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AG. 140 - INTRODUCTION TO THE LIVESTOCK INDUSTRY

AG 140

INTRODUCTION

TO THE

LIVESTOCK INDUSTRY

FOR

IDAHO

SECONDARY AGRICULTURE INSTRUCTORS

Developed and written by:
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Administered through the
Department of Agricultural and Extension Education
University of Idaho
By
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FOREWORD

The Agricultural Science and Technology Curriculum Guides are the product of many years of careful planning and development. In 1987, an Agricultural Education Technical Committee was assembled to determine the competencies necessary to prepare students for careers in agriculture. In 1989, a committee of secondary agriculture instructors, state supervisory staff and University of Idaho Agricultural and Extension Education faculty arranged the competencies into an outline of courses appropriate for secondary agriculture programs in Idaho. These curriculum guides have been written to provide the secondary agriculture instructor with up-to-date instructional materials to be used in developing lessons for the student interested in pursuing a career in agriculture.

The arrangement of the guide follows the courses outlined in the Agricultural Science and Technology Curriculum Outline - The Guide to the 90's (Vo. Ed. #240) published in 1989. The format used in this guide was adapted from the curriculum guides developed for Idaho secondary agriculture instructors during the period of 1981-1985.

The original Idaho Agricultural Curriculum Guides used in the development of these materials were:

1981 - Livestock Production
1981 - Agricultural Mechanics
1982 - Farm Business Management
1985 - Crop and Soil Science

Many individuals made the original guides possible. The format used was adapted from curriculum developed by the Curriculum and Instructional Materials Center of the Oklahoma State Department of Vocational and Technical Education. Selected information and many of the transparency masters used in the guides were provided by the Vocational Instructional Services, Texas A & M University. Additional information and transparency masters were provided by the Department of Agricultural Communications and Education, College of Agriculture, University of Illinois and the Agricultural Education Program, Department of Applied Behavioral Sciences, University of California, Davis.

Laboratory exercises incorporated into the units of instruction were used from the Holt, Rinehart and Winston, Inc. book, Modern Biology, Biology Investigations and the Scott, Foresman, and Company Lab Manual for Biology. Credit appears on the first page of the materials used from these two sources.

Without the following individuals' dedication and commitment, this project would not have been completed.

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Technical Assistance for the Met Technology Unit (Ag 140-G) was provided by:

Dr. John Miller, Department of Animal and Veterinary Science, University of Idaho

USE OF THIS PUBLICATION

Introduction

This material must be taught. It does not replace the teacher, nor the teacher's expertise. The teacher needs to adapt the material to the local area and individual students. The teacher must also provide the necessary motivating techniques to help the students learn the material.

The pages in the guide are color coded to assist in identifying and locating the desired pages. The colors used are:

Table of Contents	Ivory
Semester Course Title Page	Green
Foreword	Yellow
Use of Publication	Salmon
Divider Page Between Units	Tan
Refer to Another Unit Page	Grey
Unit Objectives/Specific Competencies	White
Suggested Activities	Blue
Information Sheets	White
Transparency Masters	White
Assignment Sheets	White
Answers to Assignment Sheets	Gold
Instructors Notes for Laboratory Exercises	Blue
Laboratory Exercises	White
Answers to Laboratory Exercises	Gold
Unit Test	White
Answers to Test	Gold

Instructional Units

These units are not geared to a particular age level and must be adapted for the students with whom they are used. Units include objectives and competencies, suggested activities for the instructor and students, information sheet, transparency masters, assignment sheets, laboratory exercises, instructor notes for laboratory exercises, answers to assignment sheets and laboratory exercises, test and answers to test. Units are planned for more than one lesson or class period.

The teacher should carefully study each instructional unit to determine:

A. The appropriateness of the material for the age level

B. The amount of material that can be covered during a class period

C. Additional objectives and/or assignments, which could be developed

D. The skills that must be demonstrated

1. Supplies needed

2. Equipment needed

3. Amount of practice needed

4. Amount of class time needed for demonstrations

E. Supplementary materials, such as pamphlets, filmstrips and slides that must be ordered

F. Resource people who must be contacted

Objectives and Competencies

Each unit of instruction is based on stated objectives. These objectives state the goals of the unit, thus providing a sense of direction and accomplishment for the student.

The objectives are stated in two forms: unit objectives, stating the subject matter to be covered in a unit of instruction; and specific objectives, stating the student performances necessary to reach the unit objective.

Since the objectives of the unit provide direction for the teaching-learning process, it is important for the teacher and students to have a common understanding of the intent of the objectives. A limited number of performance terms have been used in the objectives for this curriculum to assist in promoting the effectiveness of the communication among all individuals using the materials.

Following is a list of performance terms and their synonyms that may have been used in this material:

Name	Identify	State a Rule	Apply a Rule
Label	Select	Calculate	
List in writing	Mark		
List orally	Point out		
Letter	Pick out		
Record	Choose		
Repeat	Locate		
Give	Match		

Describe	Order	Distinguish
Define	Arrange	Discriminate
Discuss in writing	Sequence	
Discuss orally	List in order	
Interpret	Classify	
Tell how	Divide	
Tell what	Isolate	
Explain	Sort	

Construct		Demonstrate	
Draw	Transcribe	Show your work	Replace
Make	Reduce	Show procedure	Turn on/off
Build	Increase	Perform an experiment	(Dis) assemble
Design	Figure	Perform the steps	(Dis) connect
Formulate	Conduct	Operate	
Reproduce	Compare	Remove	

Reading of the objectives by the student should be followed by a class discussion to answer any questions concerning performance requirements for each instructional unit.

Teachers should feel free to add objectives, which will fit the material to the needs of the students and community. When a teacher adds objectives, he/she should remember to supply the needed information, assignment sheets and/or laboratory exercises and criterion tests.

Suggested Activities

Each unit of instruction has a suggested activities sheet outlining steps to follow in accomplishing specific objectives. Duties of the instructor will vary according to the particular unit. However, for best use of the material they should include the following: provide students with objective sheet, information sheet, assignment sheets, and laboratory exercises; preview filmstrips, make transparencies, and arrange for resource materials and people; discuss unit and specific objectives and information sheet; give test. Teachers are encouraged to use any additional instructional activities and teaching methods to aid students in accomplishing the objectives.

Information Sheet

The information sheet provides content essential for meeting the cognitive (knowledge) requirements of the unit. The teacher will find that the information sheet serves as an excellent guide for presenting the background knowledge necessary to develop the skills specified in the unit objective.

Students should read the information sheet before the information is discussed in class. Students may take additional notes on the information sheet.

Transparency Masters

Transparency masters provide information in a special way. The students may see as well as hear the material being presented, thus reinforcing the learning process. Transparencies may present new information or they may reinforce information presented in the information sheet. They are particularly effective when identification is necessary.

Transparencies should be made and placed in the notebook where they will be immediately available for use. Transparencies direct the class's attention to the topic of discussion. They should be left on the screen only when topics shown are under discussion. (NOTE: Stand away from the overhead projector when discussing transparency material. The noise of the projector may cause the teacher to speak too loudly.)

Assignment Sheets

Assignment sheets give direction to study and furnish practice for paper and pencil activities to develop the knowledge which is a necessary prerequisite to skill development. These may be given to the student for completion in class or used for homework assignments. Answer sheets are provided which may be used by the student and/or teacher for checking student progress.

Laboratory Exercises

Laboratory exercises are found in selected units. The laboratory exercises include both science and agricultural mechanics activities. The science laboratory exercises often have instructions to the instructor prior to the actual laboratory. Procedures outlined in the laboratory exercise for agricultural mechanics give direction to the skill being taught and allow both student and teacher to check student program toward the accomplishment of the skill.

Test and Evaluation

Paper-pencil and performance tests have been constructed to measure student achievement of each objective listed in the unit of instruction. Individual test items may be pulled out and used as a short test to determine student achievement of a particular objective. This kind of testing may be used as a daily quiz and can help the teacher spot difficulties being encountered by students in their efforts to accomplish the unit objective. Test items for objectives added by the teachers should be constructed and added to the test.

Test Answers

Test answers are provided for each unit. These may be used by the teacher and/or student for checking student achievement of the objectives.

Care of Materials

The cost of reproduction of this guide prohibits the replacement of these materials. Therefore, please be extremely careful in handling originals. Make the necessary copies of the information sheets, transparencies, assignments and tests and replace originals in the curriculum guide notebook. Take extra care in keeping originals clear for future reproduction.

INTRODUCTION TO THE LIVESTOCK INDUSTRY

AG 140-A

UNIT OBJECTIVE

After completion of this unit students will be able to identify the importance and scope of the livestock industry in the United States, Idaho and the community. This knowledge will be demonstrated by completion of assignment sheets and a unit test with a minimum of 85 percent accuracy.

SPECIFIC OBJECTIVES AND COMPETENCIES

After completion of this unit, the student should be able to:

1. Match terms associated with an introduction to the livestock industry to their correct definitions.
2. Name ten types of livestock.
3. Name four products and three services livestock provide.
4. Identify the sources of Idaho cash farm receipts.
5. Identify Idaho's rank in the nation's agriculture for crops, livestock and livestock products.
6. Distinguish between primary and secondary food sources.
7. Describe reasons for and against using livestock as a food source.
8. List three specific careers in each of the seven areas of livestock industry employment.
9. Develop an opinion on the future of livestock production.
10. Conduct a community survey on the types of livestock raised in the area.
11. Be familiar with current employment information in the livestock industry.

INTRODUCTION TO THE LIVESTOCK INDUSTRY

AG 140-A

SUGGESTED ACTIVITIES

I. Suggested activities for instructor

- A. Make transparencies and necessary copies of material.
- B. Provide students with objectives and discuss.
- C. Provide students with information and discuss.
- D. Provide students with assignment sheets and discuss.
- E. Obtain background information on the local livestock industry.
- F. Invite a local rancher to come in and talk about the livestock industry in the local community.
- G. Have students collect articles on the livestock industry and share them in class.
- H. Divide class into groups to conduct the community survey and have them report their results in class.
- I. Review and give test.
- J. Reteach and retest if necessary.

II. Instructional materials

- A. Objective sheet
- B. Suggested activities
- C. Information sheet
- D. Transparency masters
  1. TM 1--Food Chains
  2. TM 2--Manure as a Fertilizer
- E. Assignment sheets
  1. AS 1--Develop an Opinion on the Future of Livestock Production
  2. AS 2--Conduct a Community Survey on the Types of Livestock Raised in the Area
  3. AS 3--Conduct a Survey of Current Employment in Livestock Industry

F. Test

G. Answers to test

III. Unit references

A. Badger, Daniel D., *Economics of Substitution and the Demand for Beef Feedlot Wastes: One Alternative for Solving Environmental Quality Problems.* Managing Livestock Wastes: The Proceedings of the 3rd International Symposium on Livestock Wastes, American Society of Agricultural Engineers, 1975.

B. Ensminger, M.E. *Animal Science.* The Interstate Printers and Publishers, Inc., Danville, Illinois, 1977.

C. Harper, Judson M., and Seckler, David. *Engineering and Economic Overview of Alternative Livestock and Waste Utilization Techniques.* Managing Livestock Wastes: The Proceedings of the 3rd International Symposium on Livestock Wastes, American Society of Agricultural Engineers, 1975.

D. *Idaho Agricultural Statistics.* United States Department of Agriculture, Washington, D.C., 1989.

INTRODUCTION TO THE LIVESTOCK INDUSTRY

AG 140-A

INFORMATION SHEET

I. Terms and definitions

A. Product--An actual material provided by an animal that can be eaten, worn or used

B. Service--A benefit provided by an animal

C. Receipt--Money coming in or received for a product or service

D. Concentrate--Feed high in energy and low in fiber
Example: grain

E. Roughage--Feed that is bulky, contains more than 18% crude fiber and is low in energy
Example: pasture

F. Cultivate--Working land to produce a crop

G. By-products--Products left after the main products have been extracted

H. Flexibility--Capacity for change

I. Elasticity--Ability of a farm operation to withstand changes in the supply or demand

II. Types of livestock

A. Beef

B. Dairy

C. Sheep

D. Swine

E. Dairy goats

F. Horses

G. Rabbits

H. Fish

I. Fur-bearing animals

J. Poultry

III. Products and services livestock provide

A. Products

1. Meat

2. Eggs

3. Milk

4. Clothing

5. Medicine

6. Fertilizer

7. Miscellaneous products
Example: Shoe polish, photographic film, soap, glue, lubricants

B. Services

1. Power
(Note: Animals used for power are found primarily in developing nations.)

2. Recreation

a. Horseback riding

b. Racing

c. Rodeos

d. Back-packing

3. Transportation--mainly used for large range operations in the West

IV. Sources of Idaho cash farm receipts - 1987

A. Cattle and calves -- 27.8%

B. Dairy products -- 13.1%

C. Hogs -- .6%

D. Sheep, lambs and wool -- 1.2%

E. Other livestock -- 2.1%

F. Total livestock -- 45.2%

G. Total crops -- 54.8%

V. Idaho's rank in the nation's agriculture - 1988

A. Livestock and livestock products

1. American cheese - 5
2. Honey - 11
3. Sheep, lambs and wool - 11
4. Milk production - 13
5. Milk cows - 18
6. All cattle and calves - 22

B. Crops

1. Potatoes - 1
2. Barley - 1
3. Sugarbeets - 3
4. Hops - 3
5. Mint (all) - 3
6. Onions (summer storage) - 3
7. Prunes and plums (fresh) - 4
8. Dry edible beans - 5
9. Sweet corn (for processing) - 5
10. Sweet cherries - 6
11. Alfalfa hay - 6
12. Wheat (all) - 8
13. Apples - 10

VI. Primary and secondary food sources (Transparency 1)

A. Primary -- Food source deriving energy directly from sun

B. Secondary -- Food source deriving energy from plants or animals

(Note: A secondary food source requires energy from the primary source for maintenance. Therefore, energy is lost as it is transferred through secondary sources.)

VII. Livestock as a food source

A. Factors against using livestock--Livestock provide a secondary food source and therefore use more energy to produce the same amount of food

Example: 400 pounds of grain will feed one man for one year. 2,000 pounds of concentrates are needed to produce enough meat and livestock products to feed one man for one year

B. Factors for using livestock

1. Usable plant energy would otherwise be wasted

a. Much of the world's land is not cultivated--46.8% of the land in the United States is pasture or grazing land, not including Alaska or Hawaii

b. Forages provide a high percentage of animal food

c. 95% of all energy fixed by plants is unusable by man, but can be used by ruminants

d. Animals can use otherwise wasted by-products

Example: Cottonseed hulls, corncobs, beet pulp, rice bran and hulls, wood by-products

2. Animals provide higher quality food

a. Higher in protein content

b. Better quality protein -- more amino acids

c. More digestible protein

d. More preferred by consumers

3. Animals provide other needed products such as medicine, power and fertilizer (Transparency 2)

Example: Medicine -- Twenty-six steer pancreas are needed to produce enough insulin to keep one diabetic alive for one year. There are 1.25 million people in the United States who require insulin regularly

Fertilizer -- One ton of manure contains 500 pounds of organic matter, 10-30 pounds of nitrogen, 5-20 pounds of phosphoric acid and 10-30 pounds of potassium. The United States' livestock industry currently produces 1.6 billion tons of manure annually

4. Animals increase flexibility of farm operations

   a. Stimulate grain production

   b. Provide elasticity to grain production

      Example: In high grain production years the excess can be fed to livestock, while in low production years forage can be substituted and grain can be marketed as cash crop

VIII. Careers in the livestock industry

A. Farming/Ranching

1. Manager

2. Foreman

3. Herdsman

B. Research

1. Production

2. Processing

3. Marketing

4. New equipment and use

C. Industry

1. Food processing

2. Pesticides and herbicides

3. Feed manufacturing

4. Dairy processing

D. Business

1. Agricultural banking

2. Farm management

3. Grading and packaging

4. Marketing

E. Education

1. Agricultural extension specialist
2. Vocational agriculture instructor
3. College instructor
4. Governmental agencies

F. Communications

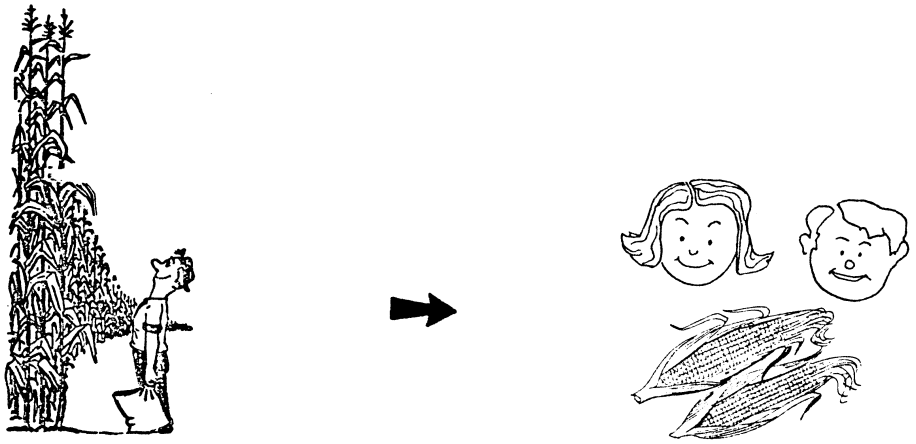
1. Farm reporting
2. Market reporting
3. Radio
4. Television

G. Service

1. Inspection and regulation
2. Plant and animal quarantine
3. Foreign service
4. Agricultural consultant
5. Veterinary

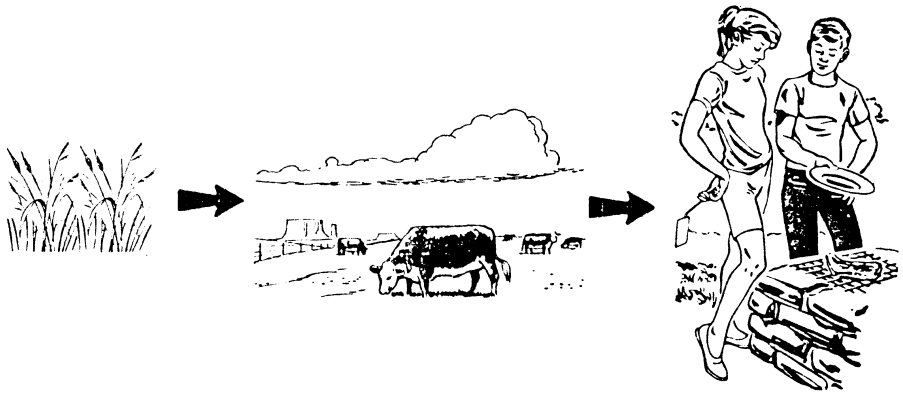
Food Chains

PRIMARY



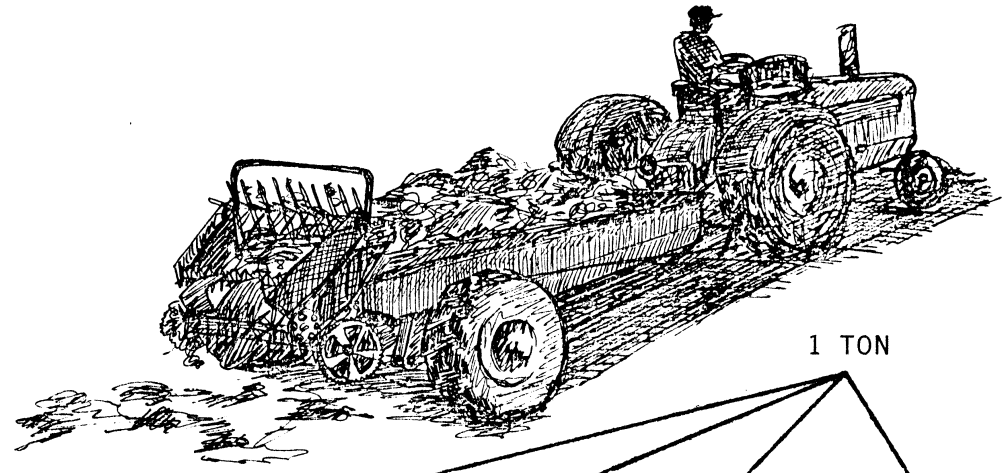
PLANT MAN

SECONDARY



PLANT ANIMAL MAN

Manure As A Fertilizer



1 TON = $6.00 - $11.33 FERTILIZER VALUE

1.6 BILLION TONS PRODUCED IN THE UNITED STATES

VALUE OF YEARLY MANURE CROP AT 1980 PRICES IS

9.6 - 18.1 BILLION DOLLARS

INTRODUCTION TO THE LIVESTOCK INDUSTRY

AG 140-A

ASSIGNMENT SHEET #1--DEVELOP AN OPINION ON THE FUTURE OF LIVESTOCK PRODUCTION

Name_____ Score_____

The world food situation is getting more critical every day. The role livestock will play in providing the world's food supply will depend on public opinion and political decisions as well as technological developments.

