was given to you.
- Do not abbreviate breed names such as “Hamp” for “Hampshire.”
- Mention the breed name when discussing breed character. “1 had more ideal Dorset breed character as evidenced by...”
- Include points of identification in your reasons. For example, “the white Shorthorn heifer” or “a partial belt Hampshire gilt.”
- Be prompt, concise, and polite with your answer if the judge asks you a question after your reasons. DO NOT ARGUE!

WORDS OR PHRASES THAT SHOULD BE AVOIDED

One of your goals in presenting oral reasons is to present information as concisely, accurately, and professionally as you can within the time limit you are given. Using an incorrect word or a phrase that is not specific enough can cost you points and may even turn out to be the determining factor in your placing as an individual or team.

Below is a list of words and phrases that should be avoided:

- **Number:** Avoid using this word. If the animal’s number is 4, refer to him as “4” as if that were his name, not “the number 4 steer.”
- **It:** Use “he” or “she” instead. Be sure to use the correct gender.
- **Animal or Individual:** Instead say “steer,” “bull,” “barrow,” etc.
- **Lacks:** This term is not direct enough. Rather than “fault 2 because he lacks muscling”, you should “fault 2 because he was light-muscled”.
- **For being:** Instead of saying “I fault 2 for being light-muscled,” say “I fault 2 because he was light-muscled.”
- **I would like to see:** This is wordy and informal. Instead of saying “I would like to see 2 wider-topped,” point out that “2 was narrow-topped” or say “Ideally 2 would be wider-topped.”
- **Placing:** Instead say “I placed the _____”.
- **Criticizing or Faulting:** Instead say “I criticize” or “I fault.”
- **Kind of or Type of:** Say a “more complete heifer” instead of a “more complete kind of heifer.”
- **Throughout, Overall, or From end to end:** Be more specific.
- **Carries or Carrying:** Instead of “carries into a thicker quarter”, say “was thicker through the quarter” or “had a thicker quarter.”
- **My:** Do not say “in my middle pair.” They are not your animals. Instead say “In the middle pair.”

WHAT TYPE OF VOICE PRESENTATION SHOULD I USE?

Reasons should be presented in a fashion that is pleasant to listen to. One must speak with authority, but in a conversational tone. Do not scream or shout your reasons. It is equally important not to talk so fast that the official can not comprehend everything that was said. Reasons should be presented in a tone slightly louder than conversation. Your tone should be convincing and sincere but not overbearing.

Avoid a dry, monotone delivery. Be enthusiastic and confident in your delivery. Terms or phrases of importance should be emphasized. Emphasizing terms or phrases allows the presenter to fluctuate his/her voice and keeps the listener attentive. Students need to pause at the periods at the end of sentences to allow them to get a breath of air.

You should enunciate terms clearly and use sentences that are grammatically correct. You can be rewarded with a good score if you remember to be accurate, use good

livestock terminology, and present convincingly in a conversational manner.

WHAT TYPE OF REASONS FORMAT DO I USE?

The format used for reasons at South Dakota State University is simple and straight forward and allows for a complete description of a class. This style does require a thorough understanding of livestock evaluation as animals are analyzed in detail and one must have the ability to recognize important differences and place these differences in a prioritized order.

A class of livestock consists of three pairs; a top pair, a middle pair and a bottom pair. In each pair we have three basic sections: Comparison, grant and criticism. The type of terminology used in each section of the reasons is important. In the opening statement on the top animal you may use either descriptive terms or class comparison. Following is an outline that demonstrates the basic format: (Figure 13)

Figure 13. Reasons Format

Introduction to the class
Opening statement
Comparison of 1 over 2

Grants 2 over 1
Criticisms of 2
Compare 2 over 3

Grant 3 over 2
Criticism of 3
Compare 3 over 4
Grant 4 over 3
Criticism of 4

I placed the...1-2-3-4-
I started the class with ...
I used 1 over 2 in the top pair
because he is ...
I admit 2 is ...
But I admit 2 is...so is second
In the middle pair I preferred 2
over 3
I grant 3 is...
However 3 is the third because...
Now in the bottom pair
I realize 4 is...
But 4 is last because...

ORGANIZATION AND FORMAT FOR NOTE TAKING

A good judge can visualize a class of animals in his mind. In contests, several classes are judged in a short time, and oral reasons are given later. Therefore, it is necessary to take notes on what you observe about the animals in each class. Notes are to be used for study before giving oral reasons to the judge and should not be read to the reasons taker. A good set of notes should help you recall or remake a mental picture of the class in your mind.

Take short, simple notes and form a habit of using terms with which you can easily make comparisons. List the main points first for each pair, and then add details or specific differences. In this manner you will always have points to talk about on all three pairs.

A 6" by 9" steno notebook is suggested for use in taking reasons notes. Divide the page into equal sections as shown in the example. Copy the name of the class and your placing at the top of the page. Use the four boxes at the top of the page for general descriptive terms for each animal. Use the boxes on the left side of the notebook for advantages for each pair and the right side for the grants and faults of the second place animal in each pair.

The reasons can be read directly from the notes in a logical fashion – left to right. Notice how the terms and phrases are read directly from the notes, flowing and blending to make a complete set of reasons. The example set of notes of Market steers 1-4-2-3, can be seen in reason form following the suggested form for your notes.

CLASS NUMBER + NAME			
1	2	3	4
OPENING STATEMENT		FIRST PLACE ANIMALS FAULTS	
Top Pair Comparison		Top pair grants	
		Second place animals faults	
Middle Pair Comparison		Middle pair grants	
		Third place animals faults	
Bottom pair comparison		Bottom pair grants	
		Bottom place animals faults	

CLASS #1 Market Steers 1-4-2-3			
1	2	3	4
Red Baldy	Hereford Marked	Black Baldy	Black
Opening: 1- Heaviest Muscled		Fault: Drops from hooks to pins	
1/4 - Heaviest Muscled - thicker topped - More correctly cond.		4/1 Nicest profiling - cleaner necked - leveler rumped	
		4's Faults (black) - Narrowed based - Bare rear ribs	
- Carcass - Grade Choice		2/4 More muscular - thicker	
4/2 - Nicest balanced cleaner fronted - More Structurally Correct - Higher Cutability		2/5 faults (Hereford) Heaviest cond.	
2/3 - More market ready - has more condition - Heavier muscled thicker top + rump - Deeper ribbed - Heavier muscled carcass		3/2 - Longer bodied - Lighter cond.	
		3 - Lost (Black Baldy) - Lightest muscled - Barrest handling	

EXAMPLE SET OF REASONS

The following example set of reasons is included to give you the opportunity to visualize how the format and transitions are utilized in a set of reasons. Try to follow the format as you read through this example.

Market Steers

1-4-2-3

I placed the crossbred market steers 1-4-2-3. I started with 1 as he is the heaviest muscled, most correctly finished steer in the class. 1 placed over 4 in the top pair because 1 is the thickest topped steer with the most shape and expression through his quarter. Additionally, 1 is a more correctly finished steer that is smoother handling and is deeper ribbed than 4. 1 should have a carcass with the best chance of grading choice. I grant 4 is the nicest profiling steer in the class and is longer necked and leveler through his rump than 1. However, the black steer is narrow based, flat through his stifle and handles bare over his last two ribs, so he is second.

In the middle pair, I like 4 over 2. 4 is the nicest balanced steer that is the cleanest fronted and strongest topped in the class. 4 is also a more structurally correct steer with a more correct set to his hock. More importantly 4 is lighter conditioned and firmer handling than 2. 4 should have a carcass that is trimmer than 2. I recognize that 2 is more muscular, with more thickness through his quarter and more dimension of stifle than 4, but the Hereford steer is the heaviest conditioned and softest handling in the class so he is third.

I like 2 over 3 in the bottom pair since 2 is a more market ready steer that is heavier muscled. 2 is thicker over his rump and has more volume of muscle in his quarter. Plus he is a deeper ribbed, bolder sprung steer that appears to be higher performing than 3. I admit that the black, white face steer is longer bodied and trimmer than 2. But he is the barest handling, lightest muscled steer that is the narrowest made. 2 should have the least chance of grading choice in the class.