Write a few paragraphs outlining your views on the future of livestock production and the role livestock should play in providing the world's food supply.

INTRODUCTION TO THE LIVESTOCK INDUSTRY

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ASSIGNMENT SHEET #2--CONDUCT A COMMUNITY SURVEY ON THE TYPES OF LIVESTOCK RAISED IN THE AREA

Name_____ Score_____

You have looked at the livestock industry on a national and state level. This assignment is designed to help you get an idea of the type and importance of livestock in your community.

Take an informal survey of your community to find out the types and approximate numbers of different livestock raised in the area. People to ask would be farmers, ranchers, agribusiness people, bankers and state extension people. Use at least three sources.

Sources	**Types**	**Numbers**
1.		
2.		
3.		

INTRODUCTION TO THE LIVESTOCK INDUSTRY

AG 140-A

ASSIGNMENT SHEET #3--CONDUCT A SURVEY OF CURRENT EMPLOYMENT IN LIVESTOCK INDUSTRY

Name_____ Score_____

There are many employment opportunities available in the livestock industry. For this assignment, you may either survey people in your community working in the livestock industry, or use available resources from the library, agriculture classroom or other written materials.

List at least 15 careers/jobs available in the livestock industry. For each job, list the required education, training or experience needed, the responsibilities (job description), and an average starting salary range.

INTRODUCTION TO THE LIVESTOCK INDUSTRY

AG 140-A

UNIT TEST

Name_____ Score_____

1. Match the terms on the right with the correct definitions by placing the appropriate numbers in the blanks provided.

_____a.	An actual material provided by an animal that can be eaten, worn or used	1.	Product
_____b.	Feed, such as pasture, that is bulky, contains more than 18% crude fiber and is low in energy	2.	Cultivate
_____c.	Capacity for change	3.	By-products
_____d.	Working land to produce a crop	4.	Elasticity
_____e.	Money coming in or received for a product or service	5.	Concentrate
_____f.	A benefit provided by an animal	6.	Flexibility
_____g.	Feed, such as grain, high in energy and low in fiber	7.	Receipt
_____h.	Ability of a farm operation to withstand changes in the supply or demand	8.	Service
_____i.	Products left after the main products have been extracted	9.	Roughage

2. Name ten types of livestock.

_____, _____, _____

_____, _____, _____

_____, _____, _____

_____

3. Name four products and three services livestock provide.

Products

a._____ c._____

b._____ d._____

Services

a._____ c._____

b._____

4. Identify the sources of Idaho cash farm receipts by writing the source by the appropriate percentage:

a. 13.1% _____

b. 1.2% _____

c. .6% _____

d. 27.8% _____

e. 2.1% _____

f. 54.8% _____

g. 45.2% _____

5. Identify Idaho's rank in the nation's agriculture for the following crops, livestock and livestock products.

a. Honey _____

b. All cattle and calves _____

c. Milk production _____

d. American cheese _____

e. Milk cows _____

f. Sheep, lambs, wool _____

g. Barley _____

h. Potatoes _____

i. Sugarbeets _____

j. Hops _____

k. All mint _____

l. Wheat _____

m. Apples _____

6. Distinguish between primary and secondary food sources by placing a one (1) by the primary sources and a two (2) by the secondary sources.

____a. Food source deriving energy from plants or animals

____b. Food source deriving energy directly from the sun

7. Describe reasons for and against using livestock as a food source.

a. Arguments for using livestock as a food source.

_____

_____

_____

_____

b. Arguments against using livestock as a food source.

_____

_____

_____

_____

8. List three specific careers in each of the following areas of livestock industry employment.

a. Farming/Ranching (1)_____

(2)_____

(3)_____

b. Research (1)_____

(2)_____

(3)_____

c. Industry (1)_____

(2)_____

(3)_____

d. Business (1)_____

(2)_____

(3)_____

e. Education (1)_____

(2)_____

(3)_____

f. Communications (1)_____

(2)_____

(3)_____

g. Service (1)_____

(2)_____

(3)_____

INTRODUCTION TO THE LIVESTOCK INDUSTRY

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ANSWERS TO TEST

1.

a.	1	e.	7	i.	3		
b.	9	f.	8				
c.	6	g.	5				
d.	2	h.	4				

2. Beef, dairy, sheep, swine, dairy goats, horses, rabbits, fish, fur-bearing animals, poultry

3. Answers should include four products and three services from the following lists:

Products -- Meat, eggs, milk, clothing, medicine, fertilizer, miscellaneous products (shoe polish, photographic film, soap, glue, lubricants)
Services -- Power, recreation, transportation

4.

a.	Dairy products	e.	Other livestock
b.	Sheep, lambs, wool	f.	Total crops
c.	Hogs	g.	Total livestock
d.	Cattle and calves		

5.

a.	11	h.	1
b.	22	i.	3
c.	13	j.	3
d.	5	k.	3
e.	18	l.	8
f.	11	m.	10
g.	1		

6.

a.	2	b.	1

7. a. Answers should include information from the following:

Usable plant energy would otherwise be wasted: Much of the world's land is not cultivated; Forages provide a high percentage of livestock feed; 95% of all energy fixed by plants cannot be used by man, but can be used by ruminants; Animals use otherwise wasted by-products

Animals provide higher quality food: Higher in protein content; Better quality protein (more amino acids); More digestible protein; More preferred by consumers

Animals provide other needed products such as medicine, fertilizer and power

Animals increase flexibility of farm operations: Stimulate grain production; Provide elasticity to grain production

b. Livestock provide a secondary food source and therefore use more energy to produce the same amount of food

8. Answer should include three careers in each area. Possible answers are included in the following:

   a. Farming/Ranching: Manager; Foreman; Herdsman
   b. Research: Production; Processing; Marketing; New equipment and use
   c. Industry: Food processing; Pesticides and herbicides; Feed manufacturing; Dairy processing
   d. Business: Agricultural banking; Farm management; Grading and packaging; Marketing
   e. Education: Agricultural extension specialist; Vocational agriculture instructor; College instructor; Governmental agencies
   f. Communications: Farm reporting; Market reporting; Radio; Television
   g. Service: Inspection and regulation; Plant and animal quarantine; Foreign service; Agricultural consultant; Veterinary

BEEF EVALUATION AND SELECTION

AG 140-B

UNIT OBJECTIVE

After completion of this unit, students should be able to identify the different breeds of beef and be able to distinguish between desirable and undesirable beef animals based on production records and visual characteristics. This knowledge will be demonstrated by completion of assignment sheets and unit test with a minimum of 85 percent accuracy.

SPECIFIC OBJECTIVES AND COMPETENCIES

After completion of this unit, the student should be able to:

1. Match terms associated with beef selection and evaluation to their correct definitions.
2. Label the three main types of cattle operations in Idaho.
3. Describe five major breeds of beef cattle, including origin and characteristics.
4. Label the parts of a beef animal.
5. Name four factors to consider when selecting a beef breed or breeds.
6. Name two factors that determine the most important traits to select for in beef cattle.
7. Identify the four basic methods of beef animal selection.
8. Match traits of beef animals to their respective heritability percentages.
9. Calculate estimated annual progress from genetic selection.
10. Name the most important factor in determining weaning weight.
11. Name the trait having the greatest influence on net income.
12. Describe the desirable and undesirable characteristics to look for when evaluating breeding stock.
13. Describe four indicators of finish and four indicators of muscling in market animals.
14. Describe the ideal market steer.
15. Describe the characteristics of three types of market steers.
16. List and describe the two scores used in determining quality grades.
17. Identify the six quality grades when given a description of each.
18. Distinguish among slaughter steers representing the top five quality grades.

19. List the four measurements used in determining yield grades.

20. Identify the five yield grades when given a description of each.

21. Distinguish among slaughter steers representing the five yield grades.

22. Evaluate and place a class of four market steers.

23. Give oral reasons on placings of a class of four steers.

24. Evaluate live market steers for quality and yield grade.

BEEF EVALUATION AND SELECTION

AG 140-B

SUGGESTED ACTIVITIES

I. Suggested activities for instructor

A. Make transparencies and necessary copies of materials.

B. Provide students with objectives and discuss.

C. Provide students with information and discuss.

D. Provide students with assignment sheets.

E. Have a local rancher talk to the class about what he looks for when buying beef animals.

F. Have students write different breed associations for information.

G. Obtain and show slides of beef animals for judging.

H. Arrange a field trip to a judge beef animals.

I. Arrange a field trip to a slaughterhouse to compare live animals with carcasses for yield and quality grading.

J. Design game for teaching parts of the beef animal.

(Note: A transparency projected onto the chalkboard makes a good learning device.)

K. Review and give test.

L. Reteach and retest if necessary.

II. Instructional materials

A. Objective sheet

B. Suggested activities

C. Information sheet

D. Handout

1. HO 1--Beef Yield Grades

E. Transparency masters

1. TM 1--Parts of a Beef Animal

2. TM 2--Desirable Characteristics of a Bull

3. TM 3--Desirable Characteristics of a Cow

4. TM 4--Structural Characteristics of Feet and Legs

5. TM 5--Indicators of Finish

6. TM 6--Indicators of Muscling

7. TM 7--Ideal Market Animal

8. TM 8--Market Steers

9. TM 9--Slaughter Steers/U.S. Quality Grades

10. TM 10--Guidelines for Quality Grading Live Market Steers

11. TM 11--Slaughter Steers/U.S. Yield Grades

F. Assignment sheets

1. AS 1--Calculate Estimated Annual Progress From Genetic Selection

2. AS 2--Evaluate and Place a Class of Four Market Steers

3. AS 3--Give Oral Reasons on Placings of a Class of Four Steers

4. AS 4--Evaluate Live Market Steers for Quality and Yield Grade

G. Answers to assignment sheets

H. Test

I. Answers to test

III. Unit references

A. Ensminger, M.E., *Beef Cattle Science*. The Interstate Printers and Publishers, Inc., Danville, Illinois, 1976.

B. Jacobs, J.A. and Dahmen, J.J., *Meat Animal Evaluation*. Department of Animal Sciences, College of Agriculture, University of Idaho, Moscow, Idaho.

C. *Model Agricultural Core Curriculum*. State Department of Education, University of California, Davis, August, 1989.

D. Thomas, Verl, M., *Beef Cattle Science Manual*. Department of Animal Sciences, College of Agriculture, University of Idaho, Moscow, Idaho.

BEEF EVALUATION AND SELECTION

AG 140-B

INFORMATION SHEET

I. Terms and definitions

A. Well-turned top--Rounded over the top; not flat

B. Trimness--Freedom from excess finish

C. Finish--Fat on an animal

D. Symmetry--Balance of animal parts

E. Type--Combination of characteristics which make an animal most useful for a specific purpose

F. Soundness--Having a correct skeletal structure; may also refer to ability to reproduce

G. Growthiness--Having good size and weight for age of animal

H. Scale--Size of the animal as determined by skeletal structure

I. Ruggedness--Quality of having large bones and frame

J. Broodiness--Characteristics which indicate female will be a good mother; femininity

K. Sex characteristics--Traits distinguishing females from males

L. Crossbreeding--Mating an animal of one breed to an animal of another breed

M. Polled--Naturally without horns

N. Crest--Part of the topline of a beef animal where the neck joins the body; secondary male sex characteristic

O. Switch--Lower part of tail consisting of long hair

P. Lean--Muscle without the fat

Q. Reproductive efficiency--Ability of an animal to produce offspring

R. Selection differential--Difference between a trait of a particular animal and the average of all the animals from which it was chosen

S. Heritability--Percentage of differences in a trait that can be explained by inheritance as opposed to environment

T. Yield grade--Numerical indicator of cutability which is defined as the percent of closely trimmed, boneless meat from the round, loin, rib and chuck

U. Quality grade--Evaluation of the tenderness and flavor of the meat

V. Marbling--Fat dispersed within the meat

W. Scrotum--External sac containing the testicles

X. Cod--Part of scrotum left on a steer after castration

Y. Twist--Area between rear quarters

II. Types of cattle operations

A. Cow-calf--Main products are weaner calves or yearling calves

B. Stocker-feeder--Utilize low quality roughages to raise animals from weaning to the feedlot or for herd replacement

C. Feedlot--Utilize a high energy ration to produce animals for slaughter

III. Major breeds of beef cattle

A. Hereford

(Note: Breed association--American Hereford Association, 715 Hereford Drive, Kansas City, Missouri 64105.)

1. Origin--England

2. Characteristics--Red with white face, underline, crest and switch; horned; excellent forage ability--good range cattle

B. Polled Hereford

(Note: Breed association--American Polled Hereford Association, 4700 E. 63rd Street, Kansas City, Missouri 64130.)

1. Origin--Iowa

2. Characteristics--Same as Hereford except for being polled

C. Angus

(Note: Breed Association--American Angus Association, 3201 Fredrick Blvd., St. Joseph, Missouri 64501.)

1. Origin--Scotland

2. Characteristics--Black; (white is not permitted on the body, except on underline behind navel); polled; resistant to eye diseases; excellent carcass yield; small birth weight, but good weaning weight

D. Shorthorn

(Note: Breed association--American Shorthorn Association, 8288 Hascall Street, Omaha, Nebraska 68124.)

1. Origin--England

2. Characteristics--Red, roan or white; polled or horned; heavy milkers

E. Charolais

(Note: Breed association--American-International Charolais Association, 1610 Old Spanish Trail, Houston, Texas 77054.)

1. Origin--France

2. Characteristics--White to cream color; horned; large; heavily muscled

F. Limousin

(Note: Breed association--North American Limousin Foundation, 100 Livestock Exchange Building, Denver, Colorado 80216.)

1. Origin--France

2. Characteristics--Red to gold color over back, shading to light buckskin or straw color under belly, around legs and muzzle; horned; large; heavily muscled; good carcass yield

G. Simmental

(Note: Breed association--American Simmental Association, One Simmental Way, Bozeman, Montana 59715.)

1. Origin--Switzerland

2. Characteristics--Light red or cream with white face (much like Herefords), usually have white spots or band on shoulders; large; excellent milkers

H. Brahman

(Note: Breed association--American Brahman Breeder's Association, 1313 La Concha Lane, Houston, Texas 77054.)

1. Origin--India

2. Characteristics--Light gray to dark red; drooping ears; long face; prominent hump over shoulders; loose skin; tolerant to parasites and insects; excellent foragers; resistant to eye diseases; adapted to hot, arid climates

I. Brangus

(Note: Breed association--International Brangus Breeder's Association, 9500 Tioga Drive, San Antonio, Texas 78230.)

1. Origin--Oklahoma (Welch)

2. Characteristics--Large; black; polled; slight crest over neck; slick hair; developed by crossing Angus bulls to Brahman cows; tolerance of Brahman to insects, heat and poor grazing conditions; fast gaining

J. Santa Gertrudis

(Note: Breed association--Santa Gertrudis Breeder's International, P.O. Box 1257, Kingsville, Texas 78363.)

1. Origin--Texas (King Ranch)

2. Characteristics--Large; red; short hair; loose hide; cross between Shorthorn and Brahman; tolerant to heat and insects

K. Beefmaster

(Note: Breed association--Beefmaster Breeder's Universal, Suite 720 GPM South Tower, 800 NW Loop 410, San Antonio, Texas 78216.)

1. Origin--Texas

2. Characteristics--No specific color, may be red, brown, dun or red with white extensions and spots; large; horned; cross between Brahman bulls and Hereford cows, then cross with Shorthorn bulls; adapted to wide range in climate

(Note: Many new breeds have been developed. Some gained popularity, then lost in popularity as other new breeds were introduced. Some other cattle breeds are: Murray Grey, Charbray, Braford, Chianina, Blonde d'Aquitane, Fleckvich, Gelbvich, Hays Converter, Lincoln Red, Maine Anjou, Pie Rouge, South Devon and Welch Black.)

IV. Parts of beef cattle (Transparency 1)

Poll	Shank (cannon bone)	Knee
Neck	Hoof	Elbow
Crops	Flank	Forearm
Back	Last rib (13th)	Brisket
Loin	Ribs	Shoulder
Hook	Sheath	Dewlap

Rump	Underline	Shoulder vein
Tailhead	Fore flank	Muzzle
Quarter	Shank	Face
Stifle	Dewclaw	Forehead
Hock	Pastern	Body

V. Factors in selecting a beef breed

A. Availability of breeding stock

B. Market for animals

(Note: Some areas react unfavorably to certain breeds.)

C. Environmental conditions

(Note: Animals should be selected from the same conditions they will be expected to perform in.)

D. Weaknesses in present stock

Example: A beef herd has mostly small framed females, so a larger framed breed bull is chosen to produce a medium framed calf

VI. Two factors that determine which traits to select for

A. Economic importance of trait

Example: Choosing an animal that has a long rump over an animal with a short and wide head, even though both characteristics are desirable

B. Heritability of trait

Example: Choosing a bull with a superior rib-eye (70% heritability) over a comparable bull with a smaller rib-eye, but a little better feedlot gain (45% heritability)

VII. Methods of selection

(Note: Using more than one of the following is very common.)

A. Appearance--Rating of visual traits

(Note: This method is the oldest and most common, but is only as good as the person making the evaluation.)

B. Show-ring winnings

(Note: This method is only practical for purebred animals because of the cost involved. Show ring credentials must be tempered with a producer's own knowledge of what will be best for his or her operation.)

C. Pedigree--Selection based on ancestors

(Note: This method must be used with caution and be based primarily on the closest ancestors. Ancestors far removed have little effect on the offspring.)

D. Production testing--Selection based on records kept of performance and/or progeny

(Note: These records have been kept primarily on weaning weights. Additional records on desirable carcass characteristics would make them more sensitive to consumer demand.)

VIII. Heritability percentages for economically important traits

(Note: The higher the percentage, the faster a herd can be improved by genetic selection for that trait.)

(CAUTION: These are estimates only. Actual percentages will vary.)

A. Calving interval (fertility) 10%

(Note: This percentage is somewhat misleading as animals with poor fertility are automatically eliminated from the calculations since they have no offspring in which to measure differences.)

B. Birth weight 40%

C. Weaning weight 30%

D. Final feedlot weight 60%

(Note: This in generally figured at one year of age or at the end of the testing period.)

E. Feedlot gain 45%

F. Feed efficiency 40%

G. Carcass grade 40%

H. Rib-eye area 70%

I. Retail product (lb) 65%

(Note: Carcass traits are the most heritable.)

IX. Calculate annual progress based on genetic selection--progress is calculated by multiplying heritability by the selection differential and then multiplying by the amount contributed from the animal selected (Assignment Sheet #1)

(Note: Selection differential can be much higher in bulls than heifers because fewer bulls need to be kept and therefore selection can be more rigid.)

Example: Goal--improvement in final feedlot weights
Procedure--select heifers weighing 50 pounds more than the herd average
--select bulls weighing 200 pounds more than the herd average

Selection differential for heifers	50 lb
Heritability estimate (60%)	x .6
Expected increase from females	30 lb
Contribute 1/2 to offspring	x .5
Heifer contribution	15 lb
Selection differential for bulls	200 lb
Heritability estimate (60%)	x .6
Expected increase from males	120 lb
Contribute 1/2 to offspring	x .5
Bull contribution	60 lb
Heifer contribution	15 lb
Expected increase in final feedlot weights of progeny	75 lb

(Note: While selection for heredity is important, overall genetic improvement only accounts for about 30% compared to an overall of 70% for environmental and management factors. This is why it is also important to select among animals in the same environmental conditions.)

X. Most important factor in determining weaning weight--milking ability of the cow

XI. Trait having the greatest influence on net income--calving interval or ability of a cow to produce a calf every year

XII. Desirable and undesirable characteristics in breeding stock (Transparencies 2, 3)

(Note: The two extremes are presented. There is a lot of area in between.)

A. Characteristics indicating reproduction efficiency

1. Bull

a. Desirable--Masculine, alert head; well-developed crest, muscling and genitalia; deep, wide chest

b. Undesirable--Sleepy; poorly muscled and poorly developed; unbalanced or small testicles

2. Cow

a. Desirable--Long and lean with smooth muscling; feminine head and body; good functional udder; normal genitalia

b. Undesirable--Coarse, heavy front; masculine characteristics; excess fat deposits; infantile vulva

B. Characteristics indicating muscling, freedom from waste and size

(Note: Too much muscling in heifers and even in bulls can cause poor reproductive performance.)

1. Desirable--Long body; reasonable height; well muscled with prominent forearms; wide rear-quarters; thick loins; long rump; trim through the brisket, flank and twist; well-turned top; correctly balanced from front to rear

2. Undesirable--Short coupled, compact and close to the ground; full flanks, brisket and twist; blocky from all points of view; narrow hindquarters; wide, flat back

C. Characteristics indicating structural soundness (Transparency 4)

1. Desirable--Straight, squarely set legs with sufficient set in hock to provide a cushion; large and wide feet with deep heels

2. Undesirable--Legs that are sickle-hocked, postlegged or cowhocked; toes that point out or in; knees that allow legs to go over center; legs that won't completely straighten; too straight of pasterns; any other deformity of skeletal structure

XIII. Indicators of finish and muscling

A. Finish (Transparency 5)

(Note: Degree of finish can best be determined by looking at those areas where there is little or no muscle development.)

1. Deep, full brisket

2. Fat over ribs behind shoulder

3. Wide, flat top

4. Rolls of fat around tailhead

5. Full flank

6. Deep body and full middle

7. Square rump

8. Full cod

9. Deep twist

10. Narrow stance

(Note: This indicates a lack of muscling.)

B. Muscling (Transparency 6)

(Note: Muscling is best determined by looking at those areas where little fat is deposited.)

1. Bulging forearms

2. Sharp turn over loin area

3. Long rump

4. Wide stance

5. Rounded top

6. Wide through the stifle region

XIV. Ideal market steer (Transparency 7)

The ideal market steer shows good size and scale by being relatively long and tall. The animal shows good muscling with bulging forearms, a sharp turn over the loin, a long rump, width through the stifle region and a wide stance. He is also correctly finished and trim through the brisket, middle, flank, cod and over the tailhead

XV. Three types of market steers (Transparency 8)

A. Steer number 1 is very light framed and shallow bodied with a lack of adequate muscling and finish throughout; he is very lightly muscled in the forearms and in the rear quarters

B. Steer number 2 is a more ideal animal with more size and scale than either 1 or 3; he has bulging forearms, a long, well-developed rump and is trim in the brisket and through the middle

C. Steer number 3 is short, fat and wasty and showing a lack of size and scale; he is carrying excess finish with a heavy front and a wasty brisket and flank; he is only exhibiting an average amount of muscle

XVI. Quality grades (Transparencies 9, 10)

A. Quality grades reflect the difference in the eating quality of meat based on

1. Marbling scores--The amount of fat interspersed in the muscle

2. Maturity scores--Reflects the age of the animal at slaughter

B. Types of quality grades (Transparencies 9, 10)

1. Prime--This carcass has superior marbling, proper carcass conformation and adequate maturity. This grade of meat is found in fine restaurants and gourmet stores

a. Beef of this grade is not economical for the meat packer because the cattle are required to get very fat to obtain enough marbling and only a small percentage of cattle meet the conformation standards

2. Choice--This is the most economical and most desirable carcass grade

a. Adequate marbling and carcass conformation are required

3. Select--(used to be called "Good") This beef may be referred to as "no-roll" since it isn't stamped with the USDA grade

a. Must have slight marbling

b. This meat is inspected but not marked with a stamp as Prime or Choice, so it can be sold under store names such as Five Star Beef, etc.

4. Standard--Usually older animals and thin animals

a. Minimum marbling or below average carcass conformation fit into this category

5. Commercial--Includes the designations of: cutter, canner and utility

a. This meat is usually processed into lunch meats, soup and canned meat products

b. Aged cattle

6. Cull--Not acceptable for human consumption (Here Fido...)

XVII. Yield grades (Transparency 11)

A. Identify carcasses for differences in "cutability" or yield of boneless, trimmed retail cuts. Yield grade is determined by the following measurements:

1. Hot carcass weight

2. External fat (measured as back fat over the 13th rib)

3. Percent heart, kidney and pelvic fat

4. Rib eye area

B. Types of yield grades: 1, 2, 3, 4, 5

(Note: Yield grade 1 being the leanest, heaviest muscled carcass and yield grade 5 being the lightest muscled, fattest.)

C. See handout #1

Handout #1

BEEF YIELD GRADES

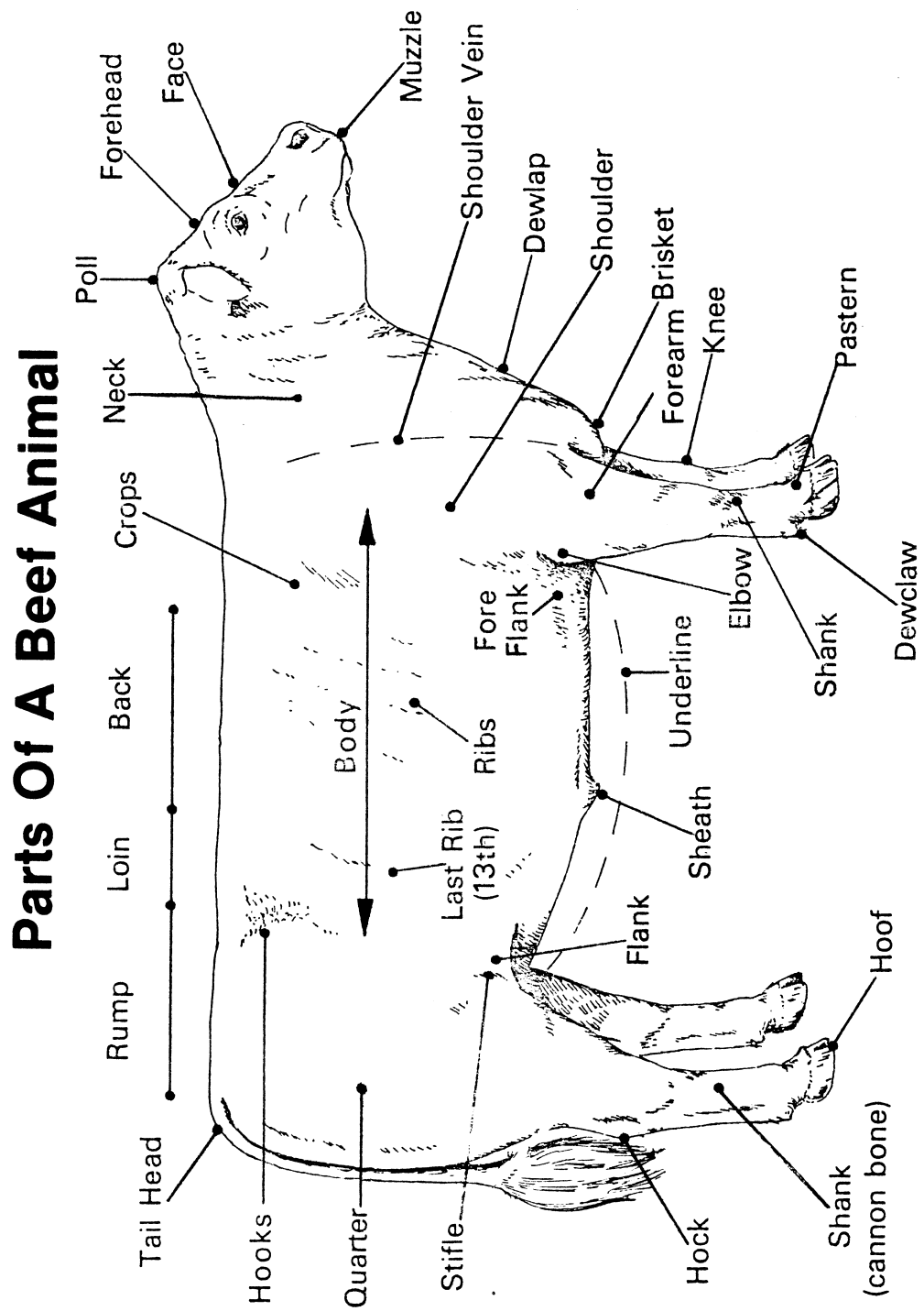
Yield Grade 1. A carcass in this group has only a thin layer of external fat over the ribs, loin and rump, and slight deposits of fat in the flanks and the cod or udder region. Muscles are usually visible through the fat in many areas.

Yield Grade 2. A carcass in this group is nearly completely covered with fat, but the lean is plainly visible through the fat over the round, the top of the shoulder and the neck.

Yield Grade 3. A carcass in this group is completely covered with fat. The lean is visible through the fat only on the neck and the lower part of the outside round. There usually is a thick layer of fat over the loin, rib and the inside round.

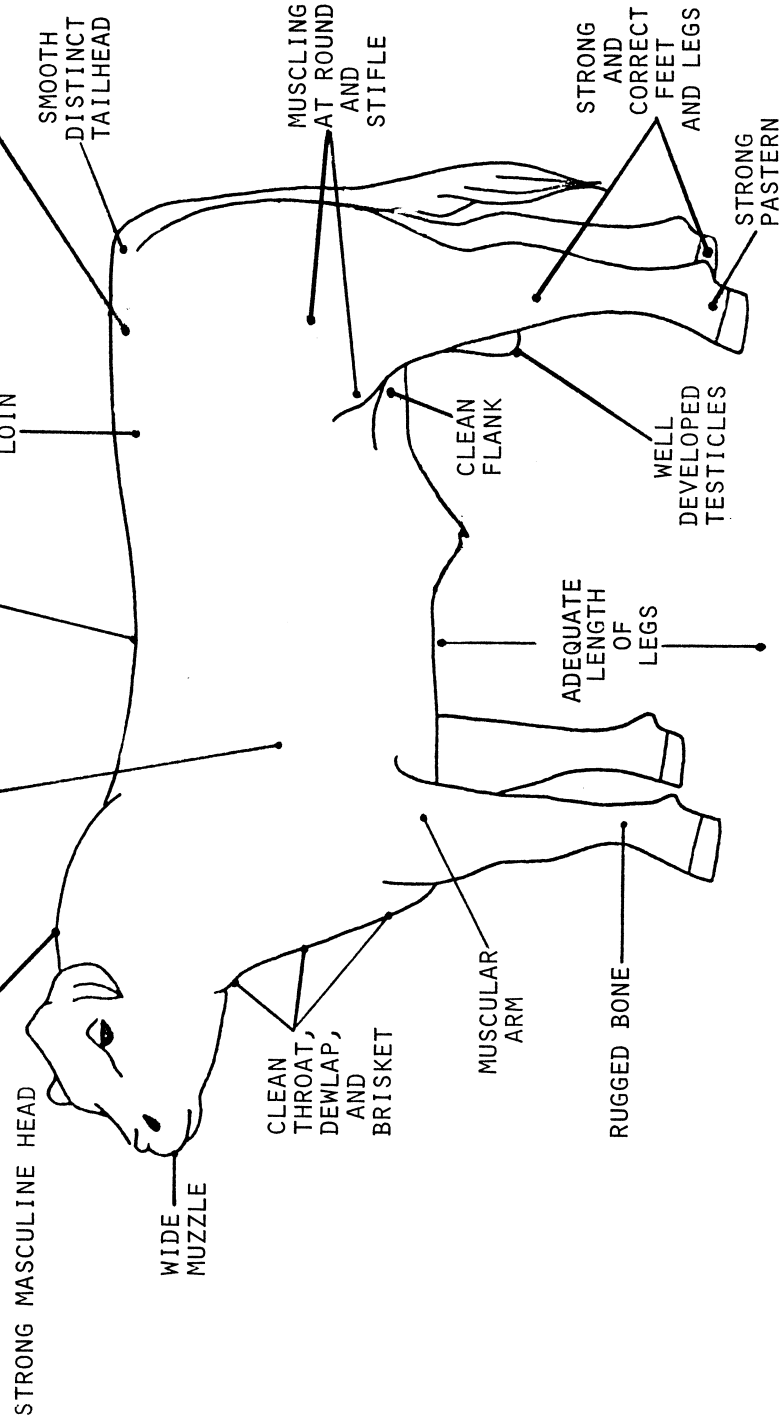
Yield Grade 4. These carcasses are completely covered with fat. The only muscles visible are those on the shanks and over the outside of the plates and flanks. There usually is a moderately thick layer of fat over the loins, rib and the inside round.

Yield Grade 5. These carcasses have more fat on all the various parts, they have a smaller rib eye area and more kidney, pelvic and heart fat than carcasses that will meet the standards for the higher grades.

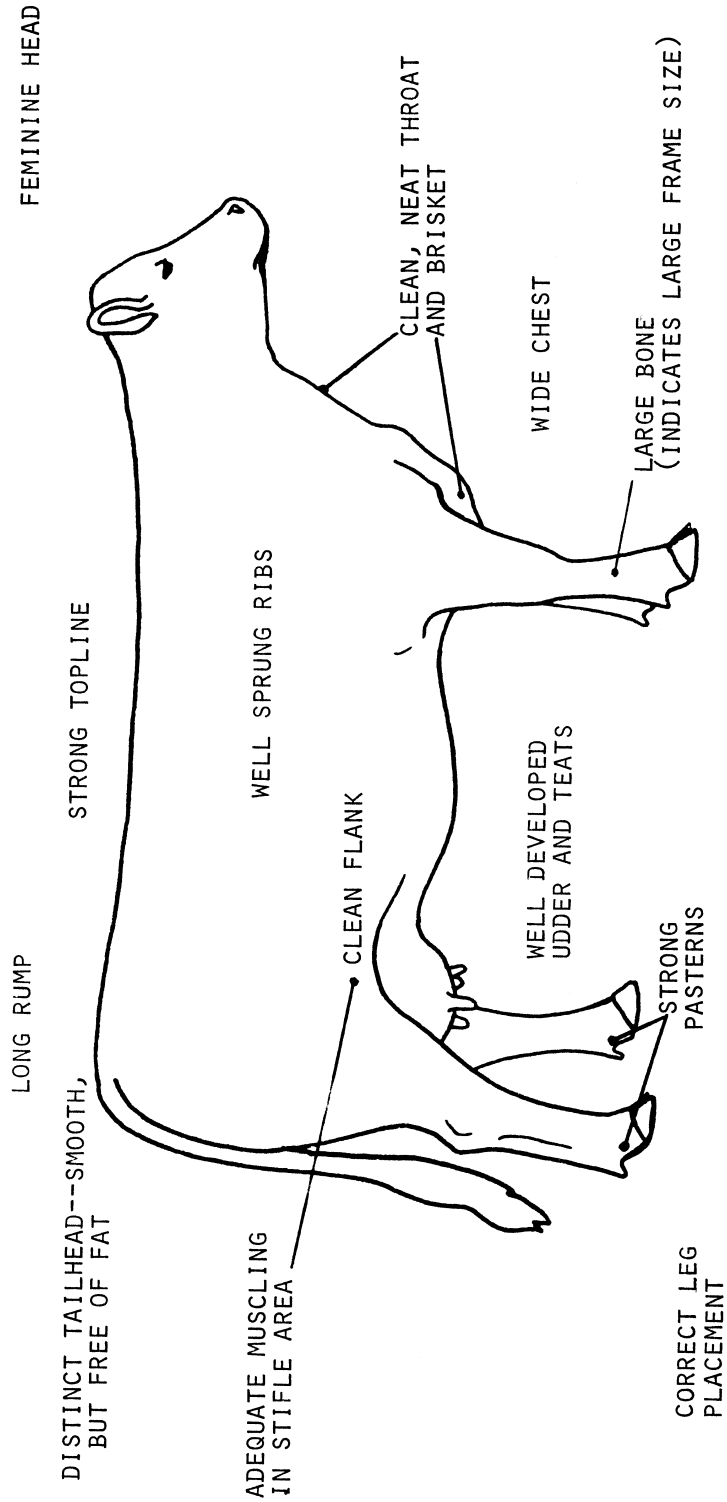

Parts Of A Beef Animal
Muzzle
Face
Forehead
Poll
Neck
Crops
Back
Loin
Rump
Tail Head
Hooks
Quarter
Body
Stifle
Last Rib (13th)
Ribs
Fore Flank
Shoulder Vein
Dewlap
Shoulder
Brisket
Forearm
Knee
Pastern
Elbow
Shank
Dewclaw
Underline
Sheath
Flank
Hock
Shank (cannon bone)
Hoof