Notice how identification of the steers is used. General terms are presented first followed by specific details with the class advantages told as soon as the steer is talked about and carcass terms are at the end of the pairs and the last place animal

Charolais Heifers

2-1-4-3

My placing of the Charolais heifers is 2-1-4-3. I started with the branded heifer as she combined femininity, balance and structural correctness to the highest degree. 2 is the most performance oriented heifer in the class, that is, the straightest lined and nicest profiling heifer. More importantly, she's the most structurally correct heifer that took the longest, freest stride of the four. I realize 1 is heavier muscled than 2 but she is the coarsest made heifer in the class, so she's second.

In my middle comparison, I prefer 1 over 4. 1 is a higher volume heifer that appears to be easier fleshing. 1 has more arch and shape of rib. Plus she is a wider based and heavier muscled heifer than 4. I admit that 4 is a more feminine designed heifer who is nicer profiling than 1, but she's the narrowest based, shallowest bodied heifer in the class.

Yet in my final comparison, I still liked 4 over 3. 4 is a growthier, more skeletally extended heifer than 3. Additionally, she's a stronger topped, leveler rumped heifer that stood straighter and squarer on her rear legs. I grant 3 is a higher volume, deeper ribbed heifer that was heavier muscled than 4, but she's the pounds-lite heifer that's the poorest balanced and least structurally correct in the class.

Crossbred Market Hogs 3-4-1-2

I place the crossbred market hogs 3-4-1-2. In this drive of non-littermate gilts, I started with 3. She is the most carcass oriented hog that best combines muscle and lean. She places over 4 in the top pair as she is the biggest skeleton, largest outline gilt that offers the most market weight flexibility. More importantly, she is the best combination of leanness and muscle. She has the most turn and shape of top and the most flare to her ham loin juncture. 3 will have the carcass with the greatest percent muscle. I grant 4 is heavier boned and bigger footed than 3, but 4 is the shortest fronted and wasty through her lower third.

Production places the middle pair and it's easily 4 over 1. 4 is simply wider constructed and fast gaining and should take fewer days to reach 240 pounds. 4 is also a heavier muscled gilt that will have a carcass with more muscle than 1. I realize 1 is a leaner gilt that is cleaner through her lower third. However, I placed her third because she is the smallest scaled hog in the class.

With this aside, leanness places the bottom pair. 1 is a leaner gilt that has a squarer, more muscular shape of top, and more shape and expression of ham. She will hang a carcass with a higher percent muscle than 2. I admit 2 is bigger outlined, but this does not compensate for the fact that she is the lightest muscled and narrowest made gilt that has the least width behind. She will hang the lightest muscled carcass in the drive.

Yorkshire Breeding Gilts 2-1-4-3

I placed the Yorkshire breeding gilts 2-1-4-3. I started with 2 as she combined volume and muscling to the greatest degree. 2 is the widest constructed largest outline gilt in the class. She is also the heaviest muscled gilt that is wider based and has more expression of ham. I admit that 1 is leaner than 2 but 1 is a heavy conditioned wasty middled gilt.

In the middle pair, I liked 1 over 4. 1 is a freer moving gilt that is looser made and moves on a longer stride. She is the higher volumed gilt of the pair and has a finer textured underline. I admit that 4 is larger scaled and longer sided. But at the same time, she is tight ribbed, fine boned and has a pin nipple on her right side.

Even so, in my final decision I liked 4 over 3. She is a larger scaled, longer bodied gilt that is more feminine appearing. 4 also is a leaner gilt that has more blade action on the move, with more expression of muscle down her top and more natural expression through her ham. I grant that 3 is a looser made gilt that was leveler designed. But 3 places last because she is the poor structured gilt that is steep rumped. Along with this, she is the lightest muscled and heaviest conditioned gilt in the class.

Suffolk Breeding Ewes

1-2-3-4

I placed the Suffolk breeding ewes 1-2-3-4. I started the class with 1, the best combination of structural correctness and extension in the class. 1 places over 2 in my top decision as 1 is a more eye appealing ewe that is better balanced and straighter lined. Additionally, 1 is the growthiest ewe in the class. I admit that 2 is a bolder strung and deeper ribbed ewe than 1. Yet, I preferred 2 second because she is an early maturing ewe that is short fronted and coarse shouldered.

With this aside, 2 places over 3 in the middle pair. 2 is a growthier ewe that's longer bodied and taller made. Also, she appears to be pounds heavier with more width of base than 3. Additionally, 2 is a more capacious ewe that is deeper ribbed and bolder sprung. I grant that 3 shows more Suffolk breed character being blacker about her points with a longer, more bell-shaped ear. But I placed her third as she is tightest ribbed and shallowest made ewe in the class.

Now in the bottom pair, I still like 3 over 4. 3 is a more feminine appearing ewe that is more feminine about her head and smoother shouldered. In addition, she is a more extended ewe than 4 as she is especially longer about her head and neck. I recognize that the blue tagged ewe is thicker made and has higher volume. But 4 places last because she is the smallest framed and the shortest bodied ewe in the class.

TERMINOLOGY FOR LIVESTOCK JUDGING

Proper use of terminology separates the knowledgeable livestock person from the rest. Individuals who have a thorough knowledge of terms and how they fit the animals better describe a picture of the class to the reason taker. Proper use and choice of descriptive terms will receive high scores in the reason room. Team members should put high priority on originality, but remember to use terms that can be understood.

TERMINOLOGY FOR CATTLE and SHEEP

Breeding cattle and sheep are generally placed on a combination of:

- * growth
- * volume/capacity
- * structural correctness
- * balance
- * muscle
- * sex characteristics
- * correctness of condition

TERMINOLOGY FOR MARKET STEERS and MARKET LAMBS

Market steers are generally placed on a combination of:

- * muscle
- * correctness of condition
- * balance and eye appeal
- * structural correctness
- * growth
- * volume/capacity

Movement – Structural Correctness

Advantages

Longer, freer striding
Easier moving
More angle to shoulder
More correct set to his hock
Wider tracking
Squarer standing
Bigger Foot

Disadvantages

Short stride
Restricted in movement
Straight shouldered
Post legged or Sickie hocked
Narrow tracking
Cow hocked
Small Foot
Shallow heel

Frame – Growth Potential

Advantages

Stood taller at the shoulder (sheep)
Longer: bodied, rumped, hipped
Indicates more growth potential:
 Longer cannon, extension in front,
 Leaner at same age, longer headed
Taller/longer fronted
Appears to have highest W.D.A. in class
Highest performing

Disadvantages

Lower fronted
Short bodied
Early maturing
Shorter cannon

Short fronted
Lowest W.D.A. in class
Pounds lightest

CATTLE AND SHEEP TERMINOLOGY

General Appearance – Balance

Advantages

More eye appealing
More stylish
Nicer balanced
Smoother made
Straightest made
Straighter lined
Better structured

Disadvantages

Least eye appealing

Poor balanced
Coarse/rough

Weak topped
Poorest structured

Volume – Ruggedness

Advantages

Highest volume/most capacious
Deepest ribbed
Widest chested
More spring and shape of rib/bolder sprung
Stout
Heavy boned

Disadvantages

Shallow
Tight ribbed
Narrow chested
Flat ribbed
Frail
Fine boned

Muscle

Advantages

Heavier muscled
More expressively muscled/more natural thickness
Thicker topped
More muscular expression
(forearm, loin, rump, stifle, quarter)
More correct muscle design
Wider from stifle to stifle
Thicker, squarer rump
Deeper quartered

Disadvantages

Light muscled
Flat quartered
Shallow loin
Flat
(forearm, loin, stifle, quarter)
Coarse in muscle design
Stand close and narrow behind
Narrow rumped
Shallow quartered

Carcass

Open terms with “This animal will have a carcass with ...”

Advantages

A lower numerical yield grade
Trimmiest
Higher cutability carcass
Requiring less fat trim
More muscular carcass
Should have a carcass that is more apt
to grade choice

Disadvantages

The highest yield grade
Heaviest conditioned/wastiet
Lowest cutability
Most fat trim
That is light muscled
Least chance of grading choice

CATTLE AND SHEEP TERMINOLOGY

Condition

Market Cattle

Advantages

Firmer and fresher handling
Lighter conditioned/trimmer

Most correctly finished steer
Nicest handling steer as he is smooth handling

Trimmer through (brisket, flank, and cod)

More apt to grade choice
More market ready

Disadvantages

Stale
Heaviest conditioned/softest, wastiest
Barest handling
Poor handling steer as he is patchy or rough handling
Wasty though (brisket, flank and cod)
Greenest appearing
Least market ready

Market Lambs

Advantages

Trimmer, cleaner pattern
Lighter conditioned
Firmer handling
Trimmer middled
Cleaner breast

Disadvantages

Wasty
Heavier conditioned
Soft handling
Wasty through his/her lower 1/3
Fuller breast

Sex Characteristics

Female

Advantages

More femininity through her head, neck and shoulder
Longer necked
Cleaner necked
Smooth shouldered

Disadvantages

Coarse made

Short necked
Wasty fronted
Round shouldered

Male

Advantages

Stronger jaw
Bolder eye
More ruggedly made
More testicular development
Tighter sheath
More desirable scrotal shape

Disadvantages

Shallow jaw
Small eye
Refined
Least testicular development
Loose sheath, lazy prepuce

CATTLE AND SHEEP TERMINOLOGY

Fleece and Breed Character for Sheep

Fleece and Skin

Advantages

Denser/tighter fleece
Greater crimp
More uniform fleece from shoulder to britch
Heavier – shearing fleece
Finer
Longer staple
More uniform grading fleece
Freer of black fiber
More character
More uniform crimp
Should shear more pounds of clean fleece
Bolder crimp of fiber

Disadvantages

Loose/open fleece
Lacks crimp
Ununiform
Lbs light fleece
Lacks character
Contains black fiber
Coarse in her britch wool
Harsh
Dirty
Belly wool

Head

Advantages

More (breed) character
More open faced (Hamps, Rambouillets, Shrops)
Darker about the points (Hamps and Suffolks)
More correct set to the ear
More femininity
More complete wool cap (Hamps, Rambouillets, and Columbias)
Longer, more bell shaped ear (Suffolks)
Longer-headed (Suffolks)

Disadvantages

Long, narrow head

Plain (Coarse) – headed
Roman-nosed
Wooly headed
Wooly eared
Parrot mouth
Short-eared (Suffolks)
Black in the poll (Hamps)

Breed Character

Advantages

Blacker about points
Longer more bell shaped ear

Suffolk

Disadvantages

Brown legged/headed
Small

Fuller wool cap
Smaller thicker ear

Hampshire

Broken wool cap/bare headed
Large ear

Shorter thicker ear
Shorter muzzle

Dorset

Large ear
Longer muzzle

* Proper description of various sheep breeds can be found at the South Dakota State University Livestock judging website: <http://ars.sdstate.edu>.

SWINE TERMINOLOGY

BREEDING SWINE TERMINOLOGY

Breeding swine are placed on a combination of:

- * structural correctness
- * volume
- * scale – growth potential
- * correctness of condition
- * balance
- * muscle
- * sex characteristics

MARKET SWINE TERMINOLOGY

Market swine are generally placed on a combination of:

- * muscle
- * leanness
- * structural correctness
- * balance
- * volume

Structure

Advantages

Angulation/cushion of pastern
Sounder
More flex (give) through her hock or knee
Freer or easier moving
More desirable slope to his/her shoulder
Leveler rumped gilt that was more correct in her movement
Longer strided
Straighter tracking
Truer from knee to ground
Looser jointed
Heavy bone
More durable, heavier structured
More even toe size
Sets down a bigger foot
More confinement adaptable as she is....

Disadvantages

Stiff or steep in her pasterns
Least structurally correct
Stiff and peggy behind
Tighter moving
Straight shouldered
Steep rumped
Short strided
Cow hocked
Over in his knees
Tight jointed
Frail
Refined
Uneven toe size
Small footed

Growth – Production

Advantages

Appears to have taken fewer days to 240 lb
Appears to be a faster growing
More youthful appearing, later maturing
Larger (scaled, outline)
More production oriented

Disadvantages

Appears to have taken the most days to 240 lb
Slowest growing
Earlier maturing
Small scaled, short bodied
Slow growing, pounds light

SWINE TERMINOLOGY

Muscling

Advantages

More (correct, desirable) in her muscle (design, pattern)
Longer and looser in her muscle design
Heavier muscled
Squarer and thicker rumped, hipped
Longer & looser in her muscle design
More muscular down her top
More correctly shaped down her top
More expressive down her top
Meatier spread down his top
Thicker (top, rump, ham)

Breeding Gilts

Disadvantages

Tight in her muscle design
Tight wound
Light muscled
Narrow rumped
Tight wound
Narrow topped

More expressively muscled
Square, more muscular top
Wider rumped
More shape ham

Market Hogs

Flat
Narrow topped
Narrow rumped
Flat hammed

Leanness

Advantages

Leaner/trimmer
Cleaner elbow pocket
Leaner shape of top
Cleaner jowl
Showed more blade action, movement

Disadvantages

Heavier condition
More condition in elbow pocket
Round top
Wasty jowl

Balance

Advantages

Leveler design/leveler topped
High tail setting
Longer necked, longer fronted
Longer sided

Disadvantages

Broken topped or high topped
Steep rump
Short necked
Short sided, coupled

SWINE TERMINOLOGY

Volume/Stoutness

Advantages

Higher volume/more capacious
Fuller ribbed
More spring of her rib
Greater spring of rib
Wider based
Wider chested
Wider (between/ through) his blades
More width of skeleton
Bigger bladed, bolder bladed

Disadvantages

Least capacious
Shallow ribbed/tight ribbed
Flat rib
Flat ribbed
Narrow based
Narrow chested
Narrow and flat shouldered
Narrow skeleton
Tight shouldered

Sex Characteristics

Female

Advantages

Prominent underline
More evenly spaced underline
Finer, more desirable texture
More correct teat (nipple) design
Set further forward

Disadvantages

Flat underline
Uneven spacing
Coarse underline
Inverted nipple/pin/blunt
Pin nipple

Male

Advantages

More testicular development
Cleaner tighter sheath
More rugged/muscular appearing
More aggressive

Disadvantages

Least testicular development
Wasty sheath
Frail, fine boned

Carcass

Advantages

Should rail a carcass requiring the least fat trim
Should yield a carcass with a higher % muscle
Should have a greater lean yield
Should have a leaner, more shapely carcass
Should have a higher % of primal cuts
Should have a carcass with the highest % lean

Disadvantages

The most fat trim
The lowest % muscle or lean

BEEF PERFORMANCE DATA

Production Situations for Beef Cattle

Different types of cattle may work better in different situations. Performance data can help select among animals of the same breed.

When selecting cattle, three basic factors should be addressed when making selections:

1. **Breeding Program**
 - What type of breeding program is being used?
 - How are the selected animals to be used in that program?
 - What are the goals or objectives of this breeding program?
2. **Feed and Labor Resources**
 - Under what conditions are the animals being raised?
 - Are feed resources readily available or limited?
 - Are labor resources readily available or limited?
3. **Marketing Program**
 - How are the cattle marketed?
 - At what age and/or weight are the cattle to be sold?
 - For what type or kind of buyer are the cattle being produced?

Performance Data & EPD's Utilized in Beef Production

1. **Birth Date** – Date an animal was born (actual).
2. **Birth Weight** – The weight of a calf taken at birth. Heavy birth weights are associated with calving problems and sometimes death of the calf or cow (actual, ratio, or EPD).

3. **Weaning Weight** – The weight of a calf taken between 160 and 250 days of age and then adjusted to a constant age of 205 days (actual, ratio, or EPD).
4. **Yearling Weight** – The weight of an animal taken between 330 and 440 days of age and adjusted to a constant age of 365 days (actual, ratio, or EPD).
5. **Maternal Milk EPD** – The difference in pounds of calf expected at weaning due to differences in milking and mothering ability of the cow.
6. **Yearling Scrotal Circumference** – The distance around the testicles in the scrotum of a bull at 365 days of age measured in centimeters. A greater scrotal circumference indicates that a bull should have the capacity to produce greater volumes of semen and his progeny should reach puberty at earlier ages (actual or ratio).
7. **Hip Height or Frame Score** – Height at the hip in inches, or height at the hip in inches for a particular age (actual or ratio).