TM 1

Desirable Characteristics Of A Bull



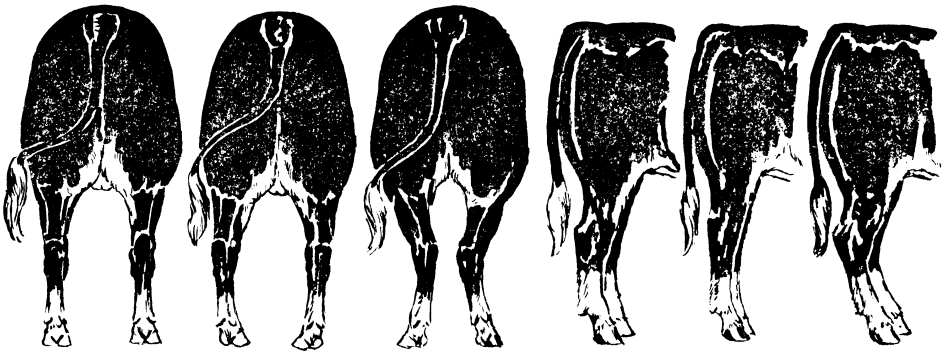
Desirable Characteristics Of A Cow



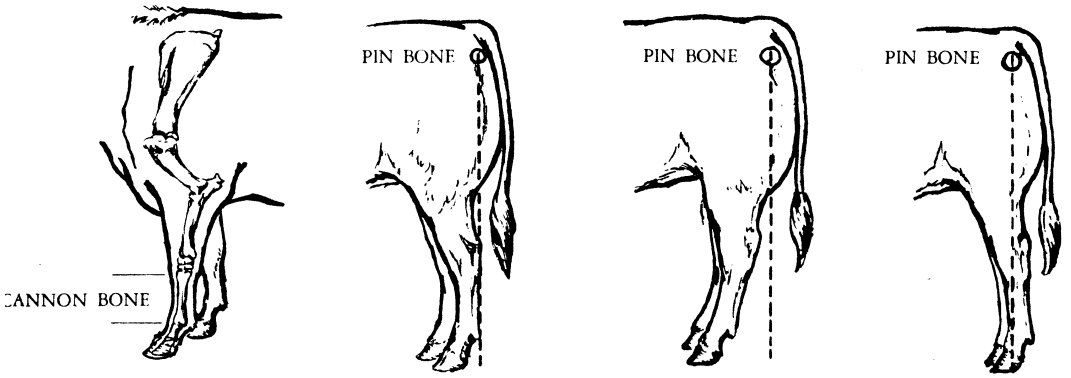
TM 3

Structural Characteristics Of Feet And Legs

CORRECT SPLAY FOOTED TOED IN CORRECT CALF KNEED BUCK KNEED



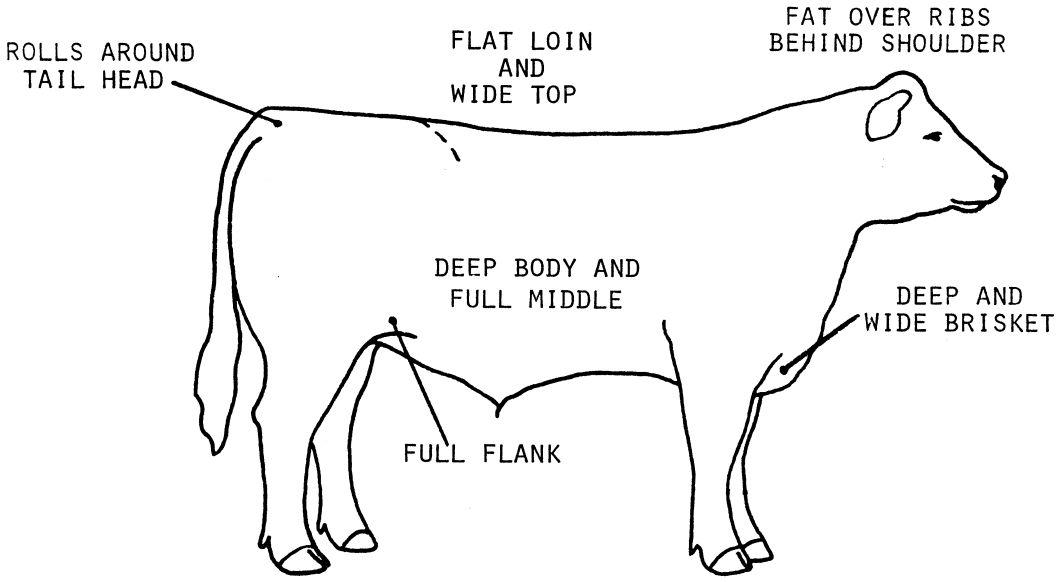
CORRECT OUT IN THE HOCKS COW HOCKED CORRECT POST LEGGED SICKLE HOCKED



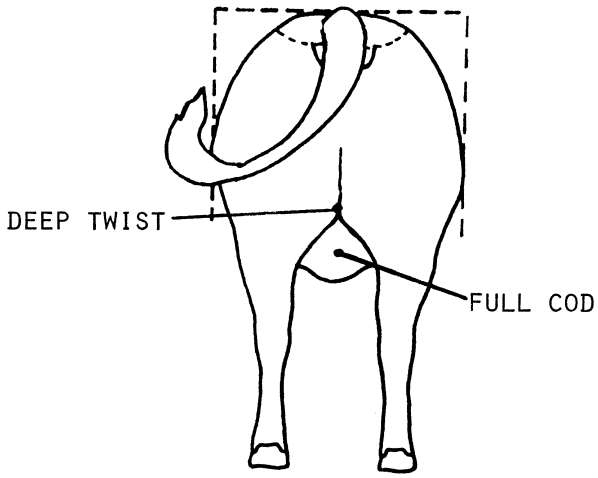
CORRECT SICKLE HOCKED POST LEGGED

TM 4

Indicators Of Finish

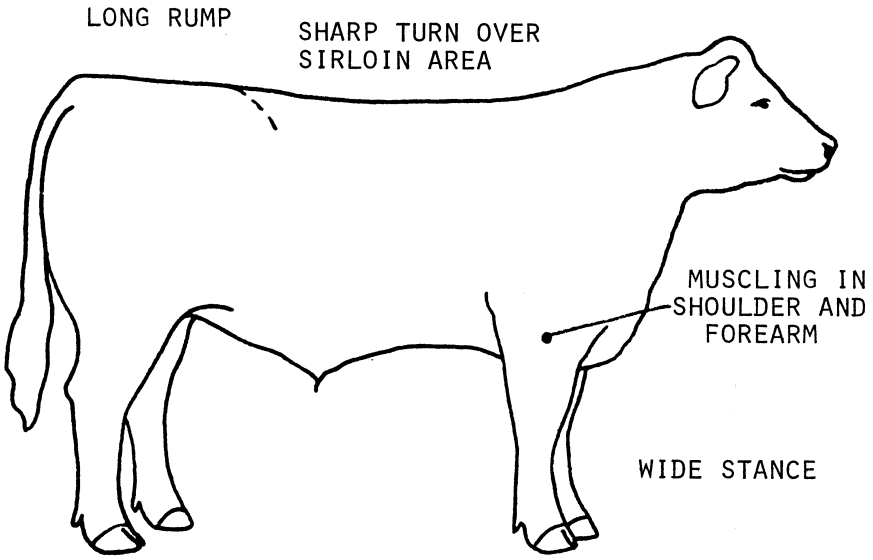


SQUARE RUMP

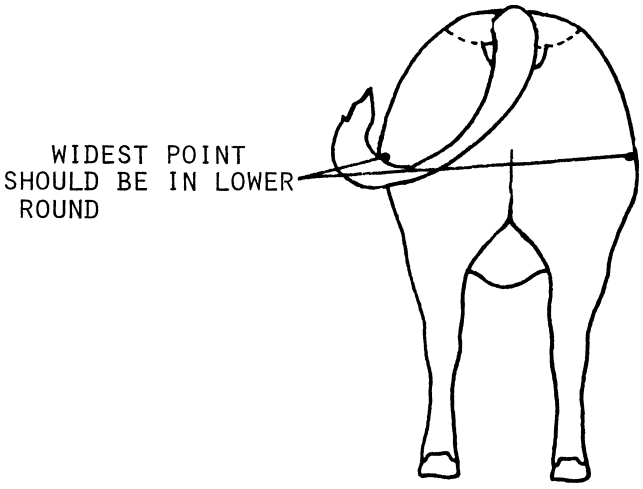


NARROW STANCE

Indicators Of Muscling

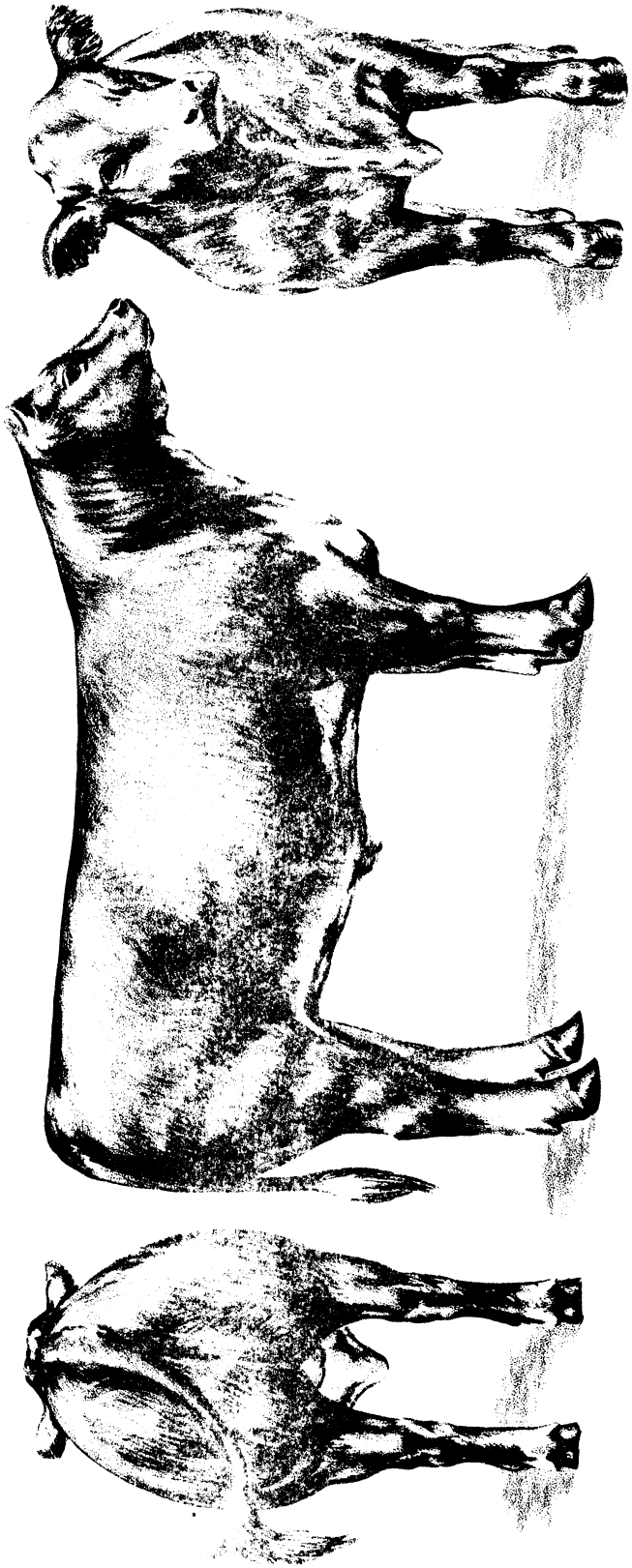


ROUNDED TOPLINE

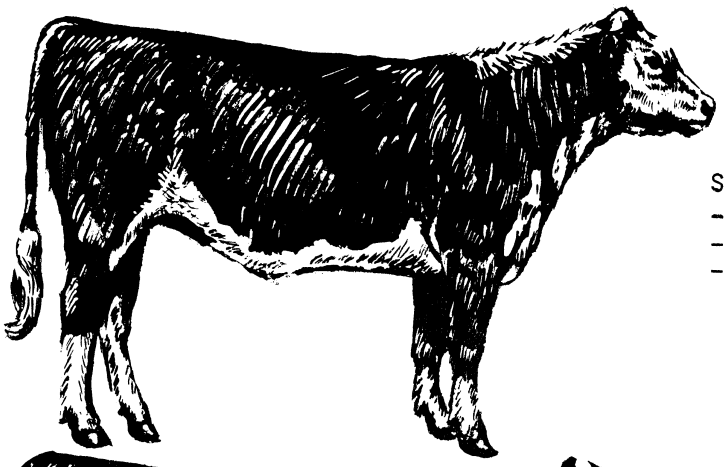


WIDE STANCE

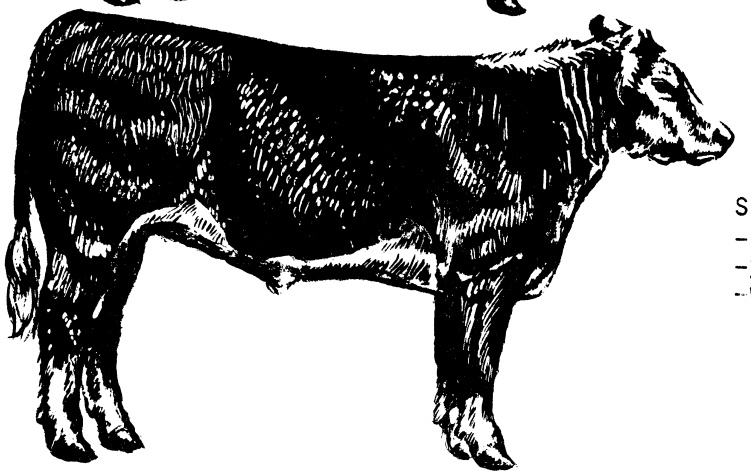
Ideal Market Animal



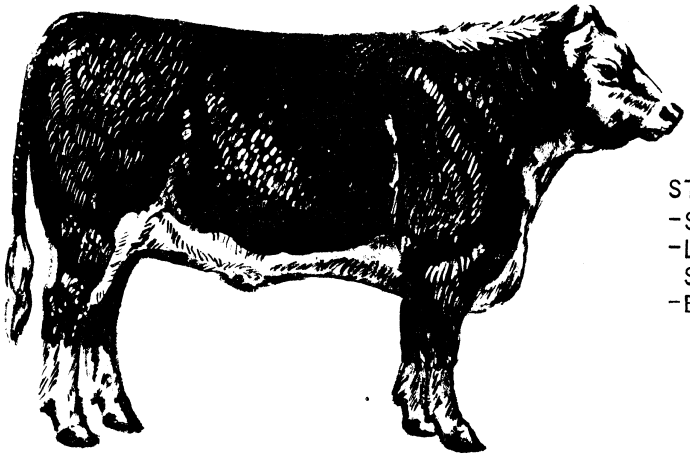
Market Steers



STEER 1
-LIGHT FRAME
-SHALLOW BODY
-LIGHT MUSCLED



STEER 2
-TRIM BRISKET
-BULDGING FOREARMS
-WELL-DEVELOPED RUMP

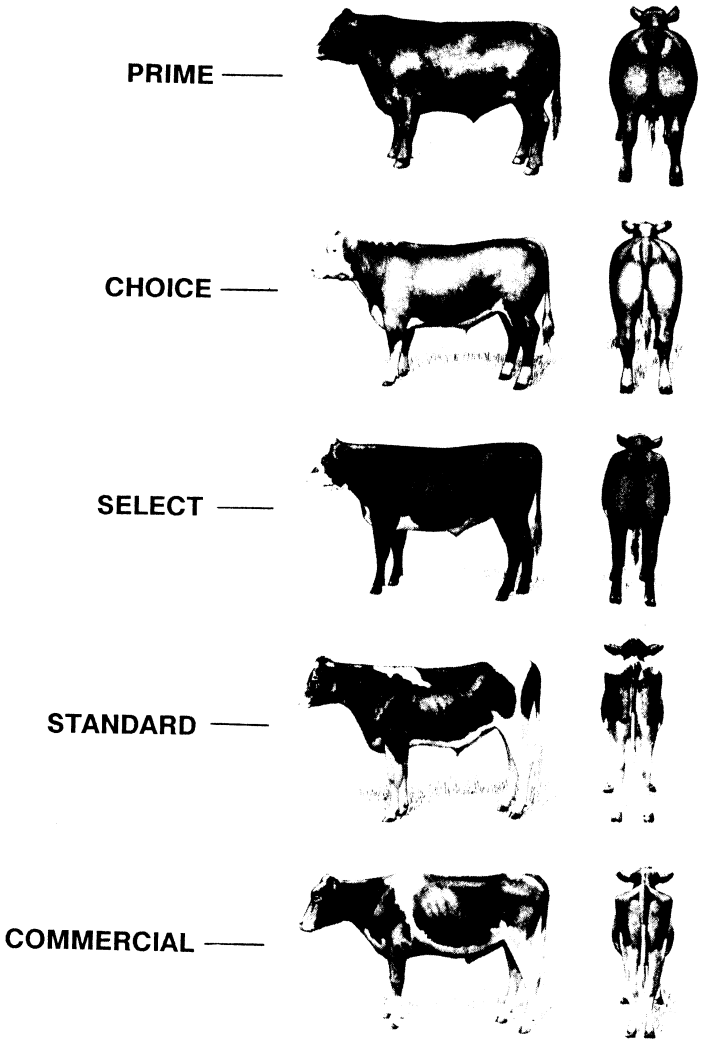


STEER 3
-SHORT, FAT, WASTY
-LACK OF SIZE AND SCALE
-EXCESS FINISH

TM 8

Slaughter Steers

U.S. Quality Grades



GUIDELINES FOR QUALITY GRADING
LIVE MARKET STEERS

BREED	MARBLING POTENTIAL	MINIMUM EXPECTED WT. TO GRADE CHOICE*
Angus (Old or small type)	High	950 lb
Angus (Modern or large type)	High	1050 lb
Hereford (Small type)	Average	1050 lb
Hereford (Large type)	Average	1150 lb
Shorthorn	High	1000 lb
Charolais	Low	1200 lb
Exotics (Simmental, etc.)	Low	1200 lb
Holstein	High	1200 lb
Brown Swiss	High	1200 lb
Angus X Hereford	High	1100 lb
Shorthorn X Hereford	High	1100 lb
Angus X Charolais	Average	1100 lb
Hereford X Charolais	Low	1200 lb
Beef X Dairy types	High	1100 lb
Hereford X Simmental	Low	1200 lb
Angus X Simmental	Average	1100 lb

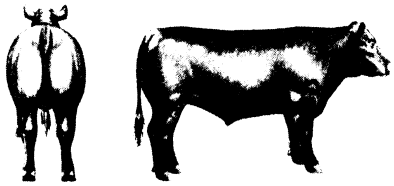
*Assuming that all have been on standard (high concentrate) feedlot rations for 150 days

Slaughter Steers

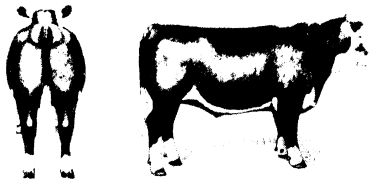
U.S. Yield Grades

YIELD GRADE 1 —

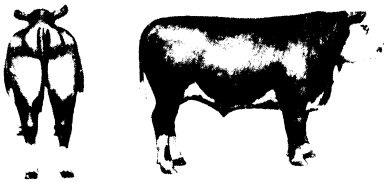
YIELD GRADE 2 —



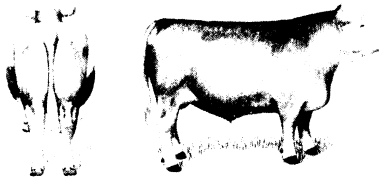
YIELD GRADE 3 —



YIELD GRADE 4 —



YIELD GRADE 5 —



BEEF EVALUATION AND SELECTION

AG 140-B

ASSIGNMENT SHEET #1--CALCULATE ESTIMATED
ANNUAL PROGRESS FROM GENETIC SELECTION

Name_____ Score_____

Beef herd improvement is accomplished by providing the proper environment and by selecting animals with superior genetic potential.

Calculate the expected increase in weaning weight of the offspring of a bull that weighed 300 pounds more than the herd average at weaning and heifers that weighed 90 pounds more than the herd average at weaning.

Calculations for heifer contribution:

Heifer contribution _____

Calculations for bull contribution:

Bull contribution _____

Expected increased in weaning weights _____

If the herd weaning weight average was 500 lb, what would the new expected average be? _____

BEEF EVALUATION AND SELECTION

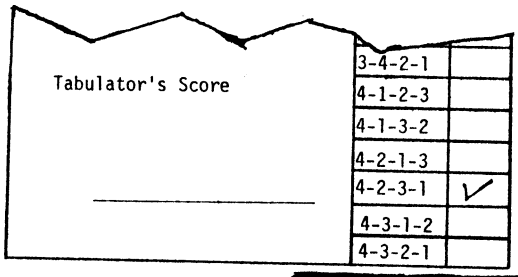
AG 140-B

ASSIGNMENT SHEET #2--EVALUATE AND PLACE
A CLASS OF FOUR MARKET STEERS

Name_____ Score_____

Based on your evaluation of four steers (either on slides or live) place them in order from most to least desirable. Mark your placing on the official scorecard below.

Example: You have decided No. 4 is the best, with No. 2 being the next best and No. 3 being the third best, with No. 1 being the least desirable. You would mark the card as follows:



Official Scorecard to use for your placings

STANDARD JUDGING CARD

Contestant no. _____

Contest _____

Class Name _____

Class No. _____

Tabulator's Score _____

Placing	✓
1-2-3-4	
1-2-4-3	
1-3-2-4	
1-3-4-2	
1-4-2-3	
1-4-3-2	
2-1-3-4	
2-1-4-3	
2-3-1-4	
2-3-4-1	
2-4-1-3	
2-4-3-1	
3-1-2-4	
3-1-4-2	
3-2-1-4	
3-2-4-1	
3-4-1-2	
3-4-2-1	
4-1-2-3	
4-1-3-2	
4-2-1-3	
4-2-3-1	
4-3-1-2	
4-3-2-1	

BEEF EVALUATION AND SELECTION

AG 140-B

ASSIGNMENT SHEET #3--GIVE ORAL REASONS ON PLACINGS OF A CLASS OF FOUR STEERS

Name_____ Score_____

The ability to critically evaluate animals is greatly improved when a person is able to explain exactly why the animals were placed as they were. Look again at the four steers and review the specific reference points for muscling and finish. Then write specific reasons for your placings before sharing them with the class.

Example: I place 1 over 2 because of one's superior scale and muscling. One has a heavier quarter with a more bulging stifle. One stands wider in the rear and is trimmer in the cod, brisket and over the tailhead. One also has a trimmer middle than the number 2 steer. I grant 2 has a stronger top and is better balanced than number 1.

Write reasons for placings:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

BEEF EVALUATION AND SELECTION

AG 140-B

ASSIGNMENT SHEET #4--EVALUATE LIVE MARKET STEERS FOR QUALITY AND YIELD GRADE

Name_____ Score_____

Using the grading sheet below, estimate the quality and yield grades of market steers.

(Note: A packing plant would be the best place to do this since the actual yield and quality grades could then be determined after slaughter.)