SHEEP PERFORMANCE DATA

Production Situations for Sheep

Much like beef cattle scenarios, sheep scenarios are designed to inform the student of the important areas within an enterprise. When selecting sheep, three basic factors should be addressed:

1. **Breeding Program**
 - What type of breeding program is being used – purebred, crossbred, or rotational?
 - What are the goals or objectives of the breeding program?
2. **Feed and Labor Resources**
 - Under what conditions are the animals being raised?
 - Are feed and labor resources readily available or limited?
3. **Marketing Program**
 - How are the sheep marketed?
 - At what age and/or weight are the sheep to be sold?
 - For what type or kind of buyer are the sheep being produced?

Performance Data Utilized In Sheep Production

1. **Birth Date** – Date an animal was born (actual).
2. **Birth Weight** – The weight of a lamb taken within 24 hours after birth. Heavy birth weights are associated with lambing problems (actual, ratio).
3. **Type of Birth and Type of Rearing** – The number of lambs born and raised by a ewe. The following designations are used: S-single; TW-twin; TR-triplet; Q-quadruplet (e.g., Type of birth – TW, type of rearing-S).
4. **Weaning Weight** – A specified weaning weight will be given for one of the age-weight categories. Usually, weaning weight would correspond with 30, 60, 90, or 120-day weight (actual, ratio, FEPD).

5. **Yearling Weight** – The weight of a sheep taken after 335 days of age and before 395 days of age and adjusted to a constant age of 365 days (actual, ratio, FEPD).

6. **Fleece Quantity and Quality** – Wool measurements on an animal are taken only once in its lifetime and should be measured at approximately one year of age. Wool measurements include:

Grease Weight – Weight of the freshly shorn fleece in pounds to the nearest tenth of a pound.

Clean Weight – Weight of the cleaned fleece.

Staple Length – Length of the unstretched wool fibers in inches to the nearest tenth of an inch, obtained from the mid-side area of the animal.

Grade – Fleece grade is recorded to measure the fineness of a fleece.

Expected Progeny Differences for Sheep:

Maternal EPD's

- **Number of Lambs Born** – An indicator of prolificacy or the genetic ability of the ewe to produce lambs.
- **Pounds of Lamb Weaned** – An indication of reproductive rate, maternal ability of the ewe, lamb survivability, and growth.

Growth EPD's

- **Weights at Preweaning, Weaning, and Postweaning** – These EPD's correspond to the age-weight categories of 30, 60, 90, 120, 180 and 365 day weights in lambs.

Wool EPD's

- **Wool EPD's** – are listed for grease fleece weight, clean fleece weight, staple length, and fiber diameter.

SWINE PERFORMANCE DATA

Production Situations for Swine

Production situations for swine classes with performance data take on slightly different formats than for classes of beef cattle or sheep. In scenarios for swine, a complete description of the following three important factors should be addressed:

1. **Breeding Program**

- What type of breeding program is being used?
- How are the selected animals to be used in that program?

2. **Marketing Program**

- How are the hogs marketed?
- For what type or kind of buyer are the hogs being produced?

3. **Type of Environment**

Example: Confinement, partial confinement, or non-confinement

Performance Data Utilized in Swine Production

1. **Birth Date** – Date an animal was born (actual).
2. **Number Born Alive** – The number of pigs in a litter that were born alive (actual, NBA_{EPD})
3. **Number weaned** – The number of pigs in a litter that were weaned at 21 days (actual).

4. **Litter 21-day Weight** – Weight of an entire litter of pigs, 14 and 28 days (actual, ratio, $LW21_{EPD}$).
5. **Sow Productivity Index** – Also referred to as SPI. Sow productivity index is an indicator of maternal ability (actual, ratio).
6. **Days to 230 Pounds** – An indicator of growth rate, days to 230 is the number of days required for a hog to reach 230 pounds. A lower number is more desirable than a higher number (actual, $DAYS_{EPD}$)
7. **Backfat Thickness** – The depth of backfat listed either as average backfat thickness or tenth-rib fat depth. A lower number indicates that a hog is leaner than a hog with a higher number (actual, ratio, BF_{EPD}).

Expected Progeny Differences for Swine:
EPD's for swine have been developed primarily for the economically important traits associated with swine production.

Maternal EPD's

- Number born alive (NBA)
- Litter 21-day weight (LW21)

Growth and Carcass EPD's

- Days to 230 (DAYS)
- Backfat depth (BF)

SELECTION INDEXES;

- Sow productivity index (SPI)
- General purpose index (GPI)
- Maternal line index (MLI)
- Terminal sire index (TSI)

Example Class with Performance Data and Production Scenario: Before you can place a performance class you must understand three important areas of the scenario and what it asks for.

YEARLING ANGUS BULLS

Scenario

These bulls will be used in a rotational crossbreeding program utilizing Angus x Hereford x Simmental. Bulls will be mated to both cows and heifers. The producer wishes to maintain his mature cow size at 1,150 to 1,250 pounds. The producer is located in Western South Dakota where feed and labor is adequate. The top 40 percent of his heifer calves will be retained, with the remainder of the cattle finished in a feedlot and marketed on a grade and yield basis.

Expected Progency Differences

Bull No.	Birth Date	Actual Birth Wt.	Birth Weight	Weaning Weight	Yearling Weight	Milk
1	02/07	86	1.0	41.0	60.0	22.0
2	02/14	105	8.6	42.0	78.0	5.0
3	02/28	75	-1.0	45.0	75.0	18.0
4	03/04	80	1.5	39.0	57.0	9.5
Breed Avg.			3.5	35.0	55.0	13.0

After analyzing the scenario, you can see that these bulls will be used on both heifers and cows in a rotational breeding program. The rancher wishes to maintain a cow between the weight of 1,150 and 1,250 pounds. He has adequate feed and labor typical of a Western South Dakota ranch. His marketing program requires him to keep his own replacements and retain ownership on the remainder of the calves. Thus, to maximize production, the producer must put emphasis on maternal traits as well as growth traits.

Based on data, the bulls should be placed 3-1-4-2. Bull 3 best fits the scenario with the most desirable maternal traits, combined with high growth traits. Bull 2 has the most growth potential, but 2 is the least maternally oriented, having the highest birth and the lowest milk. Two's growth will not maintain the desired cow size. The middle pair of bulls, 1 and 4, have very similar data with 1 having a slight advantage maternally and slightly higher growth data. Based on the given data, 3 has the advantages on paper with bulls 1 and 4 being similar and 2 being the least acceptable for the scenario.

YORKSHIRE GILTS

Scenario

Rank these gilts as you would use them as replacements in a purebred Yorkshire herd. You profit mainly from the sale of performance-tested boars and gilts to commercial swine operations, however, you do sell a few purebred boars as herd sires. All of your hogs and your customers' hogs are raised in total confinement.

EPDs					
No.	Birth Date	NBA	21-d LW	Days to 240	BF
1	3/27	+0.25	+1.92	-1.22	-0.03
2	4/4	+0.32	+3.40	-3.28	-0.01
3	4/8	+0.15	+1.33	-0.94	+0.04
4	4/8	-0.05	-0.39	+2.05	+0.06
Breed Avg.		.10	+1.0	-.5	0.00

The scenario asks for the replacement gilts to be replacements in purebred Yorkshire herds. The producer sells a majority of his offspring to commercial producers who put emphasis on production traits as well as large scaled, lean breeding stock. An important part of the scenario is that all hogs are raised in confinement. Thus, emphasis needs to be placed on selecting structurally sound hogs that are level designed and loose in their make up.

Based on the data alone, gilt 2 excels in performance traits with a negative EPD of -3.28 for Days to 240 lb. This means her offspring will be the fastest growing, taking the fewest days to reach 240 lb. She also has a negative EPD for back fat, thus her offspring should also be leaner than gilts 3 or 4. She also is the most maternally oriented, having the highest number born alive (NBA) EPD, as well as the heaviest 21-day litter weight (21-d LW) EPD. Providing she is structurally sound and is a quality gilt from a visual standpoint, she should make a good replacement. Gilt 1 ranks second on data having more desired EPDs for NBA, 21-d LW, days to 240, and backfat than gilts 3 or 4. Gilt 3 is a more maternally oriented gilt that should have faster growing offspring that are leaner because she has a negative EPD for Days to 240 lbs as well as a leaner backfat EPD (+.04 vs +.06). Gilt 4 has the least desirable data because she has the poorest maternal data, being negative for both NBA and 21-d LW, as well as having positive EPDs for both Days to 240 and Back Fat. The data would indicate that Gilt 4's offspring will be both the heaviest conditioned as well as the slowest growing.

SUFFOLK RAM LAMBS

Scenario

Rank these rams as you would use them for stud rams in a purebred Suffolk flock. Feed and labor resources are more than adequate to maintain the flock of ewes. You profit mainly from selling rams and ewes to other purebred Suffolk breeders and a few rams to commercial sheep producers. You retain your own replacement ewes.

EPDs

No.	Birth Type	Birth Rearing	Birth Weight	Maternal		Growth	
				Lambs Born	Pounds Weaned	60-day Weight	365-day Weight
1	TW	TW	9.3	-.6	-1.0	+0.5	+5.2
2	S	S	12.0	-.2	0.0	+1.3	-2.7
3	TW	S	10.2	+.3	+5.0	+2.0	+12.2
4	TR	TW	9.6	+.4	+6.1	+3.1	+10.7
Breed Avg				+1.1	+1.0	+1.0	+2.5

After reviewing the scenario you realize the breeder is a purebred producer, who profits from selling offspring to other producers. The producer has more than adequate amounts of feed to maintain his sheep. His marketing program requires him to select his own replacements, yet produce high enough quality offspring to sell to other purebred breeders. To maximize profit in this scenario, the producer must emphasize a balance of the traits as well as visual appraisal.

When analyzing the data alone, rams 3 and 4 are more maternally oriented, with better growth data than either ram 1 or 2. Ram 4 best fits the scenario, having the best balanced data of the four. Ram 4 is the most maternally oriented, having the highest EPD for Lambs Born and Pounds Weaned. Ram 4 doesn't have the highest growth data, but it is more than adequate to meet the demands of the scenario. Ram 3 has the highest 365-day Weight EPD but cannot match the maternal strengths of Ram 4.

Rams 1 and 2 both give up performance as well as maternal strength to rams 3 and 4. Ram 1 has higher growth data and maternal data. Two has the lowest growth data. Thus, Ram 2 will sire the smallest lambs on average of the four rams at 1 year of age. Both Rams 1 and 2 need to be evaluated for visual traits.

LIVE ANIMAL EVALUATION

A livestock producer must possess the proper understanding of live animal and carcass evaluation in order to remain competitive in today's changing market place. Furthermore, he should develop an ability to correlate these factors with the conformation or shape of the live animal. Ultrasound has proven to be an important tool to aid in selection. However, visual appraisal has the advantage of being faster and less expensive. Most market animals are bought and sold on the basis of visual estimation.

BEEF CATTLE GRADING

Economically important traits for beef cattle evaluation that will be discussed are: 1) live weight; 2) dressing percent; 3) muscling; 4) fat thickness; 5) yield grade; and 6) quality grade.

Live Weight – Beef Cattle have a wider range of market weights than other species due to differences in type and maturity.

Normal Range: 950-1500 lb
Average: 1150 lb

Dressing Percent – Dressing percent is important because it reflects the amount of carcass in relation to the animal's live weight. Dressing percent is calculated by using the following formula:

$$\frac{\text{Hot Carcass Wt.}}{\text{Live Animal Wt.}} \times 100 = \text{Dressing \%}$$

Dressing percent is affected by the fill, finish, muscling, sex, type, and whether the animal is pregnant or not.

Normal Range: 55-67% for steers and heifers
Average: 62% for Choice steers and heifers

Muscling – Muscling can be estimated visually by a number of traits. A good indication of total carcass muscle is the ribeye. Generally, an average beef steer has approximately 1.1 sq. in. of ribeye area per 100 lb live weight. For example – a 1,000 lb steer should have an 11.0 sq. in. ribeye.

Normal Range: 10 – 18.0 in²
Average: 12.6 in² for a 1150 lb steer; 11.6 in² for a 1150 lb heifer

Fat Thickness – The primary estimate of fatness is fat thickness at the 12th rib. It is used to assess total fat on the carcass.

Normal Range: .15 - .8 in.
Average: .5 in.

Yield Grade – Yield grade is an estimate of percent retail yield of the four primal cuts of beef (chuck, rib, loin, and round) and is also known as cutability. Yield grade identifies the difference in the yield of lean red meat to waste fat. (Figure 14)

- USDA 1 – Most desirable, trim
- USDA 2
- USDA 3 – Industry average
- USDA 4
- USDA 5 – Least desirable, excessively fat

Yield grade is based on the four following traits:

- 1) hot carcass weight
- 2) fat thickness at the 12th rib
- 3) percent of kidney, heart, pelvic fat
- 4) ribeye area

The following is a three-step method for calculating yield grade;

- 1) A preliminary yield grade is first determined solely on 12th rib fat thickness.

$$\text{PYG} = 2.0 + (2.5 \times \text{fat thickness})$$

Thickness of Fat Over Ribeye, in.	Preliminary Yield Grade
.2	2.5
.4	3.0
.6	3.5
.8	4.0
1.0	4.5
1.2	5.0
1.4	5.5

- 2) Adjust the preliminary yield grade using the estimates of ribeye area and carcass weight. Carcass weight of the animal can be calculated by estimating the animal's dressing percent and multiplying it by the live weight of the animal.

Carcass Wt. (lb)	Required Ribeye Area
500	9.8
550	10.4
600	11.0
650	11.6
700	12.2
750	12.8
800	13.4

Adjust the preliminary yield grade by 0.3 for every 1.0 sq. in. change in ribeye from the size given for a particular carcass weight. If you estimate an animal to be above average in muscling, the adjustment is subtracted from preliminary yield grade; if below average in muscling, then the adjustment is added.

$$\text{PYG Adj.} = (\text{Required REA} - \text{Actual REA}) \times 0.3$$

- 3) Estimation of percent kidney, pelvic, and heart fat (KPH%) in live steers is extremely difficult to asses with consistent success. The average KPH% for an average steer is 2.5%. Thus, the adjustment for every 1.0% change above or below 3.5% is .2 of a yield grade. If internal fat is above 3.5%, the adjustment factor is added; if below, the adjustment factor is subtracted.

$$\text{PYG Adj.} = (\text{Actual KPH} - 3.5) \times .02$$

Example:

Fat Thickness = 0.2 in. Preliminary Yield Grade = 2.5

Ribeye Area = 14.5 sq. in. Adjustment for REA = -.7

(live wt. = 1,130 lb, dressing percent is estimated at
62%, thus carcass wt. = 700 lb)

Percent Internal Fat = 2.5% Adjustment Factor = -.2
Final Yield Grade = 1.6

Quality Grade - Quality is important in meat products to insure customer satisfaction. Quality can be identified as those factors that affect the palatability or tastefulness, flavor, and juiciness of the meat. Quality grading of beef carcasses is determined by two subjectively scored factors in all cases where color, texture, and firmness of lean are normal. (Figure 15)