MARKET BEEF EVALUATION

	Animal No._____		Animal No._____		Animal No._____		Animal No._____	
	Estimate	Actual	Estimate	Actual	Estimate	Actual	Estimate	Actual
Live Weight								
Sex								
Breed								
Dressing %								
Hot Carcass Wt.								
Fat thickness over loin								
% Internal Fat								
Yield Grade								
Quality Grade								

Estimated Animal Placing_____ Actual Animal Placing_____

BEEF EVALUATION AND SELECTION

AG 140-B

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

Heifer contribution	13.5 lb
Bull contribution	45.0 lb
Expected increase in weaning weights	58.5 lb
New herd average	558.5 lb

Assignment Sheet #2

Evaluated to the satisfaction of the instructor

Assignment Sheet #3

Evaluated to the satisfaction of the instructor

Assignment Sheet #4

Evaluated to the satisfaction of the instructor

BEEF EVALUATION AND SELECTION

AG 140-B

UNIT TEST

Name_____ Score_____

1. Match terms on the right to the correct definitions.

____a. Percentage of differences in a trait that can be explained by inheritance as opposed to environment

____b. Fat dispersed within the meat

____c. Traits distinguishing females from males

____d. Size of the animal as determined by skeletal structure

____e. Part of the topline of a beef animal where the neck joins the body; secondary male sex characteristic

____f. Having good size and weight for age of animal

____g. Combination of characteristics which make an animal most useful for a specific purpose

____h. Numerical indicator of cutability which is defined as the percent of closely trimmed, boneless meat from the round, loin, rib and chuck

____i. Naturally without horns

____j. Mating an animal of one breed to an animal of another breed

____k. Freedom from excess finish

____l. External sac containing the testicles

____m. Ability of an animal to produce offspring

____n. Fat on an animal

____o. Characteristics which indicate a female will be a good mother; femininity

____p. Quality of having large bones and frame

____q. Muscle without the fat

1. Well-turned top
2. Heritability
3. Trimness
4. Finish
5. Symmetry
6. Type
7. Soundness
8. Growthiness
9. Scale
10. Ruggedness
11. Broodiness
12. Sex characteristics
13. Crossbreeding
14. Polled
15. Crest
16. Switch
17. Lean
18. Reproductive efficiency
19. Selection differential
20. Yield grade

____r. Balance of animal parts

____s. Difference between a trait of a particular animal and the average of all the animals from which it was chosen

____t. Having a correct skeletal structure; may also refer to ability to reproduce

____u. Evaluation of the tenderness and flavor of the meat

____v. Rounded over the top; not flat

____w. Lower part of tail consisting of long hair

____x. Part of scrotum left on a steer after castration

____y. Area between rear quarters

21. Quality grade

22. Marbling

23. Twist

24. Cod

25. Scrotum

2. Label the three main types of cattle operations in Idaho. Write the correct answer in the blank provided.

a. _____ Main products are weaner calves or yearling calves

b. _____ Utilize a high energy ration to produce animals for slaughter

c. _____ Utilize low quality roughages to raise animals from weaning to the feedlot or for herd replacement

3. a. Breed: _____ Origin: _____

Characteristics: _____

_____

_____

_____

b. Breed: _____ Origin: _____

Characteristics: _____

_____

_____

c. Breed: _____ Origin: _____

Characteristics: _____

_____

_____

_____

d. Breed: _____ Origin: _____

Characteristics: _____

_____

_____

_____

e. Breed: _____ Origin: _____

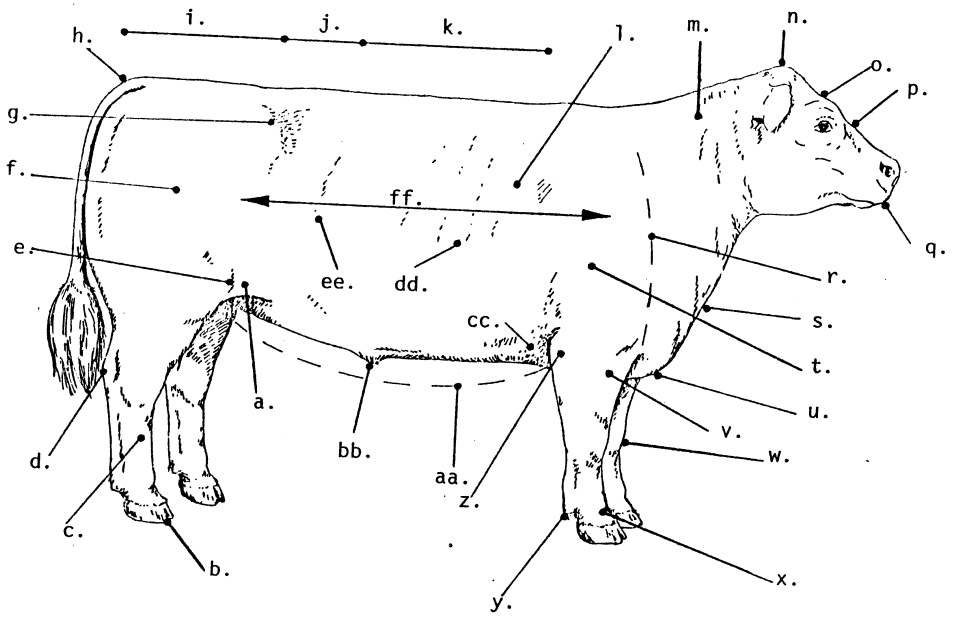
Characteristics: _____

_____

_____

_____

4. Label the parts of the beef animal.



a._____	l._____	w._____
b._____	m._____	x._____
c._____	n._____	y._____
d._____	o._____	z._____
e._____	p._____	aa._____
f._____	q._____	bb._____
g._____	r._____	cc._____
h._____	s._____	dd._____
i._____	t._____	ee._____
j._____	u._____	ff._____
k._____	v._____	

5. Name four factors to consider when selecting a beef breed or breeds.

a. _____ c. _____

b. _____ d. _____

6. Name two factors that determine the most important traits to select for in beef cattle.

a. _____ b. _____

7. Identify the four basic methods of beef animal selection. Write the correct method in the blank provided.

a. _____ Selection based on placing at a regional fair

b. _____ Selection based on ancestors

c. _____ Selection based on records kept of performance and/or progeny

d. _____ Selection based on rating of visual traits

8. Match the traits of beef animals to their respective heritability percentages. Write the correct number in the blank provided. (Note: Some percentages will be used more than once.)

____a.	Rib-eye area	1.	30%
____b.	Weaning weight	2.	40%
____c.	Birth weight	3.	45%

____d.	Calving interval	4.	60%
____e.	Retail product	5.	65%
____f.	Carcass grade	6.	70%
____g.	Feedlot gain	7.	10%
____h.	Feed efficiency		
____i.	Final feedlot weight		

9. Calculate the estimated increase in pasture gain due to genetic selection in the following problem. Show your work in the space provided.

   Data: Select heifers that gain .25 lb per day more than the herd average
   Select bulls that gain .5 lb per day more than the herd average
   Pasture gain has a heritability of 30%

   Answer_____

10. Name the most important factor in determining weaning weight.

    _____

11. Name the trait having the greatest influence on net income.

    _____

12. Describe two desirable and two undesirable characteristics in each of the following areas to look for when evaluating breeding stock.

		Desirable	Undesirable
a.	Characteristics indicating reproduction efficiency of a bull	_____	_____
		_____	_____
b.	Characteristics indicating reproduction efficiency of a cow	_____	_____
		_____	_____
c.	Characteristics indicating muscling, freedom from waste and size	_____	_____
		_____	_____
d.	Characteristics indicating structural soundness	_____	_____
		_____	_____

13. Describe four indicators of muscling and four indicators of finish in market animals.

a. Muscling

_____

_____

_____

_____

b. Finish

_____

_____

_____

_____

14. Describe the ideal market steer.

_____

_____

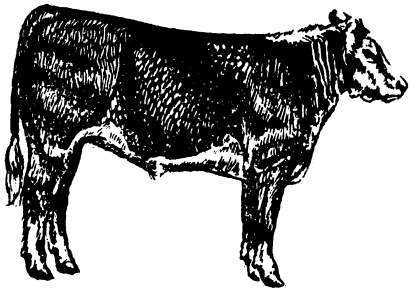
_____

_____

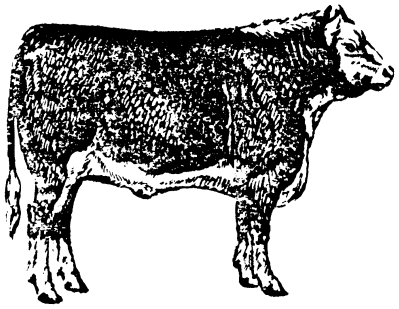
_____

15. Describe the three steers pictured.

a.



b.



_____

_____

_____

_____

_____

_____

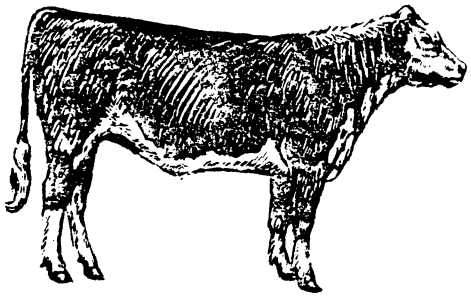
_____

_____

_____

_____

c.



_____

_____

_____

_____

_____

16. List and describe the two scores used in determining quality grades.

a. _____

_____

b. _____

_____

17. Identify the six quality grades for each of the following descriptions. Write the correct quality grade In the blank provided.

a. _____ This meat is usually processed into lunch meats, soup and canned meat products

b. _____ This is the most economical and most desirable carcass grade; Adequate marbling and carcass conformation are required

c. _____ Usually older animals and thin animals; Minimum marbling or below average carcass conformation fit into this category

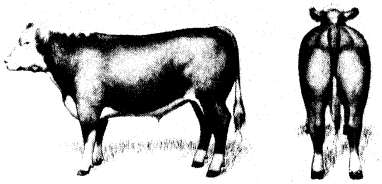
d. _____ This meat is not acceptable for human consumption

e. _____ This carcass has superior marbling, proper carcass conformation, and adequate maturity; This grade of meat is found in fine restaurants and gourmet stores

f. _____ This beef may be referred to as "no-roll" since it isn't stamped with the USDA grade; Must have slight marbling

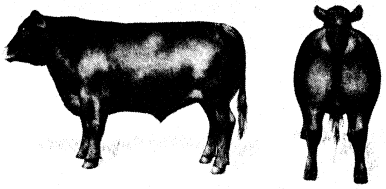
18. Distinguish among the five slaughter steers represented by assigning the appropriate quality grade.

a. _____

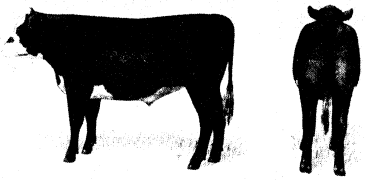


b. _____

c. _____



d. _____



e. _____

19. List the four measurements used in determining yield grades.

    a. _____

    b._____

    c._____

    d._____

20. Identify the five yield grades when given a description of each. Write the correct grade in the blank provided.

    a. _____ A carcass in this group is completely covered with fat. The lean is visible through the fat only on the neck and the lower part of the outside round. There usually is a thick layer of fat over the loin, rib and the inside round.

    b. _____ These carcasses have more fat on all the various parts, they have a smaller rib eye area and more kidney, pelvic and heart fat than carcasses that will meet the standards for the higher grades.

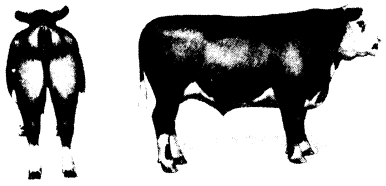
    c. _____ A carcass in this group has only a thin layer of external fat over the ribs, loin and rump, and slight deposits of fat in the flanks and the cod or udder region. Muscles are usually visible through the fat in many areas.

    d. _____ These carcasses are completely covered with fat. The only muscles visible are those on the shanks and over the outside of the plates and flanks. There usually is a moderately thick layer of fat over the loins, rib and the inside round.

    e. _____ A carcass in this group is nearly completely covered with fat, but the lean is plainly visible through the fat over the round, the top of the shoulder and the neck.

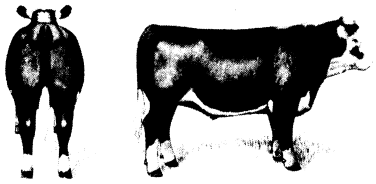
21. Distinguish among the five slaughter steers represented by assigning the appropriate yield grade.

a. _____

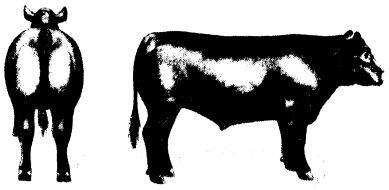


b. _____

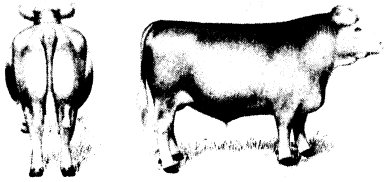
c. _____



d. _____



e. _____



BEEF EVALUATION AND SELECTION

AG 140-B

ANSWERS TO TEST

1.

a.	2	h.	20	n.	4	t.	7
b.	22	i.	14	o.	11	u.	21
c.	12	j.	13	p.	10	v.	1
d.	9	k.	3	q.	17	w.	16
e.	15	l.	25	r.	5	x.	24
f.	8	m.	18	s.	19	y.	23
g.	6						

2. a. cow-calf b. feedlot c. stocker-feeder

3. Answer should include information from five of the following breeds:

	Breed	Origin	Characteristics
a.	Hereford	England	Red with white face, underline, crest and switch; horned; excellent forage ability—good range cattle
b.	Polled	Iowa	Same as Hereford except for being Hereford polled
c.	Angus	Scotland	Black; polled; resistant to eye diseases; excellent carcass yield; small birth weight, but good weaning weight
d.	Shorthorn	England	Red, roan or white; polled or horned; heavy milkers
e.	Charolais	France	White to cream color; horned; large; heavily muscled
f.	Limousin	France	Red to gold color over back, shading to light buckskin or straw color under belly, around legs and muzzle; horned; large; heavily muscled; good carcass yield
g.	Simmental	Switzerland	Light red or cream with white face, usually have white spots or band on shoulders; large; excellent milkers
h.	Brahman	India	Light gray to dark red; drooping ears; long face; prominent hump over shoulders; loose skin; tolerant to parasites and insects; excellent foragers; resistant to eye diseases; adapted to hot, arid climates

	Breed	Origin	Characteristics
i.	Brangus	Oklahoma	Large; black; polled; slight crest over neck; slick hair; tolerance of Brahman to insects, heat and poor grazing conditions; fast gaining
j.	Santa	Texas	Large; red; short hair; Gertrudis loose hide; tolerant to heat and insects
k.	Beefmaster	Texas	No specific color (may be red, brown, dun, or red with white extensions and spots); large; horned; adapted to wide range in climate

4.

a.	Flank	l.	Crops	w.	Knee
b.	Hoof	m.	Neck	x.	Pastern
c.	Shank	n.	Poll	y.	Dewclaw
d.	Hock	o.	Forehead	z.	Elbow
e.	Stifle	p.	Face	aa.	Underline
f.	Quarter	q.	Muzzle	bb.	Sheath
g.	Hooks	r.	Shoulder vein	cc.	Fore flank
h.	Tailhead	s.	Dewlap	dd.	Ribs
i.	Rump	t.	Shoulder	ee.	Last rib (13th)
j.	Loin	u.	Brisket	ff.	Body
k.	Back	v.	Forearm		

5. Availability of breeding stock; Market for animals; Environmental conditions; Weaknesses in present stock

6. Economic importance of trait; Heritability of trait

7.

a.	Show-ring winnings	c.	Production testing
b.	Pedigree	d.	Appearance

8.

a.	6	d.	7	g.	3
b.	1	e.	5	h.	2
c.	2	f.	2	i.	4

9.

Heifer contribution	=	.0375 lb
Bull contribution	=	.075 lb
Answer	=	.1125 lb

10. Milking ability of cow

11. Calving interval or ability of a cow to produce a calf every year

12. Answers should include two of the following in each area.

	Desirable	Undesirable
a.	Masculine, alert head; well-developed crest, muscling and genitalia; Deep, wide chest	Sleepy; Poorly muscled and developed; Unbalanced or small testicles

b.	Long, lean with smooth muscling; Feminine head, body; Good functional udder; Normal genitalia	Coarse, heavy front; Masculine characteristics; Excess fat deposits; infantile vulva
c.	Long body; Reasonable height; Well muscled with prominent forearms; Wide rear quarters; Long rump; Thick loins; Trim through brisket, flank and twist; Well-turned top; Correctly balanced from front to rear	Short coupled, compact and close to ground; Full flanks, brisket and twist; Blocky from all points of view; Narrow hindquarters; Wide, flat back
d.	Straight, squarely set legs; Correct set to hock; Large and wide feet with deep heels	Sickle-hocked, postlegged or cowhocked legs; Toes that point out or in; Knees that allow legs to go over center; Legs that won't completely straighten; Too straight of pasterns; Any other skeletal deformity

13. Answer should include four of the following under each section:

    a. Muscling: Bulging forearms; Sharp turn over loin area; Long rump; Wide stance; Rounded top; Wide through the stifle region

    b. Finish: Deep, full brisket; Fat over ribs behind shoulder; Wide, flat top; Rolls of fat around tailhead; Full flank; Deep body and full middle; Square rump; Full cod; Deep twist; Narrow stance

14. The ideal market steer shows good size and scale by being relatively long and tall. The animal shows good muscling with bulging forearms, a sharp turn over the loin, a long rump, width through the stifle region and a wide stance. He is also correctly finished and trim through the brisket, middle, flank, cod and over the tailhead

15. a. Steer number 1 is an ideal animal with more size and scale than either 2 or 3. He has bulging forearms, a long, well-developed rump and is trim in the brisket and through the middle

    b. Steer number 2 is short, fat and wasty and also is showing a lack of size and scale. He is carrying excess finish with a heavy front and a wasty brisket and flank. He is only exhibiting an average amount of muscle

    c. Steer number 3 is very light framed and shallow-bodied with a lack of adequate muscling and finish throughout. He is very lightly muscled in the forearms and in the rear quarters

16. a. Marbling scores--The amount of fat interspersed in the muscle
    b. Maturity scores--Reflects the age of the animal at slaughter

17. a. Commercial
    b. Choice
    c. Standard
    d. Cull
    e. Prime
    f. Select

18. a. Choice
    b. Commercial
    c. Prime
    d. Select
    e. Standard

19. Hot carcass weight; External fat; Percent heart, kidney and pelvic fat; Rib eye area

20. a. Yield Grade 3
b. Yield Grade 5
c. Yield Grade 1
d. Yield Grade 4
e. Yield Grade 2

21. a. 4
b. 1
c. 3
d. 2
e. 5

DAIRY CATTLE EVALUATION AND SELECTION

AG 140-C

UNIT OBJECTIVE

After completion of this unit, students should be able to describe different breeds of dairy animals and the different methods available for selection. Students should also be able to distinguish between desirable and undesirable dairy animals and be able to choose bulls based on production records of offspring. This knowledge will be demonstrated by the completion of the assignment sheets and unit test with a minimum of 85 percent accuracy.

SPECIFIC OBJECTIVES AND COMPETENCIES

After completion of this unit, the student should be able to:

1. Match terms associated with dairy cattle selection to their appropriate definition.
2. Describe four advantages and four disadvantages of dairy farming.
3. List and describe the five major breeds of dairy cattle including origin, characteristics and average production.
4. Label the parts of a dairy cow.
5. Describe the comparative merits of the five methods of selecting dairy cattle.
6. Describe four key steps in judging.
7. Match the four general areas on the Dairy Cow Unified Scorecard to the parts of the animal that are evaluated in each of those areas.
8. Match the parts of a dairy cow to a description of how they should look in an ideal animal.
9. Distinguish between desirable and undesirable general appearance, body capacity, mammary systems and dairy character.
10. Write the average time a cow remains in a commercial and a purebred herd.
11. Describe three advantages of a good culling program.
12. Describe four uses for blood typing dairy animals.
13. Match traits to their heritability estimates.
14. Describe the two components of the modified contemporary comparison system for bull evaluation.
15. Place a class of four dairy animals.
16. Give oral reasons on placings of a class of four dairy animals.
17. Select the bulls best suited to improve either milk or fat production when given a list of bulls from a sire summary list.

DAIRY CATTLE EVALUATION AND SELECTION

AG 140-C

SUGGESTED ACTIVITIES

I. Suggested activities for instructor

A. Make transparencies and necessary copies of material.

B. Provide students with objectives and discuss.

C. Provide students with information and discuss.

D. Provide students with assignment sheets and discuss.

E. Make a bulletin board display of the different dairy breeds.

F. Obtain slides and/or pictures of dairy cows.

G. Obtain copies of *Hoard's Dairyman Judging Guides*, Hoard's Dairyman, Fort Atkinson, Wisconsin 53538 or *Techniques of Judging Dairy Cattle* by Dennis A. Hartman, 2709 Mt. Vernon Lane, Blacksburg, Virginia 24060.

H. Have students write to various breed associations for information.

I. Arrange a judging field trip at a local dairy.

J. Obtain copies of a DHIA Sire Summary List.

K. Develop a teaching aid for teaching the parts of a dairy cow.

(Note: A very easy aid can be made by projecting an outline of a cow onto the chalkboard with an overhead projector. A flannel board cow outline can also be used efficiently.)

L. Have students work assignment sheets.

M. Review and give test.

N. Reteach and retest if necessary.

II. Instructional materials

A. Objective sheet

B. Suggested activities

C. Information sheet

D. Transparency masters

1. TM 1--Parts of a Dairy Cow

2. TM 2--General Appearance

3. TM 3--Body Capacity

4. TM 4--Mammary System

5. TM 5--Dairy Character

E. Assignment sheets

1. AS 1--Place a Class of Four Dairy Animals

2. AS 2--Give Oral Reasons on Placings of a Class of Four Dairy Animals

3. AS 3--Select the Bulls Best Suited to Improve Either Milk or Fat Production

F. Answers to assignment sheets

G. Test

H. Answers to test

III. Unit references

A. Ensminger, M.E., *Dairy Cattle Science*, The Interstate Printers and Publishers, Danville, Illinois, 1980.

B. Hartman, Dennis A., *Techniques of Judging Dairy Cattle*, Dennis A. Hartman, Blacksburg, Virginia, 1979.

C. *Judging Guide*. W.D. Hoard and Sons Company, Fort Atkinson, Wisconsin, 1980.

D. *Sire Summary List*. North Central Regional Extension Publication 137, Ames, Iowa, Summer, 1980.

DAIRY CATTLE EVALUATION AND SELECTION

AG 140-C

INFORMATION SHEET

I. Terms and definitions

A. Enterprise--A business venture utilizing a specific phase of agricultural production
Example: Dairy cattle production

B. Capital--Money invested in an enterprise

C. Butterfat percentage--A measure of the amount of fat in milk

D. Type--The physical appearance of an animal determined by an evaluation of important characteristics

E. Pedigree--The ancestry of an individual

F. Purebred--An animal that can meet ancestry requirements for a particular breed

G. Progeny testing--Evaluation of an animal based on the performance of its offspring

H. Breed characteristics--Physical traits that differentiate one breed from another

I. Dairy character--Combination of characteristics that indicate a cow's ability to convert feed into milk

J. Body capacity--Size of barrel and heart girth indicating an animal's ability to consume large amounts of feedstuffs

K. Mammary system--Parts of the cow directly responsible for producing and storing milk

L. Culling--Process of eliminating less desirable animals from the herd

M. Blood typing--Testing for certain unique characteristics in the blood

N. Registration--Process of putting purebred animals on the records of their respective purebred association

O. Freemartin heifer--Sterile female born twin with a bull

P. Fertility--Ability of an animal to reproduce

Q. SNF--Solids not fat; amount of solids in the milk not counting the fat

R. Clean--Freedom from fat

S. Open appearance--Having ribs that are widely spaced and well sprung

T. Spring of rib--The amount ribs arch out from the backbone

U. Postlegged--Rear legs are too straight when viewed from the side

V. Sickle-hocked--Rear legs are too curved when viewed from the side

W. Cowhocked--Rear legs are turned so hocks are close together and feet are pointing out when viewed from the rear

X. Modified contemporary comparison system for bull evaluation--Records kept on bulls by which they can be evaluated on how they affect their offspring's production compared to the breed average

II. Dairy production as a farming enterprise

A. Advantages

1. Regular income all year round

2. Less fluctuation than other agricultural enterprises

3. Efficient way to convert roughages and other feeds into a high quality food

4. Labor needs remain constant

5. Capital investment can often be quickly and easily increased even on limited acreages

B. Disadvantages

1. High capital requirements

2. Management and labor need high skill levels

3. Cows require continual attention

4. Average income per hour is low

III. Major breeds of dairy cattle

A. Holstein

(Note: The breed association is the Holstein-Friesian Association of America, Box 808, Brattleboro, Vermont 05301.)