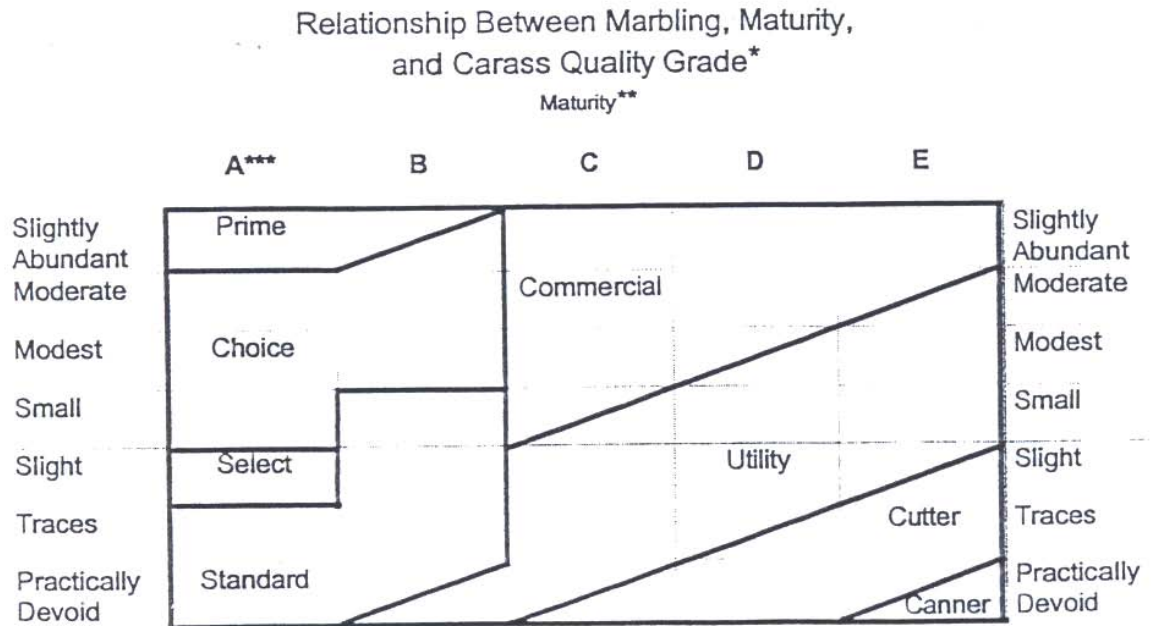
Maturity – is the physiological age of the carcass. Maturity is important since the tenderness of lean muscle decreases as the animal advances in age. It is measured by the degree of ossification of the vertebrae.

Approximate Age	9-30	30-42	42-54	54-72	≥72
Maturity	A	B	C	D	E
Classification	Young Cattle		Mature Cattle		

Marbling – The amount of fat within the muscle is known as marbling or intramuscular fat. The marbling is scored in the ribeye muscle at the 12th rib. There are nine degrees of marbling and they are listed from the least amount to the highest.

- | | |
|-----------------------|------------------------|
| 1. Practically Devoid | 6. Moderate |
| 2. Traces | 7. Slightly Abundant |
| 3. Slight | 8. Moderately Abundant |
| 4. Small | 9. Abundant |
| 5. Modest | |

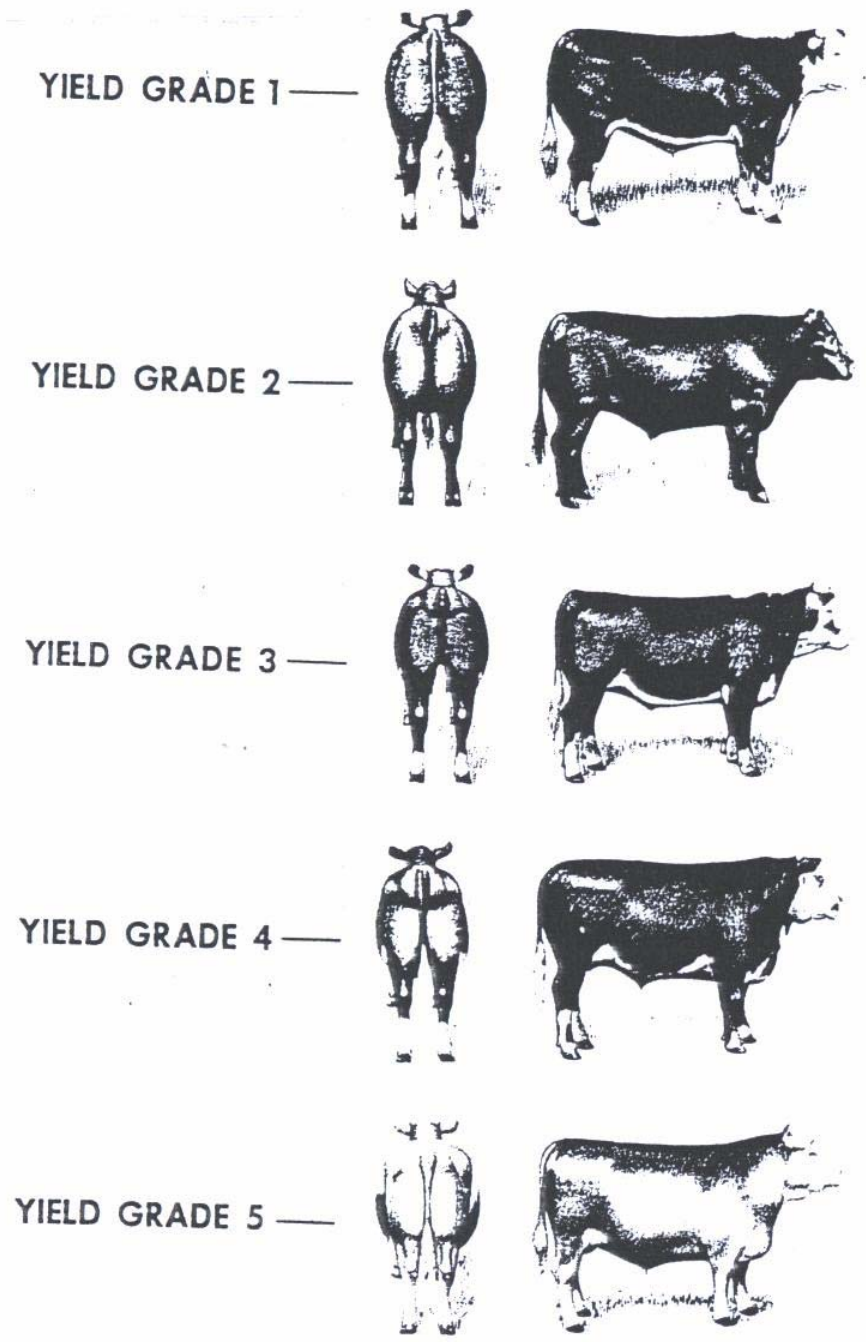
Maturity and marbling are evaluated and combined to determine the final quality grade. These eight quality grades of beef are shown below.



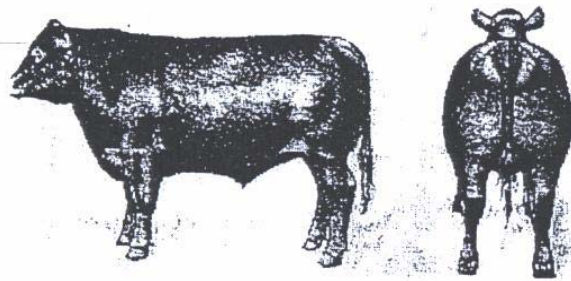
* Assumes that firmness of lean is comparably developed with the degree of marbling and that the carcass is not a "dark cutter."
 ** Maturity increases from left to right (A through E)
 *** The A maturity portion of the Figure is the only portion applicable to bullock carcasses

Beef Cattle Yield Grades

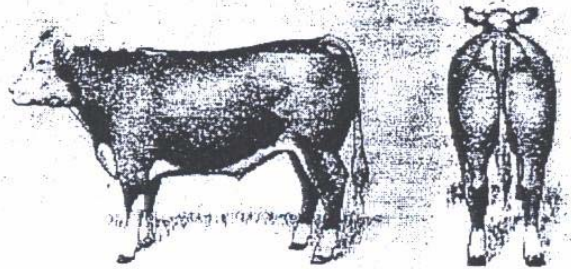
Figure 14



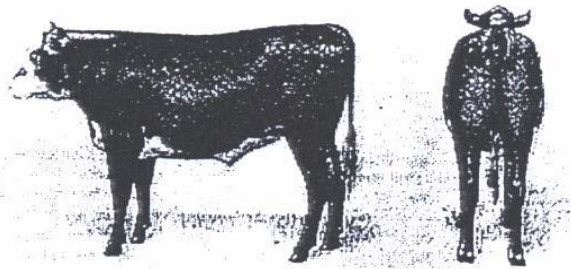
Beef Cattle Quality Grades
Figure 15



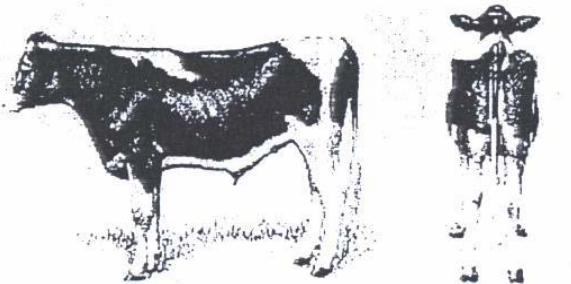
Prime



Choice



Select



Standard

SWINE GRADING

As in beef, economically important carcass and live traits are considered in swine and are as follows: 1) live weight; 2) dressing percent; 3) fatness; 4) carcass length; 5) muscling; 6) USDA grade; and 7) percent muscle.

Live Weight – Market hogs do not vary in live weight as much as beef cattle and can be subjectively estimated with more accuracy.

Normal Range: 190-270 lb
Average: 245 lb

Dressing Percent – Dressing percent is highest of the three meat animal species due to the fact that pigs are the only monogastrics. Dressing percent of market hogs with adequate condition should grade choice.

Normal Range: 68-77%
Average: 72%

Fat Depth – Last rib fat depth is measured at the last rib, and is the primary factor in determining carcass grade. Tenth rib fat is measured between the 10th and the 11th and is also used in calculating percent muscle.

Muscling – The degree of muscling of a hog is considered when grading market hogs and pork carcasses. Three degrees of pork carcass muscling are recognized in the pork grading standards shown in Figure 18.

Muscle Score #1 – Thin (Inferior)
Muscle Score #2 – Average
Muscle Score #3 – Thick (Superior)

Loin eye area is also another estimate of carcass muscle and is used in the

percent muscle equation. Loin eye area is measured between the 10th and 11th ribs on pork carcasses and is highly correlated to carcass muscle.

Normal Range: 3.5 - 7.0 in²
Average: 4.8 in²

USDA Grade – USDA grade is determined based on quality indicating characteristics of the lean and expected yield of the four lean cuts (ham, loin, picnic shoulder and Boston butt). The following equation is used to estimate the grade of barrow or gilt carcasses:

USDA Grade = (4.0 x Last Rib Backfat Thickness, in) – (1.0 x muscle score)

The muscle scores in this equation are: thin = 1.0; average = 2.0; and thick = 3.0. Exceptions to this equation are that carcasses with thin muscling cannot grade U.S. No. 1 regardless of last rib fat depth (LRFD) and carcasses with 1.75 in. or more of LRFD cannot be graded as U.S. No. 3 regardless of muscling. Figure 16 depicts USDA Grades for Swine.

Percent Muscle – A more accurate and precise method is assessing differences in carcass yield of lean red meat. The factors used to predict percent muscle include hot carcass weight (HCW), loin eye area (LEA), and tenth rib fat depth (10RFD). The following is an equation used to estimate pounds of muscle containing 5% fat:

Lb of muscle containing 5% fat =
 $7.231 + (.437 \times \text{HCW}) + (3.877 + \text{LEA}) - (18.746 \times 10\text{RFD})$

Percent muscle can then be calculated as follows:

$\% \text{ muscle} = \frac{\text{Pounds of muscle}}{\text{Hot carcass weight}} \times 100$

USDA Grades for Swine
Figure 16

**Preliminary
Grade**

U.S. No. 1



U.S. No. 2



U.S. No. 3



U.S. No. 4



U.S. Utility



**Muscling
Scores**

Thick



Average



Thin



LAMB GRADING

Lamb grading, much like beef grading, requires seven carcass traits to be evaluated; 1) live weight; 2) dressing percent; 3) fat thickness; 4) muscling; 5) ribeye area; 6) yield grade; and 7) quality grade.

Live Weight - Lambs are normally slaughtered from 100 – 140 pounds depending on market conditions as well as breed of the lamb.

Normal Range: 90 – 150 lb
Average: 125 lb

Dressing Percent – Because lambs are finished at lighter weights and because they are ruminants with a greater proportion of their live weight in the form of offal, dressing percent is affected by four main factors in lambs; 1) finish; 2) fill; 3) fleece; and 4) muscling.

Normal Range: 45 – 57%
Average: 52% shorn lambs
50% unshorn lambs

Fat Thickness – Fat thickness is used to calculate yield grade and is taken over the ribeye muscle at the 12th rib. Adjusted fat thickness is the average of two measurements taken over the ribeye on each side of the carcass.

Normal Range: .05 - .5 in.
Average: .25 in.

Yield Grade – Yield grade in lambs is used to estimate the yield of boneless, closely trimmed retail cuts from the leg, loin, rack and shoulder. The only factor used to estimate yield grade is fat thickness at the 12th rib. The formula for yield grade is as follows:

Yield Grade = .4+
(10 x adjusted fat thickness in inches)

Muscling – Muscling does not contribute to calculating yield grade, but it does contribute to overall cutability of the carcass. Ribeye and leg conformation score are measures that indicate muscling. Ribeye area is a cross section of the longissimus dorsi muscle and is measured between the 12th and 13th rib.

Normal Range: 1.5 – 3.6 in²
Average: 2.6 in.²

Quality Grade – Quality grades in lambs are based on 1) maturity score; 2) flank streakings; and 3) conformation score. Grades of lambs are as follows: Prime, Choice, Good, Utility, and Cull.

Maturity of lambs is based on the age of the lamb and is measured by the presence or absence of a break joint as well as the color and texture of the lean. To be classified as lamb, a carcass must have at least one break joint. Flank streaking is dependent on the overall degree of carcass finish. Conformation is used to estimate degree of adequate muscling in a carcass.

In estimating quality grade of lambs, all three factors are used. It should be kept in mind that approximately 98% of all lambs grade Choice or above with 2% grading Good in young lambs.

GLOSSARY

Accuracy (Reasons) - In a livestock judging contest, the contestant's ability to describe correctly the differences among animals in a class.

Actual Data - The actual records of the individual. For example, an Angus bull calf might have a 600 lb weaning weight, Dorset ewe might have a 90 lb weight at 90 days, or a Hampshire boar might have a loin-muscle area of 6.55 square inches.

Adaptability - The ability of an animal to adapt to changes in the environment in which it lives.

Age-weight Categories (Sheep) - Specific ages at which an animal's weight should be taken and recorded for evaluation of performance records and calculation of the appropriate FEPDs.

Backfat Thickness (Swine) - The depth of backfat, listed as either average, or as last-rib backfat thickness or tenth-rib fat depth. A lower number indicates that a hog is leaner than a hog with a higher number.

Barrow (Swine) - A castrated male; castrated boar pig.

Birth Date - Date an animal was born.

Birth Weight - The weight of an animal taken at birth. Heavy birth weights are associated with calving problems in beef cattle, lambing problems in sheep, and farrowing problems in swine. Heavier weights also tend to be associated with greater survival rates.

Boar (Swine) - An intact male; not castrated; a male capable of breeding females.

Bovine (Beef Cattle) - Scientific name for domestic beef and dairy cattle.

Breed Character - Particular characteristics of separate breeds that distinguish animals among the various breeds (e.g. color, horns, ear set, wool type).

Breed Class - Any set of categories that classify breeds according to appearance or function.

Breeding Animal - An animal kept for the purpose of breeding, as opposed to a market animal.

Bull (Beef Cattle) - An intact male; not castrated; a male capable of breeding females.

Calf (Beef Cattle) - An animal less than one year of age.

Calving Ease (Beef Cattle) - the ability of a heifer or cow to deliver a calf without difficulty.

Carcass - The muscle, bone, and fat associated with the slaughter of an animal after the removal of the head, hide, and viscera (internal organs).

Carcass Length (Swine) - The linear measurement from the anterior of the first rib to the anterior of the aitch bone (hipbone).

Carcass Quality - The observed properties of a carcass that may directly or indirectly influence the palatability characteristics of the edible meat.

Conformation - The overall appearance of an animal or composition of a carcass.

Cow (Beef Cattle) - A female that has had a calf.

Cutability - The percentage of boneless, closely trimmed, retail cuts of a carcass.

Dam - The female parent of an animal.

Days to 230 (Swine) - An indicator of growth rate; days to 230 is the number of days required for a hog to reach 230 pounds. A lower number is more desirable than a higher number.