1. Origin -- Holland

2. Characteristics -- Black and white and white switch; adult weight: cows 1500#, bulls 1800#; average milk production-15,528#; butterfat test-3.5%

B. Guernsey

(Note: The breed association is the American Guernsey Cattle Club, Peterborough, New Hampshire 03458.)

1. Origin -- Guernsey Island (Coast of France)

2. Characteristics--Light fawn to almost red; white markings on face, legs, switch and flanks; adult weight: cows 1200#, bulls 1700#; average milk production-10,573#; butterfat test-4.7%

C. Jersey

(Note: The breed association is the American Jersey Cattle Club, 2105-J S. Hamilton Rd., Columbus, Ohio 43227.)

1. Origin--Jersey Island (English Channel)

2. Characteristics -- Light fawn to black, white spotted to solid; adult weight: cows 1200#, bulls 1200-1600#; average milk production-10,150#; butterfat test-4.9%

D. Ayrshire

(Note: The breed association is the Ayrshire Breeders' Association, Brandon, Vermont 05733.)

1. Origin--Scotland

2. Characteristics--Red with white markings or white with red markings; adult weight: cows 1300#, bulls 1900#; average milk production-11,730#; butterfat test-3.9%

E. Brown Swiss

(Note: The breed association is the Brown Swiss Cattle Breeders' Association of America, Inc., Box 1038, Beloit, Wisconsin 53511.)

1. Origin--Switzerland

2. Characteristics--Light fawn to black; black nose, tongue, switch and horn tips; largest, most rugged breed; adult weight: cows 1500#, bulls 2000#; average milk production-13,063#; butterfat test-3.9%

(Note: Several breeds are considered to be dual-purpose (beef and dairy) breeds. They are Milking Shorthorn, Red Poll and Devon.)

IV. Parts of a dairy cow (Transparency 1)

Muzzle	Rump	Teats
Nose	Thurl	Mammary veins
Forehead	Tailhead	Milk wells
Poll	Pin bone	Pastern
Horns	Tail	Knee
Neck	Rear udder attachment	Chest floor
Heart girth	Stifle	Elbow
Withers	Thigh	Brisket
Crops	Flank	Dewlap
Back	Hock	Point of shoulder
Chine	Switch	Shoulder blade
Loin	Dewclaw	Throat
Ribs	Hoof	Jaw
Barrel	Fore udder attachment	Hip or Hook

V. Methods of selecting dairy cattle

A. Selection based on type of judging

1. Good "type" animals generally wear longer

2. High production is not necessarily dependent on type, but desirable type animals do not hurt production

3. Purebred animals are much more valuable when they have desirable type characteristics

4. Judging is often the only selection method available

B. Selection based on pedigree

1. Close ancestors are most valuable for predicting quality

2. Most useful for young animals with underdeveloped type traits

3. Popular blood lines increase value of purebred animals

C. Selection based on show-ring winnings

1. Very limited use

2. Provides valuable exposure for purebred herds

D. Selection based on progeny testing

1. Primarily used with bulls

2. Records are getting more sophisticated and reliable

3. Large number of offspring needed for reliable predictions

(Note: These offspring need to be distributed among many herds instead of having a large number of animals from a few herds.)

E. Selection based on production records

1. Very reliable

2. Usually used to make culling decisions within herd

VI. Key steps in judging

A. Observe moving animal

B. Stand back and get an overall view

C. Examine individual parts of animal

D. Compare animal to the "ideal type"

VII. Parts of the Dairy Cow Unified Scorecard

A. General appearance--30%--Attention should be directed toward breed characteristics, head, shoulder blades, back, rump, legs and feet

B. Dairy character--20%--Attention should be directed toward neck, withers, ribs, flanks, thighs and skin

C. Body capacity--20%--Attention should be directed to barrel and heart girth

D. Mammary system--30%--Attention should be directed to fore udder, rear udder, teats, median suspensory ligament and mammary veins

(Note: Commercial dairymen weigh dairy character and mammary system more heavily than these percentages indicate.)

VIII. Description of an ideal dairy animal

A. Breed characteristics--True to particular dairy breed

B. Head--Moderate in length; clean-cut and alert

C. Shoulder blades--Blend tightly into body

D. Back--Straight and strong

E. Rump--Long and wide; level from hooks to pins with refined, level tailhead; thurls high and wide

F. Legs and feet--Strong; forelegs straight and squarely set; hind legs straight with slight set when viewed from the side; strong pasterns

G. Neck--Long and clean-cut, blends smoothly with shoulders

H. Withers--Sharp

I. Ribs--Wide apart, highly sprung

J. Thighs--Flat

K. Skin--Loose and pliable

L. Barrel--Long and deep, increasing in spring of rib towards the rear

M. Heart girth--Deep, full crops; wide chest floor

N. Udder--Symmetrical with evenly balanced quarters; moderate crease between halves when viewed from rear; strongly attached

O. Teats--Uniform and squarely placed; moderate size

P. Mammary veins--Large, twisting and branching

IX. Desirable and undesirable dairy animals (Transparencies 2, 3, 4, 5)

A. General appearance (Transparency 2)

1. Desirable--Head true to breed type; shoulders blend smoothly and tightly into body; strong and straight back; long, wide rump that is nearly level from hooks to pins; flat, strong leg bones; short, strong pasterns; deep heels; straight hind legs when viewed from the rear and having a slight set to the hock when viewed from the side

2. Undesirable--Coarse head and shoulders; winged shoulders; weak back and loin; narrow, sloping rump; frail or light boned; cowhocked, sickle-hocked or postlegged hind legs; weak, sloping pasterns; shallow heel

B. Body capacity (Transparency 3)

1. Desirable--Long body; deep fore and rear rib; fore ribs are widely spaced and have good "spring of rib"; wide chest floor; wide down the top with full crops

2. Undesirable--Narrow and shallow; ribs hug body; "slabsided"

C. Mammary systems (Transparency 4)

1. Desirable--Symmetrical, level udder, with evenly balanced quarters; squarely placed teats of moderate length; strong fore udder attachment with fore udder blending into the body; high and wide rear udder attachment that causes udder to have a crease when viewed from the rear and to be held well above the hocks

2. Undesirable--Tilted udder; small, poorly attached udder; bulging fore udder; quartered or cut up when viewed from the side; light or dry quarters; teats that point out or are too long, too short or abnormally shaped; broken udder floor; udder hanging below the hocks, especially in younger cows

D. Dairy character (Transparency 5)

1. Desirable--Angular and open appearance; sharp over the withers; long and trim neck with trim brisket; wide apart, wide, long ribs; flat thighs; clean over the hip and pin bones

2. Undesirable--Coarse and fleshy; excess fat indicated by a full brisket, rounding over the withers and back, and rounded thighs; short, heavy neck and throat

X. Average time a cow remains in milking herd

(Note: A commercial herd may have both purebred and grade animals, but its main function is milk production. A purebred herd makes a share of its profit by selling purebred animals.)

A. Commercial--3 1/2 years

B. Purebred--5 years

XI. Advantages of a good culling program

A. Reduces waste of time and money on low producing cows

B. Causes overall herd improvement

C. Increases profits

XII. Uses for blood typing dairy animals

A. Confirm parentage for registration purposes

B. Determine parentage between one or more likely sires

C. Identify stolen cattle

D. Determine fertility of heifers born with a bull

(Note: 85% of all heifers born with a bull are infertile and are called freemartins.)

XIII. Heritability estimates

(Note: Studies have shown that differences between individual cows are due to: herd influences--35%; year and season--15%; inheritance--25%; and short term factors such as nervousness or mastitis--25%.)

	Trait	Heritability
A.	Production:	
1.	Milk production	25%
2.	Fat percentage	50%
3.	Protein percentage	50%
4.	Feedlot gain	45%

	Trait	Heritability
B.	Physical traits:	
1.	Stature	40%
2.	Udder support	20%
3.	Legs and feet	15%

	Trait	Heritability
C.	Management traits:	
1.	Milking speed	25%
2.	Birth weight	40%
3.	Temperament	40%
4.	Fertility	5%

(Note: This heritability estimate may be somewhat misleading since an infertile heifer is automatically eliminated from the data collection since she has no offspring to measure differences in. A heifer with an infantile vulva or a coarse, bullish appearance should always be selected against.)

XIV. Modified contemporary comparison system for bull evaluation

A. Predicted difference--Indicates the average increase in production of a bull's daughters over the breed herd average

1. Milk--Measured in pounds

2. Fat--Measured in pounds and as a percentage

3. Dollars--Indicates increase in profits by using a particular bull

B. Repeatability--Percent of reliability for predicted differences; reliability increases as number of daughters, especially those in different herds, increase

Example:

Sire Code	Sire Name	Repeatability
7H477	Glendell Arlinda Chief	99%

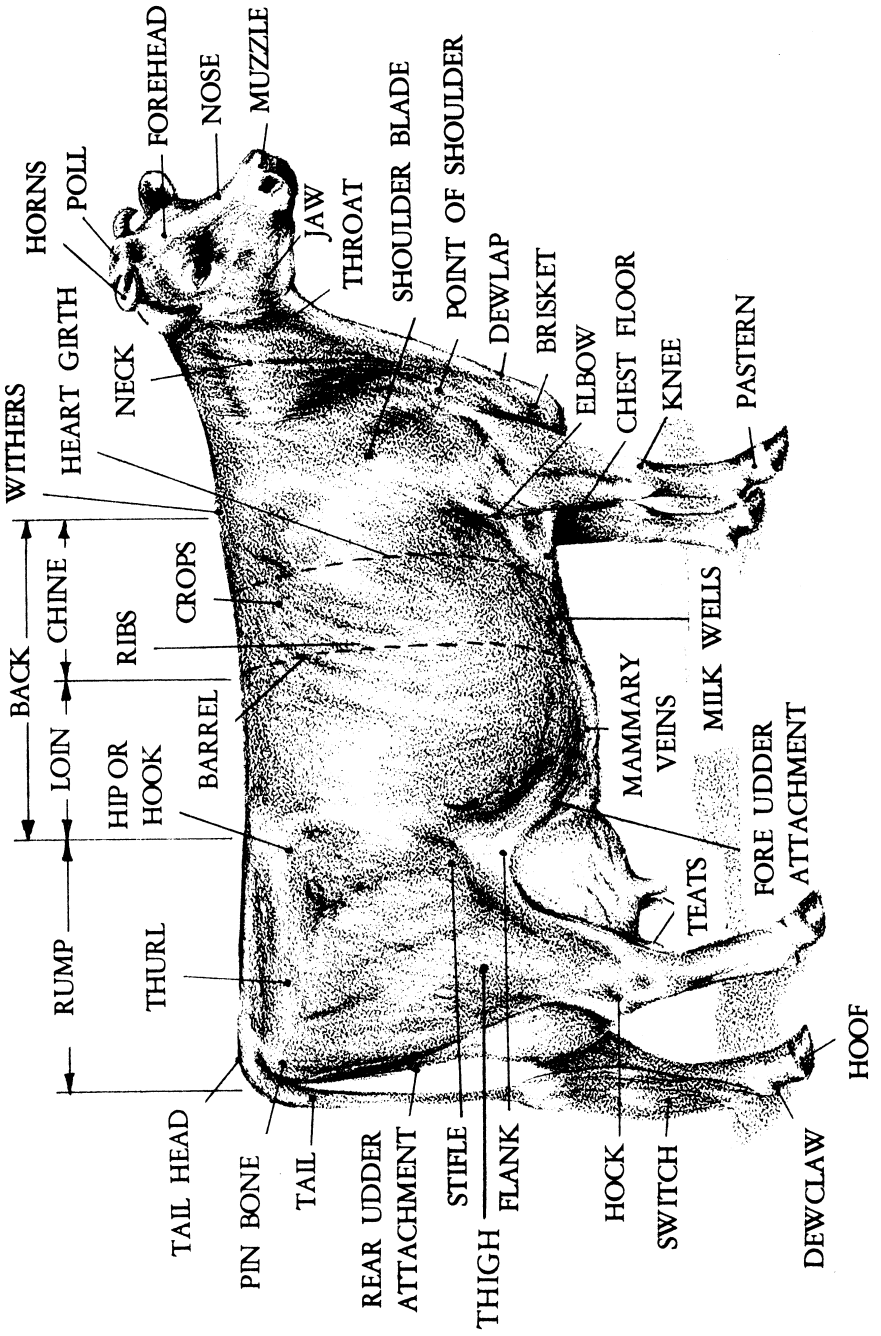
Predicted Differences

Milk	Fat %	Fat	Dollars
+2035	-.09	+60	+218

Daughters of the bull Glendell will have an increased milk production of 2035 pounds, a decreased fat percentage of .09 percent, an increased overall fat production of 60 pounds and an increased value of milk production of $218. These average increases will happen 99% of the time

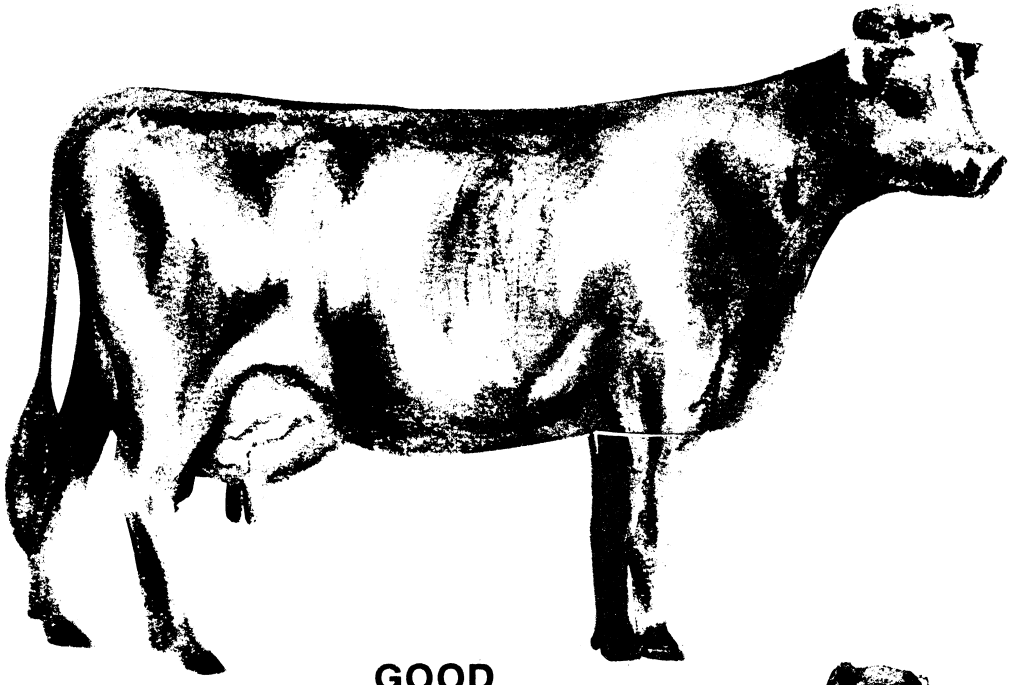
(Note: The pounds of fat increase even though the percentage of fat decreases because of the big increase in overall milk production.)

Parts Of A Dairy Cow



TM 1

General Appearance



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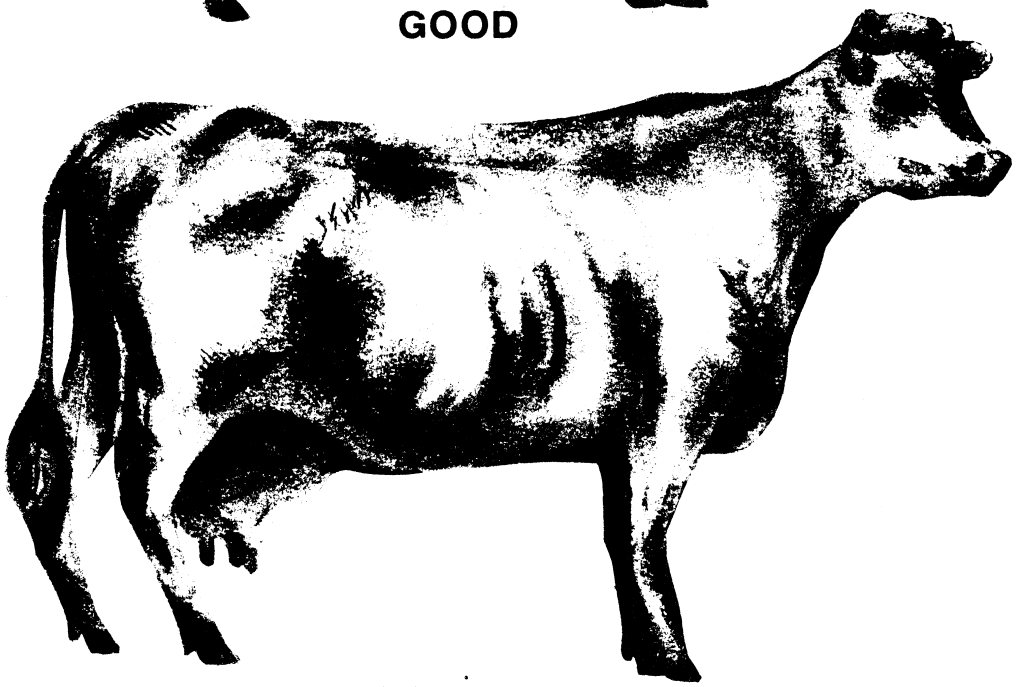

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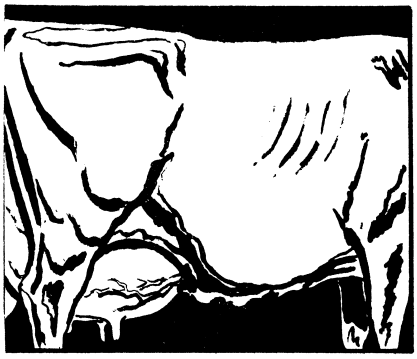
TM 2

Body Capacity



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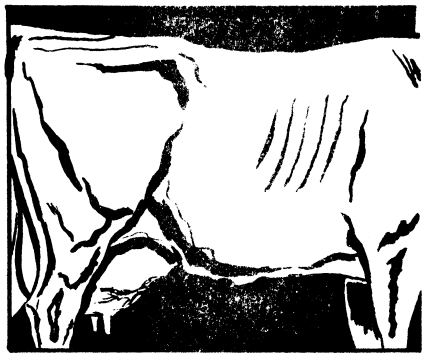

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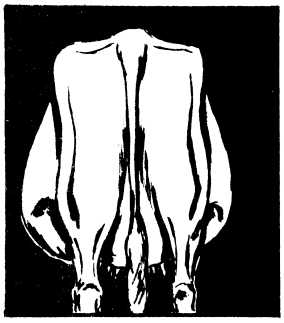

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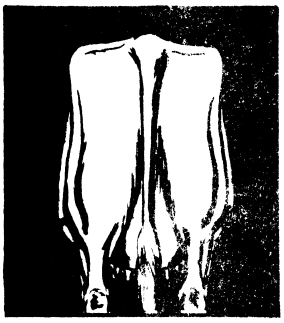

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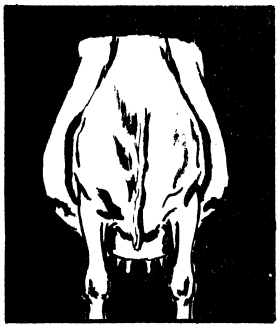

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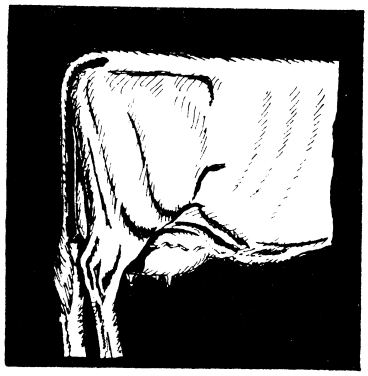
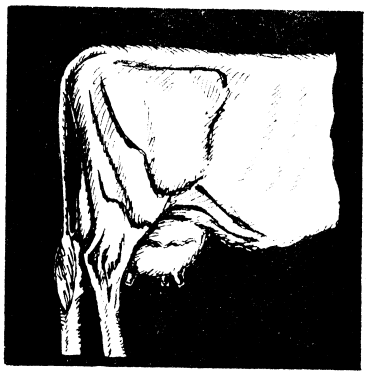
TM 3

Mammary Systems



GOOD UDDER AND FORE UDDER ATTACHMENT



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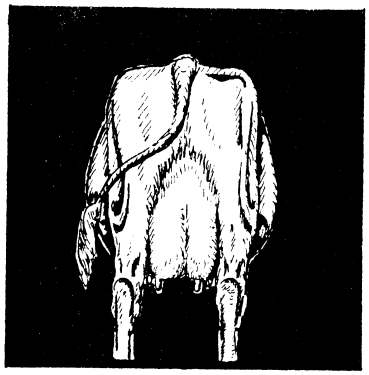
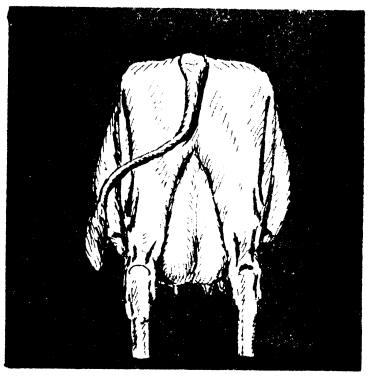
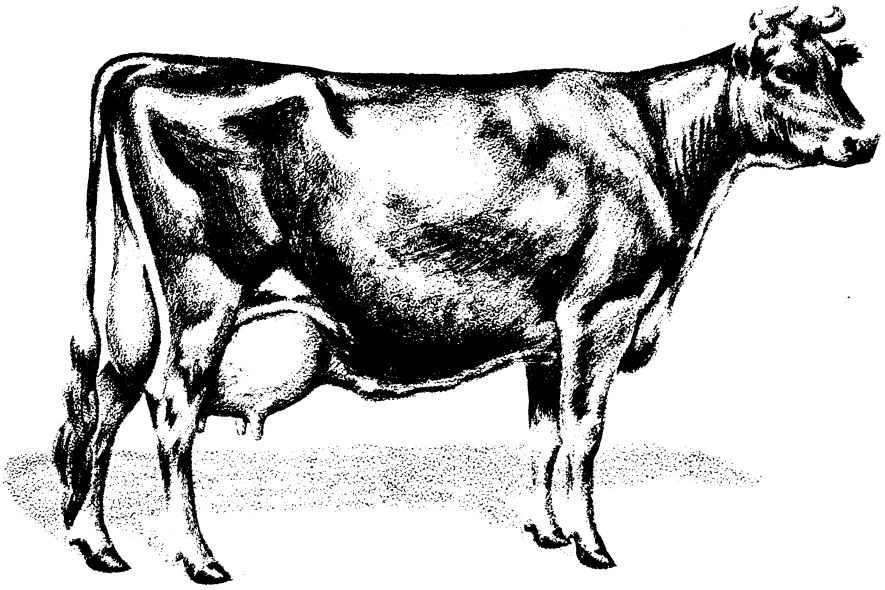


GOOD UDDER AND REAR UDDER ATTACHMENT



POOR UDDER AND REAR UDDER ATTACHMENT

Dairy Character



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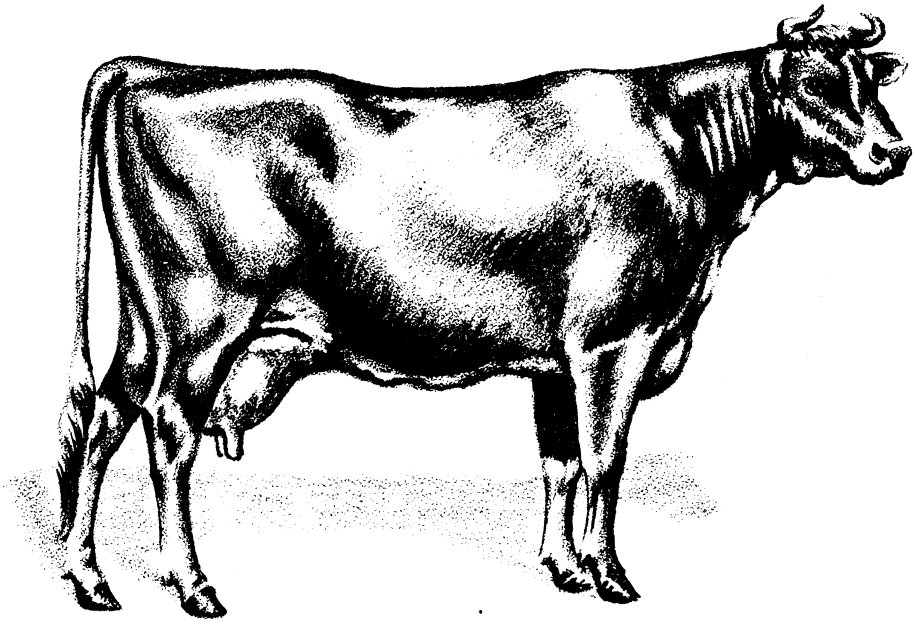


POOR

TM 5

DAIRY CATTLE EVALUATION AND SELECTION

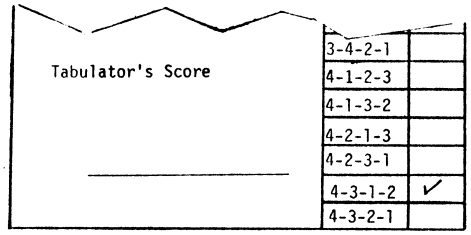
AG 140-C

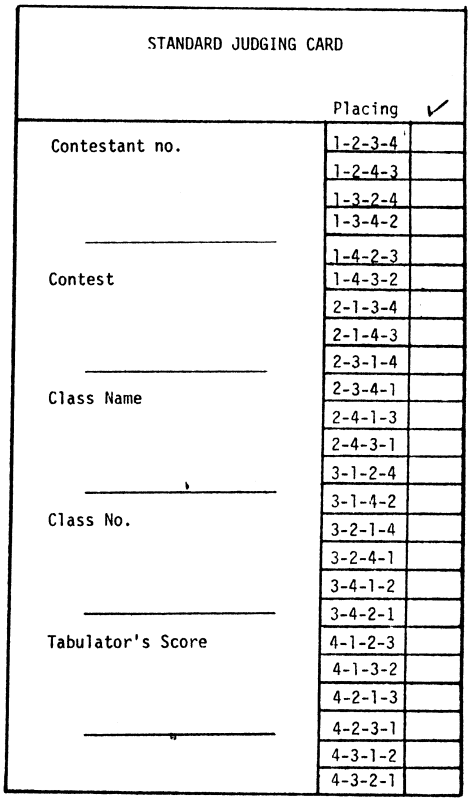
ASSIGNMENT SHEET #1—PLACE A CLASS OF FOUR DAIRY ANIMALS

Name_____ Score_____

Based on your evaluation of a class of four dairy cows (either on slides or live) place them order from most to least desirable. Mark your placings on the official scorecard below. It would be beneficial to try additional classes of animals such as different ages of cows, heifers and bulls.

Example: You have decided No. 4 is the best, with No. 3 being the next best ad No. 1 being the third best, with No. 2 being the least desirable. You would mark the card as shown below.





DAIRY CATTLE EVALUATION AND SELECTION

AG 140-C

ASSIGNMENT SHEET #2--GIVE ORAL REASONS ON PLACINGS
OF A CLASS OF FOUR DAIRY ANIMALS

Name_____ Score_____

The ability to effectively evaluate animals is greatly improved when a person is able to explain exactly why the animals were placed as they were. Look again at the four cows and review the specific reference points for general appearance, body capacity, dairy character and the mammary system. Then write specific reasons for your placings before sharing them with the class.

Example: Four places easily over 3 because she exhibits more dairyness from her withers to her advantage over 3 in Holstein breed character about the head, being broader in muzzle and deeper in jaw. She also excels 3 in fullness of crops. Granted, 3 is more nearly level from hips to pins and has greater width of body than 4. But 3 places at the bottom of this class because of her thickness, undesirable teat size and lack of breed character. She does excel in straightness of topline and spring of rib, however.

DAIRY CATTLE EVALUATION AND SELECTION

AG 140-C

ASSIGNMENT SHEET #3--SELECT THE BULLS BEST SUITED
TO IMPROVE EITHER MILK OR FAT PRODUCTION

Name_____ Score_____

Sire summaries, based on the production records of a bull's offspring have become essential to the operation of a modern commercial dairy. These summaries help dairy managers select semen from bulls that will best fit into their operation and therefore improve their overall profits. These records are not hard to figure out once you understand how they work. Study the information on the modified contemporary comparison system for bull evaluation and then answer the questions about the bulls listed below.

The following is taken from the Sire Summary List published by the North Central Regional Extension and prepared by extension dairy specialists at Iowa State University.

	Percent	Predicted Differences		
Sire Name	Repeatability	Pounds of Milkfat	Fat %	Pounds of Fat
Long-Haven Kingstead Admiral	92	+1072	-.14	+17
Paclamar Majuro	61	+1068	+.03	+44
Round Oak Rag Apple Elevation	99	+1484	-.03	+50
Cedar-Grove Golden Nugget	94	+1664	+.01	+62
Chapel-Bank Apache	99	+212	+.24	+42
Double Ned Harveycrest Walkway	98	+1678	-.13	+41

a. Which bull would you choose to get the biggest increase in milk production?

_____

b. Which bull would you choose to increase your butterfat test?

_____

c. Which bull has the least reliable predicted differences?

_____

d. Which bull would probably increase your profits the most?

_____

e. Which bull would probably provide the smallest increase in profits?

_____

DAIRY CATTLE EVALUATION AND SELECTION

AG 140-C

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

Answered to the satisfaction of the instructor

Assignment Sheet #2

Answered to the satisfaction of the instructor

Assignment Sheet #3

a. Double Ned Harveycrest Walkway

b. Chapel-Bank Apache

c. Paclamar Majuro

d. Cedar-Grove Golden Nugget
(Note: This would be because of the improved fat test.)

e. Chapel-Bank Apache

DAIRY CATTLE EVALUATION AND SELECTION

AG 140-C

UNIT TEST

Name_____ Score_____

1. Match the terms on the right to the appropriate definition.

a._____	Freedom from fat	1.	Capital
b._____	Testing for certain unique characteristics in the blood	2.	Type
c._____	An animal that can meet ancestry requirements for a particular breed	3.	Purebred
d._____	Physical traits that differentiate one breed from another	4.	Breed characteristics
e._____	The physical appearance of an animal determined by an evaluation of important characteristics	5.	Body capacity
f._____	The ancestry of an individual	6.	Blood typing
g._____	Process of putting purebred animals on the records of their respective purebred association	7.	Fertility
h._____	Parts of the cow directly responsible for producing and storing milk	8.	SNF
i._____	Having ribs that are widely spaced and well sprung	9.	Open appearance
j._____	Money invested in an enterprise	10.	Postlegged
k._____	Process of eliminating less desirable animals from the herd	11.	Cowhocked
l._____	A business venture utilizing a specific phase of agricultural production	12.	Modified contemporary comparison system for bull evaluation
m._____	A measure of the amount of fat in milk	13.	Enterprise
n._____	Combination of characteristics that indicate a cow's ability to convert feed into milk	14.	Butterfat percentage
o._____	Evaluation of an animal based on the performance of its offspring	15.	Pedigree
		16.	Progeny testing
		17.	Dairy character
		18.	Mammary system
		19.	Culling
		20.	Registration

p._____ Rear legs are turned so hocks are close together and feet are pointing out when viewed from the rear

q._____ Records kept on bulls by which they can be evaluated on how they affect their offspring's production compared to the breed average

r._____ Solids not fat; amount of solids in the milk not counting the fat

s._____ Sterile female born twin with a bull

t._____ Rear legs are too curved when viewed from the side

u._____ Ability of an animal to reproduce

v._____ Rear legs are too straight when viewed from the side

w._____ The amount ribs arch out from the backbone

x._____ Size of barrel and heart girth indicating an animal's ability to consume large amounts of feedstuffs

21. Freemartin heifer

22. Clean

23. Spring of rib

24. Sickle-hocked

2. Describe four advantages and four disadvantages of dairy farming.

Advantages

a._____

b._____

c._____

d._____

Disadvantages

a._____

b._____

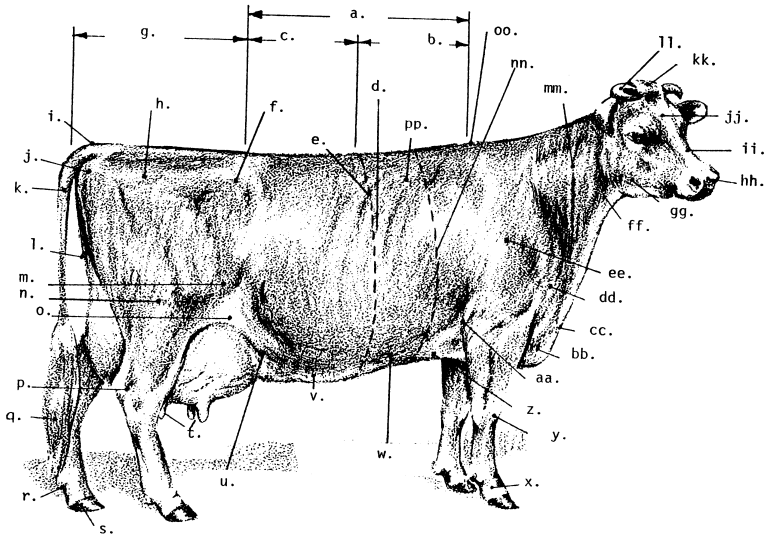
c._____

d._____

3. List and describe the five major breeds of dairy cattle including origin, characteristics and average milk production

Breed	Origin	Characteristics	Average Production
a.			
b.			
c.			
d.			
e.			

4. Label the parts of the dairy cow.



a._____ v._____

b. ._____ w._____

c._____ x._____

d. ._____ y._____

e._____ z._____

f. ._____ aa._____

g._____ bb._____

h. ._____ cc._____

i._____ dd._____

j. ._____ ee._____

k._____ ff._____

l. ._____ gg._____

m._____ hh._____

n ._____ ii._____

o._____ jj._____

p._____ kk._____

q._____ ll._____

r._____ mm._____

s._____ nn._____

t._____ oo._____

u._____ pp._____

5. Describe the comparative merits of the five methods of selecting dairy cattle.

a. Judging _____

_____

_____

_____

_____

b. Pedigree _____

_____

_____

_____

_____

c. Show-ring winnings _____

_____

_____

_____

d. Progeny testing _____

_____

_____

_____

_____

e. Production records _____

_____

_____

_____

6. Describe four key steps in judging.

a. _____

b. _____

c. _____

d. _____

7. Match the four general areas on the Dairy Cow Unified Scorecard to the parts of the animal that are evaluated in each of those areas.

1.	Dairy character	3.	Body capacity
2.	Mammary system	4.	General appearance

a. _____ Neck, withers, ribs, flanks, thighs and skin

b. _____ Breed characteristics, head, shoulder blades, back, rump, legs and feet

c. _____ Fore udder, rear udder, teats, median suspensory ligament and mammary veins

d. _____ Barrel, heart girth

8. Match the parts of a dairy cow on the right to the description of how they should look in an ideal animal.

_____a.	Long and deep, increasing in spring of rib towards the rear	1.	Breed characteristics
_____b.	Straight and strong	2.	Head
_____c.	Long and clean-cut, blends smoothly with shoulders	3.	Shoulder blades
_____d.	Flat	4.	Back
_____e.	Sharp	5.	Rump
_____f.	True to particular dairy breed	6.	Legs and feet
_____g.	Symmetrical with evenly balanced quarters; moderate crease between halves when viewed from rear; strongly attached	7.	Neck
_____h.	Deep, full crops; wide chest floor	8.	Withers
_____i.	Long and wide; level from hooks to pins with refined, level tailhead; thurls high and wide	9.	Ribs
_____j.	Wide apart, highly sprung	10.	Thighs
		11.	Skin
		12.	Barrel

_____k. Strong; forelegs straight and squarely set; hind legs straight with slight set when viewed from the side; strong pasterns

_____l. Large, twisting and branching

_____m. Blend tightly into body

_____n. Moderate in length; clean-cut and alert

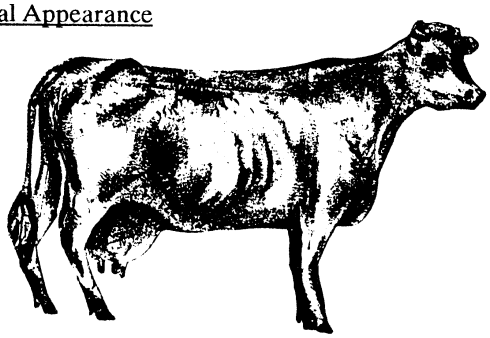
_____o. Uniform and squarely placed; moderate size

_____p. Loose and pliable

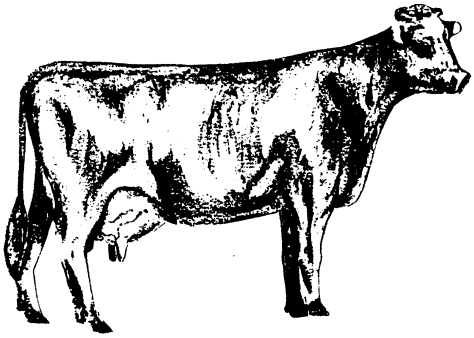
13. Heart girth
14. Udder
15. Teats
16. Mammary veins

9. Distinguish between desirable and undesirable general appearance, body capacity, mammary systems and dairy character by writing desirable or undesirable beneath the appropriate pictures.

General Appearance



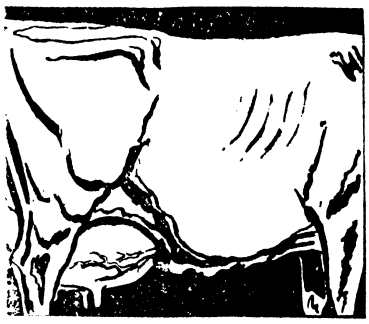
a. _____



b. _____

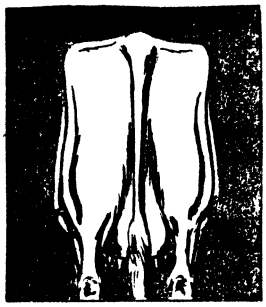
Body Capacity

c. _____



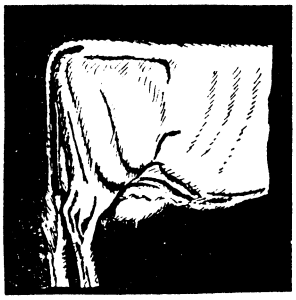
d. _____

e. _____

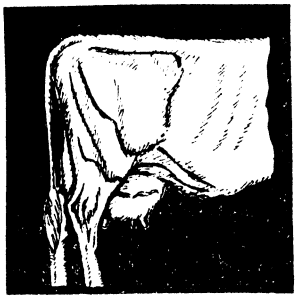


f. _____

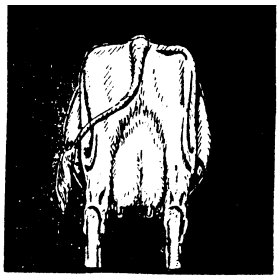
Mammary Systems



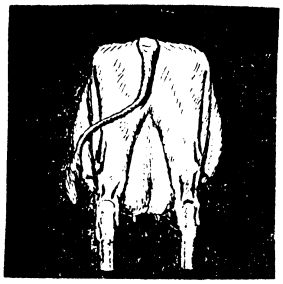
g. _____



h. _____

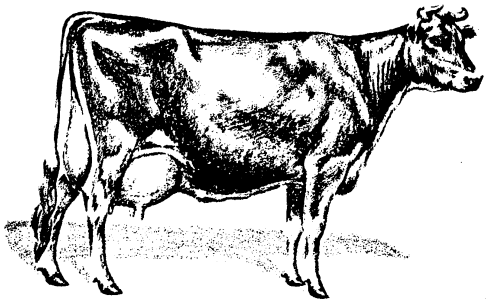


i. _____

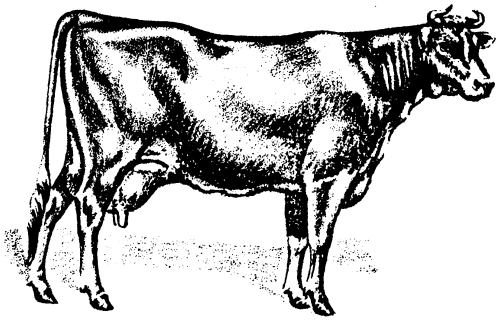


j. _____

Dairy Character



k. _____



l. _____

10. Write the average time a cow remains in a commercial and a purebred herd.

    a. Commercial _____

    b. Purebred _____

11. Describe three advantages of a good culling program.

    a._____

    b._____

    c._____

12. Describe four uses for blood typing dairy animals.

    a._____

    b._____

    c._____

    d._____

13. Match the heritability estimates to the appropriate trait.

(Note: The estimates may be used more than once.)

a._____	Udder support	1.	5%
b._____	Fat percentage	2.	15%
c._____	Milking speed	3.	20%
d._____	Birth weight	4.	25%
e._____	Temperament	5.	40%
f._____	Fertility	6.	45%
g._____	Milk production	7.	50%
h._____	Feedlot gain		
i._____	Legs and feet		
j._____	Stature		
k._____	Protein percentage		

14. Describe the two components of the modified contemporary comparison system for bull evaluation.

a. Predicted difference

_____

_____

_____

b. Repeatability

_____

_____

_____

DAIRY CATTLE EVALUATION AND SELECTION

AG 140-C

ANSWERS TO TEST

1.

a.	22	g.	20	m.	14	s.	21
b.	6	h.	18	n.	17	t.	24
c.	3	i.	9	o.	16	u.	7
d.	4	j.	1	p.	11	v.	10
e.	2	k.	19	q.	12	w.	23
f.	15	l.	13	r.	8	x.	5

2. Advantages should include 4 of the following: Regular income all year round; Less fluctuation than other agricultural enterprises; Efficient way to convert roughages and other feeds into a high quality food; Labor needs remain constant; Capital investment can often be quickly and easily increased even on limited acreages

Disadvantages should include: High capital requirements; Management and labor need high skill levels; Cows require continual attention; Average income per hour is low

3.