Delivery (Reasons) - The manner with which a livestock judging contestant presents his or her reasons.

Distance (Reasons) - how far you stand from the judge. Depending on your voice and stature, the distance you stand from the judge will vary. Six to 10 feet is generally adequate.

Dressing Percentage - The proportion of carcass weight relative to live weight of an animal; carcass weight divided by live weight.

Early Maturing - An animal or breed that typically reaches puberty and the ability to reproduce at an earlier age than other animals of that breed or species.

Estimated Breeding Value (Beef Cattle) - An estimated breeding value (EBV) is similar to a ratio, but it accounts for all of the relationships in a pedigree and predicts how the progeny or offspring of a particular animal should perform in relation to the average for a group of animals. This value is an indication of an animal's expected performance due to genetics. The value can be used to compare performance of animals within a group.

Ewe (Sheep) - A female sheep of any age.

Expected Progeny Difference - An Expected Progeny Difference (EPD) takes into account the relationships in a pedigree and predicts how progeny or offspring of a particular animal should perform relative to animals from an average parent.

Fat Depth Tenth-rib (swine)- The linear measurement of fat depth taken at the tenth rib and at a position that is three-fourths the length of the loin eye.

Fat Thickness (Sheep, Beef Cattle) - The typical linear measurement of fat thickness taken over the ribeye.

Feed Efficiency – The calculated measurement of conversion of feed to body weight gain; pounds of feed divided by pounds of body weight gain.

Fertility – The associated characteristics of reproduction.

Fleece (Sheep) – The coat of wool covering a sheep.

Fleece Clean Weight (Sheep) – The weight, in pounds, of a fleece that has been washed appropriately.

Fleece Grade (Sheep) – The classification system used to describe grease wool. Three systems are used: the blood or American system, the numerical or English system, and the metric system.

Fleece Grease Weight (Sheep) – The weight, in pounds, of a freshly-shorn fleece that has not been washed or scoured.

Fleece Staple Length (Sheep) – The length, in inches, of a lock of shorn wool.

Fleece Type (Sheep) - A classification system to group sheep according to wool quality. Fleece type or wool type is considered as either fine, medium, long, or crossbred and describes the type of wool fiber characteristic of the breed.

Flock EPD (Sheep) - These EPDs are very similar to those used by the beef cattle industry to predict progeny performance of the animal. The EPDs can be listed as such, or may take the form of Flock Expected Progeny Differences (FEPD) for sheep, and presently can be used only within a flock.

Frame Score (Beef Cattle) – A numerical value associated with height at the hip in inches for a particular age.

General Purpose Index (Swine) – Ranks hogs on both growth and maternal traits and is well-suited for use in a rotational crossbreeding system.

Gilt (Swine) - A female that has not had a litter of pigs.

Growth Rate - Typically, the pounds of body weight gained during a specified period of time (e.g., average daily gain).

Hardiness – The ability of an animal to withstand the environment.

Heifer (Beef Cattle) – A female that has not had a calf.

Hip Height (Beef Cattle) - Height at the hip in inches.

Inflection (Reasons) - Voice inflection is one of the most important items in your delivery of oral reasons. Emphasis should be placed on the words that describe the important differences among animals and the important characteristics of each animal.

KPH Fat Percentage (Beef Cattle) - The amount of fat contained in the regions of the kidney, pelvis, and heart relative to the carcass weight.

Lamb (Sheep) – Any sheep less than one year of age.

Late Maturing - An animal or breed that typically reaches puberty and the ability to reproduce at a later age than other animals of that breed or species.

Leg Score (Sheep) - The subjective characteristic indicative of the total volume of muscle in the leg of a lamb. Muscle volume in the leg is reflective of total carcass muscle.

Litter Size (Swine) - The number of pigs in a litter.

Litter Weight at 21 Days (Swine) – Weight of an entire litter of pigs between 14 and 28 days of age and adjusted to a constant age of 21 days.

Loineye Area (Swine) – The surface area of the *Longissimus dorsi* muscle at the tenth rib of a pork carcass.

Market Animal - Any young animal intended for slaughter purposes.

Maternal - Referring to the dam's side of the pedigree.

Maternal Line Index (Swine) – Ranks hogs by both growth traits and maternal traits, with emphasis on the maternal EPDs.

Mature Cow Weight (Beef) – Average weight of a group of cows from six to ten years of age.

Milking Ability – The ability of a female to produce milk. Typically, larger quantities of milk result in heavier offspring at weaning.

Number Born Alive (Swine) – The actual number of pigs in a litter that were born alive.

Number Weaned (Swine) – The number of pigs in a litter that were weaned. The standard weaning age for swine is 21 days.

Percent Muscle (Swine) - The amount of lean meat contained in the carcass of a pig relative to the carcass weight.

Performance Data and Records - Objective numerical indexes of economically important traits associated with livestock production.

Pigment (Beef Cattle or Sheep) – The characteristic color found around the eyes of certain breeds of beef cattle.

Polled (Beef Cattle) – Natural trait of not having horns or not having the genetic ability to develop horns.

Post-weaning – After weaning.

Pre-weaning – Before weaning.

Presentation (Reasons) - The manner in which oral reasons are spoken to an official judge.

Production Situation – A description of particular limitations or goals of a breeding program that provides guidance for selection decisions involving the use of performance records (sometimes called scenario).

Progeny - All of the offspring from a particular parent animal.

Puberty - The age at which an animal is capable of reproducing.

Quality Grade – Those factors associated with palatability characteristics of the lean, edible portion of meat, including color, texture, firmness, marbling, and age.

Ram (Sheep) – An intact male; not castrated; a male capable of breeding females.

Ratio – To rank animals within the same herd or flock we generally use a ratio. A ratio consists of a number, typically around 100 that compares each animal to the other animals in a particular group. Any number less than 100 indicates that the animal's performance was inferior to or less desirable than the average of the group, whereas any number greater than 100 indicates that the animal's performance record was superior to or more desirable than the average of the group.

Ribeye Area (Beef Cattle, Sheep) – The surface area of the *Longissimus dorsi* muscle between the twelfth and thirteenth rib of a beef or lamb carcass.

Scrotal Circumference (Beef Cattle, Sheep) - The distance around the testicles in the scrotum of a bull or ram in centimeters, usually adjusted to 365 days of age. A greater scrotal circumference indicates that a male should have the capacity to produce greater numbers of sperm, and his progeny should reach puberty at earlier ages.

Sire – The male parent of an animal.

Sow (Swine) – A female that has had a litter pigs.

Sow Productivity Index (Swine) – Also referred to as SPI. Sow productivity index is an indicator of maternal ability and combines the number of pigs born alive and 21-day litter weaning weights into an index.

Steer (Beef Cattle) – A castrated male; a castrated bull.

Terminal Sire – A breeding male that is used to generate market animals; typically having high growth rate and desirable carcass characteristics.

Terminal Sire Index (Swine) – Ranks hogs on $DAYS_{EPD}$ and BF_{EPD} only, and does not include any maternal information.

Type of Birth (Sheep) – The number of lambs *born* to a ewe. The following designations are used: S-single, TW-twin, TR-triplet, and Q-quadruplet.

Type of Rearing (Sheep) – The number of lambs *raised* by a ewe. The following designations are used S-single, TW-twin, TR-triplet, and Q-quadruplet.

Underline (Swine) – The teats or nipples on the underside or belly of a pig.

Weaning – The time when young animals are removed from their mothers and forced to give up their dam's milk as a source of nutrients.

Weaning Weight – The weight of an animal at weaning or at a standard weaning age. Adjusted weaning weight is calculated for one of the standard weaning ages listed, and the standard age is listed also. The weight of a calf taken from 160 to 250 days of age and then adjusted to a constant age of 205 days. Standard weaning ages for lambs are 45, 60, 90, and 120 days. The standard weaning age for swine is 21 days.

Wether (Sheep) – A castrated male sheep; a castrated ram.

Yearling – An animal that is more than one year of age, but not more than two years of age.

Yearling Weight – The weight of an animal taken after 330 days of age and adjusted to a constant age of 365 days.

Yield Grade (Beef Cattle, Sheep) – The numerical designation (1-5) for the percentage of boneless, closely trimmed, retail cuts obtained from a carcass.