Breed	Origin	Characteristics	Average Production
a. Holstein	Holland	Black and white, and white switch; adult weight: cows 1500#, bulls 1800#; butterfat test 3.5%	15,528#
b. Guernsey	Guernsey Island (Coast of France)	Light fawn to almost red; white markings on face, legs, switch and flanks; adult weight: cow 1200#, bulls 1700#; butterfat test-4.7%	10,573#
c. Jersey	Jersey Island (English Channel)	Light fawn to black, white spotted to solid; adult weight: cows 1200#, bulls 1200-1600#, butterfat test-4.9%	10,150#
d. Ayrshire	Scotland	Red with white markings or white with red markings; adult weight: cows 1300#, bulls 1900#; butterfat test-3.9%	11,730#

Breed	Origin	Characteristics	Average Production
e. Brown Swiss	Switzerland	Light fawn to black; black nose, tongue, switch and horn tips; largest, most rugged breed; adult weight: cows 1500#, bulls 2000#; butter-fat test3.9%	13,063#

4.

a.	Back	o.	Flank	cc.	Dewlap
b.	Chine	p.	Hock	dd.	Point of shoulder
c.	Loin	q.	Switch	ee.	Shoulder blade
d.	Ribs	r.	Dewclaw	ff.	Throat
e.	Barrel	s.	Hoof	gg.	Jaw
f.	Hip or Hook	t.	Teats	hh.	Muzzle
g.	Rump	u.	Fore udder attachment	ii.	Nose
h.	Thurl	v.	Mammary veins	jj.	Forehead
i.	Tailhead	w.	Milk wells	kk.	Poll
j.	Pin bone	x.	Pastern	ll.	Horns
k.	Tail	y.	Knee	mm.	Neck
l.	Rear udder attachment	z.	Chest floor	nn.	Heart girth
m.	Stifle	aa.	Elbow	oo.	Withers
n.	Thigh	bb.	Brisket	pp.	Crops

5. a. Judging--Good "type" animals generally wear longer; High production is not necessarily dependent on type, but desirable type animals do not hurt production; Purebred animals are much more valuable when they have desirable type characteristics; Judging is often the only selection method available

b. Pedigree--Close ancestors are most valuable for predicting quality; Most useful for young animals with underdeveloped type traits; Popular blood lines increase value of purebred animals

c. Show-ring winnings--Very limited use; Provides valuable exposure for purebred herds

d. Progeny testing--Primarily used with bulls; Records are getting more sophisticated and reliable; Large number of offspring needed for reliable predictions

e. Production records--Very reliable; Usually used to make culling decisions within herd

6. a. Observe moving animal
b. Stand back and get an overall view
c. Examine individual parts of animal
d. Compare animal to the "ideal type"

7.

a.	1	c.	2
b.	4	d.	3

8.

a.	12	e.	8	i.	5	m.	3
b.	4	f.	1	j.	9	n.	2
c.	7	g.	14	k.	6	o.	15
d.	10	h.	13	l.	16	p.	11

9.

a.	Undesirable	e.	Undesirable	i.	Desirable
b.	Desirable	f.	Undesirable	j.	Undesirable
c.	Desirable	g.	Desirable	k.	Desirable
d.	Desirable	h.	Undesirable	l.	Undesirable

10.

a. 3 1/2 years
b. 5 years

11. Reduces waste of time and money on low producing cows; Causes overall herd improvement; Increases profits

12. Confirm parentage for registration purposes; Determine parentage between one or more likely sires; Identify stolen cattle; Determine fertility of heifers born with a bull

13.

a.	3	e.	5	i.	2
b.	7	f.	1	j.	5
c.	4	g.	4	k.	7
d.	5	h.	6		

14.

a. Indicates average increase in production of a bull's daughters over the breed herd average; differences are figured in pounds of milk, fat and dollars

b. Indicates reliability of predicted differences; it is figured as a percent and increases with the number of daughters, especially those in different herds

SWINE EVALUATION AND SELECTION

AG 140-D

UNIT OBJECTIVE

After completion of this unit, students should be able to identify the different breeds of swine and be able to distinguish between desirable and undesirable animals based on production records and physical appearance. This knowledge will be demonstrated by completion of assignment sheets and unit test with a minimum of 85 percent accuracy.

SPECIFIC OBJECTIVES AND COMPETENCIES

After completion of this unit, the student should be able to:

1. Match terms associated with swine evaluation and selection to their proper definitions.
2. Label the parts of a swine.
3. Describe five major breeds of swine, including origins and characteristics.
4. List seven factors to consider when selecting a swine breed.
5. Identify four methods of selecting breeding swine.
6. Describe desirable and undesirable characteristics of breeding swine.
7. Describe the reasons for considering each of the six selection factors when choosing quality swine breeding stock.
8. Match traits of swine to their respective heritability percentages.
9. Calculate estimated improvement from genetic selection.
10. Describe four indicators of finish and four indicators of muscling in market swine.
11. Describe the characteristics of a meat-type hog.
12. Describe the conformation of the ideal market swine.
13. List the two considerations in quality grading swine carcasses.
14. Distinguish among market swine representing the top four USDA quality grades.
15. Evaluate and place a class of four market swine.
16. Give oral reasons for placing a class of market swine.
17. Evaluate live market swine for USDA quality grade.
18. Demonstrate the ability to measure backfat thickness on market swine.

SWINE EVALUATION AND SELECTION

AG 140-D

SUGGESTED ACTIVITIES

I. Suggested activities for instructor

A. Make transparencies and necessary copies of material.

B. Provide students with objectives.

C. Provide students with information and discuss.

D. Provide students with assignment sheets and laboratory exercise.

E. Have students write different breed associations for information.

F. Obtain and show slides of swine for judging.

G. Arrange field trip to judge swine.

H. Arrange field trip to slaughterhouse to compare live animals with carcasses.

I. Design a game for teaching parts of a hog.

(Note: A transparency projected onto the chalkboard makes a good learning device.)

J. Identify purebred swine breeders in the community and ask them to discuss pedigrees with the class.

K. Watch a butcher process a meat-type hog and match characteristics discussed in class with actual observations.

L. Review and give test.

M. Reteach and retest if necessary.

II. Instructional materials

A. Objective sheet

B. Suggested activities

C. Information sheets

D. Handouts

1. HO 1--Market Classes and Grades of Hogs and Pigs

2. HO 2--Expected Yield of Lean Cuts Based on Grade

E. Transparency masters

1. TM 1--Parts of the Swine
2. TM 2--Desirable Characteristics of a Boar
3. TM 3--Desirable Characteristics of a Gilt
4. TM 4--Swine Heritability Estimates
5. TM 5--Indicators of Finish
6. TM 6--Indicators of Muscling
7. TM 7--Characteristics of a Meat Type Hog
8. TM 8--Ideal Swine Conformation
9. TM 9--USDA Swine Quality Grades
10. TM 10--Swine Grading Standards

F. Assignment sheets

1. AS 1--Calculate Estimated Improvement From Genetic Selection
2. AS 2--Evaluate and Place a Class of Four Market Swine
3. AS 3--Give Oral Reasons for Placing a Class of Four Market Swine
4. AS 4--Evaluate Live Market Swine for USDA Quality Grade

G. Laboratory exercise

1. LE 1--Measure Backfat Thickness on Market Swine

H. Answers to assignment sheets and laboratory exercise

I. Test

J. Answers to test

III. Unit references:

A. Bundy, C.E. and Diggins, R.V., *Swine Production*. Prentice-Hall Publishers, Englewood Cliffs, New Jersey, 1970.

B. Jacobs, J.A. and Dahmen, J.J., *Meat Animal Evaluation*. Department of Animal Sciences, College of Agriculture, University of Idaho, Moscow, Idaho.

C. *Model Agricultural Core Curriculum*. State Department of Education, University of California, Davis, August 1989.

SWINE EVALUATION AND SELECTION

AG 140-D

INFORMATION SHEET

I. Terms and definitions

A. Finish--Fat covering on an animal

B. Muscle--Meat on an animal

C. Heritability--Percentage of differences in a trait that can be explained by inheritance

D. Soundness--Correct skeletal structure

E. Reproductive efficiency--Ability of an animal to produce offspring

F. Twist--Area between the hams on a swine

G. Quality grade--Evaluation of the tenderness and flavor of meat

H. Selection differential--Difference between a trait of a particular animal and the average of the group from which it was chosen

I. Breed characteristics--Combination of traits possessed by an animal that are characteristic of its breed or ancestry

J. Conformation--Physical form of an animal

K. Breed Association--Organization established for the promotion and registry of a specific breed

L. Disposition--Temperament or expected behavior

M. Prolificness--Ability to produce abundant offspring

N. Pedigree--Record of ancestry

O. Type--Combination of characteristics which indicate an animal's usefulness for a specific purpose

P. Reproduction traits--Specific characteristics that affect an animal's ability to produce offspring

Q. Growth traits--Characteristics indicating the ability to produce a large quantity of desirable meat cuts

R. Genitalia--External reproductive organs

S. Backfat--Fat covering back and loin of an animal

T. Scale--Size of the animal as determined by skeletal structure

II. Parts of a swine (Transparency 1)

Snout	Tail	Belly
Ear	Ham	Side
Poll	Stifle	Fore flank
Neck	Hock	Pastern
Shoulder	Hind leg	Foreleg
Back	Dew claw	Jowl
Loin	Hind flank	Cheek
Rump	Sheath	

III. Major breeds of swine

A. Duroc

(Note: Breed association--United Duroc Swine Registry, 1803 W. Detweiller Dr., Peoria, Illinois 61614.)

1. Origin--New England States

2. Characteristics--Red, light golden to dark red; medium length; slightly dished face; droopy ears

B. Hampshire

(Note: Breed association--Hampshire-Swine Registry, 1111 Main St., Peoria, Illinois 61606.)

1. Origin--Kentucky

2. Characteristics--Black with white belt encircling the shoulders, white front feet and legs; erect ears

C. Poland China

(Note: Breed association--The Poland China Record Association, P.O. Box 71, Galesburg, Illinois 61401.)

1. Origin--Ohio

2. Characteristics--Black, six white points (feet, nose, tail); drooping ears

D. Spotted Poland China

(Note: Breed association--National Spotted Swine Record, Inc., Secretary, 110 Main, Bainbridge, Indiana 46105.)

1. Origin--Ohio

2. Characteristics--Spotted, fifty percent white and fifty percent black; drooping ears

E. Chester White

(Note: Breed association--Chester White Swine Record Association, 817 E. 9th St., Box 228, Rochester, Indiana 46975.)

1. Origin--Pennsylvania

2. Characteristics--White; drooping ears

F. Yorkshire

(Note: Breed association--American Yorkshire Club, Inc., Box 2417, West Lafayette, Indiana 47906.)

1. Origin--England

2. Characteristics--White; erect ears

G. Berkshire

(Note: Breed association--American Berkshire Association, Secretary, 601 W. Monroe St., Springfield, Illinois 62704.)

1. Origin--England

2. Characteristics--Black, six white points (feet, face, tail); erect ears; short snout

(Note: Several new breeds have been imported and/or developed, such as Landrace, Tamworth, and Hereford. Many have also been developed by crossbreeding such as Minnesota #1, Minnesota #2, Montana #1, Palouse and the Beltsville lines.)

IV. Factors in selecting a breed

A. Availability of breeding stock

B. Prolificness

C. Growth ability

D. Disposition

E. Carcass quality

F. Efficient use of feed

G. Market demand
(Note: The breed selected should be in good demand for purebred breeding stock as well as be accepted as excellent meat-type animals.)

V. Methods of selecting breeding swine

(Note: Using a combination of the following is common.)

A. Appearance

1. Visual appraisal of conformation and type

2. Conformation is closely related to production potential

B. Performance records

1. Associated with production traits; i.e., weaning weight, rate of gain, feed efficiency

2. Associated with performance of littermates and progeny

C. Pedigree

1. List of ancestors

2. Used mainly by purebred breeders

D. Show-ring winnings

1. Indicates swine are of the type and conformation accepted by industry

2. Care should be taken to insure selection is based on merits of the animal and not merits of the showman

VI. Desirable and undesirable characteristics of breeding swine (Transparencies 2, 3)

A. Characteristic indicating reproductive efficiency

1. Boars (Transparency 2)

a. Desirable--Well developed testicles of equal size; normal genitalia; twelve to fourteen teats; aggressive behavior; masculine, alert head; deep, wide chest; heavy muscling with minimal fat covering

b. Undesirable--Unbalanced or small testicles; sleepy or inactive; swollen or damaged sheath and genitalia; excess finish

2. Sows (Transparency 3)

a. Desirable--Twelve to fourteen evenly spaced functional teats; feminine head; straight underline; normal genitalia; good scale without excess fat deposits; long and lean with good muscling

b. Undesirable--Blind or inverted teats; infantile vulva; excess finish; small frame; masculine appearance; high-strung and nervous disposition

(Note: Blind or inverted nipples are highly heritable.)

B. Characteristics indicating muscling and freedom from excess finish

1. Desirable--Long body with well arched back; deep sides and ample chest capacity; deep, full hams; trim head and jowls; high tail setting with a lack of fat deposits; minimum amount of backfat covering; wide stance

2. Undesirable--Short body; close to the ground; excess fat deposits over back, tailhead, jowls, brisket and flanks; shallow hams and poorly developed loins

C. Characteristics indicating structural soundness

1. Desirable--Toes of equal size and spread; strong and ample bone; sound feet and legs with straight, strong pasterns; legs set out on the corners

2. Undesirable--Toes of unequal size that lead to breakdown of pasterns; legs that turn out and appear "cowhocked from the rear"; postleggedness

(Note: Structural soundness is important, especially in raising swine in confinement or on a concrete flooring. A breeding animal that is not structurally sound will not stay in the breeding herd very long.)

VII. Selection factors for choosing quality swine breeding stock

A. Structural soundness

1. Sound feet and legs are especially important in swine raised on concrete and in confinement

2. Sound skeletal structure will increase longevity in the breeding herd

B. Reproduction traits

1. Infantile vulvas, indicating an undeveloped reproductive tract, are becoming more common preventing many gilts from being used as replacements

2. Swollen or abnormal testicles and sheath on boars may lead to sterility

C. Underlines

1. Gilts and boars should have twelve to fourteen evenly spaced, functional nipples

2. Blind or inverted nipples should be selected against as they are highly heritable

D. Conformation and type

1. Breeding swine should possess those traits for meat-type swine as well as specific breeding traits

2. Breed characteristics are important to look for

E. Disposition

1. Bold, aggressive boars tend to be better breeders

2. Aggressive gilts tend to be better mothers and more prolific

F. Muscling

1. Excessive muscling is not always desirable in breeding stock as it may lead to Porcine Stress Syndrome--PSS

2. Breeding swine should be as muscled as top quality market animals, as such traits are highly heritable

VIII. Heritability percentages for economically important traits (Transparency 4)

(Note: The higher the percentage, the faster a herd can be improved by genetic selection for that trait.)

(Caution: These are estimates only. Actual percentages will vary.)

A. Production traits

1.	Litter size at birth	10%
2.	Litter size at weaning	10%
3.	Litter weaning weight	15%

(Note: Production traits generally have low heritability percentages.)

B. Feedlot traits

1.	Post-weaning gain	30%
2.	Feed efficiency	35%

(Note: Feedlot traits generally have medium heritability percentages.)

C. Carcass traits

1.	Length	50%
2.	Backfat thickness	50%
3.	Loin eye area	50%
4.	Yield of lean cuts	55%

(Note: Carcass traits generally have higher heritability percentages. These traits should receive added emphasis in selecting for genetic improvement.)

IX. Calculate estimated improvement based on genetic selection--Progress is calculated by multiplying heritability by the selection differential and then multiplying by the amount contributed from the animal selected (Assignment Sheet #1)

(Note: Selection differential can be much higher in boars than gilts, because fewer boars need to be kept. Therefore, boar selection requirements can be more rigid.)

Example: Goal--decrease in backfat thickness
Procedure--select gilts with .3 inch less backfat than their herd average
--select boar with .5 inch less backfat than their herd average

Selection differential for gilts	.3 in.
Heritability estimate (50%)	x .5
Expected decrease from gilts	.15 in.
Contribute 1/2 to offspring	x .5
Gilt contribution	.075 in. less fat
Selection differential for boar	.5 in.
Heritability estimate (50%)	x .5
Expected decrease from boar	.25 in.
Contribute 1/2 to offspring	x .5
Boar contribution	.125 in.
Gilt contribution	.075 in.
Boar contribution	.125 in.
Expected decrease in backfat thickness of progeny	.200 in.

(Note: While selection for heritability is important, environment and management accounts for greater differences in growth and production.)

X. Indicator of finish and muscling of market swine (Transparencies 5, 6)

A. Finish (Transparency 5)

(Note: Degree of finish can best be determined by looking at areas where there is little or no muscle development.)

1. Wasty jowls

2. Fat deposits around tailhead

3. Narrow stance in front and rear

4. Deep twist

5. Little movement in shoulders

6. Fullness of flank

7. Wrinkles in belly

8. Square over back and loin

B. Muscling (Transparency 6)

(Note: Muscling is best determined by looking at those areas where little fat is deposited.)

1. Bulging shoulder and forearm

2. Sharp turn over the back and loin

3. Deep, wide ham

4. Wide stance in front and rear

5. Widest through the shoulders and hams

6. Well arched back

XI. Characteristics of a quality meat-type hog (Transparency 7)

A. Yield 55% of live weight in primal cuts: Ham, Loin, Picnic and Boston Butt

B. Weigh 200 to 210 pounds in 5 1/2 months

C. Backfat thickness less than 1.2 inches

D. Length of carcass 30 inches or longer at 5 1/2 months

E. Loin-eye area of 4 1/2 square inches or more

F. Feed conversion of 1 pound of gain to 3.5 pounds or less of feed

G. Females produce and raise 8 or more pigs per litter

XII. The ideal market swine (Transparency 8)

The ideal market swine is long with a well arched back. The animal shows trimness in the neck, jowls and belly, with trim and straight underlines. He stands well off the ground on strong legs with short, straight pasterns. The animal exhibits ample muscling with deep, wide hams and bulging loins. He has a well-turned back with a minimum amount of backfat and finish in the flanks and twist

XIII. U.S.D.A. quality grades (Transparencies 9, 10; Handouts 1, 2)

A. There are two considerations in quality grading swine carcasses

1. Quality of the lean meat

2. Belly thickness

B. Grades for carcasses that have acceptable lean quality are listed below. The different grades are determined by backfat thickness and carcass length, as well as yield of lean cuts. They are:

1. U.S. No. 1

2. U.S. No. 2

3. U.S. No. 3

4. U.S. No. 4

C. Carcasses having unacceptable lean or bellies that are too thin are graded U.S. Utility. Sows also fit this category

D. Carcasses from boars or stags have a strong "sex" odor and are not passed for use as human food

Handout #1

MARKET CLASSES AND GRADES OF HOGS AND PIGS

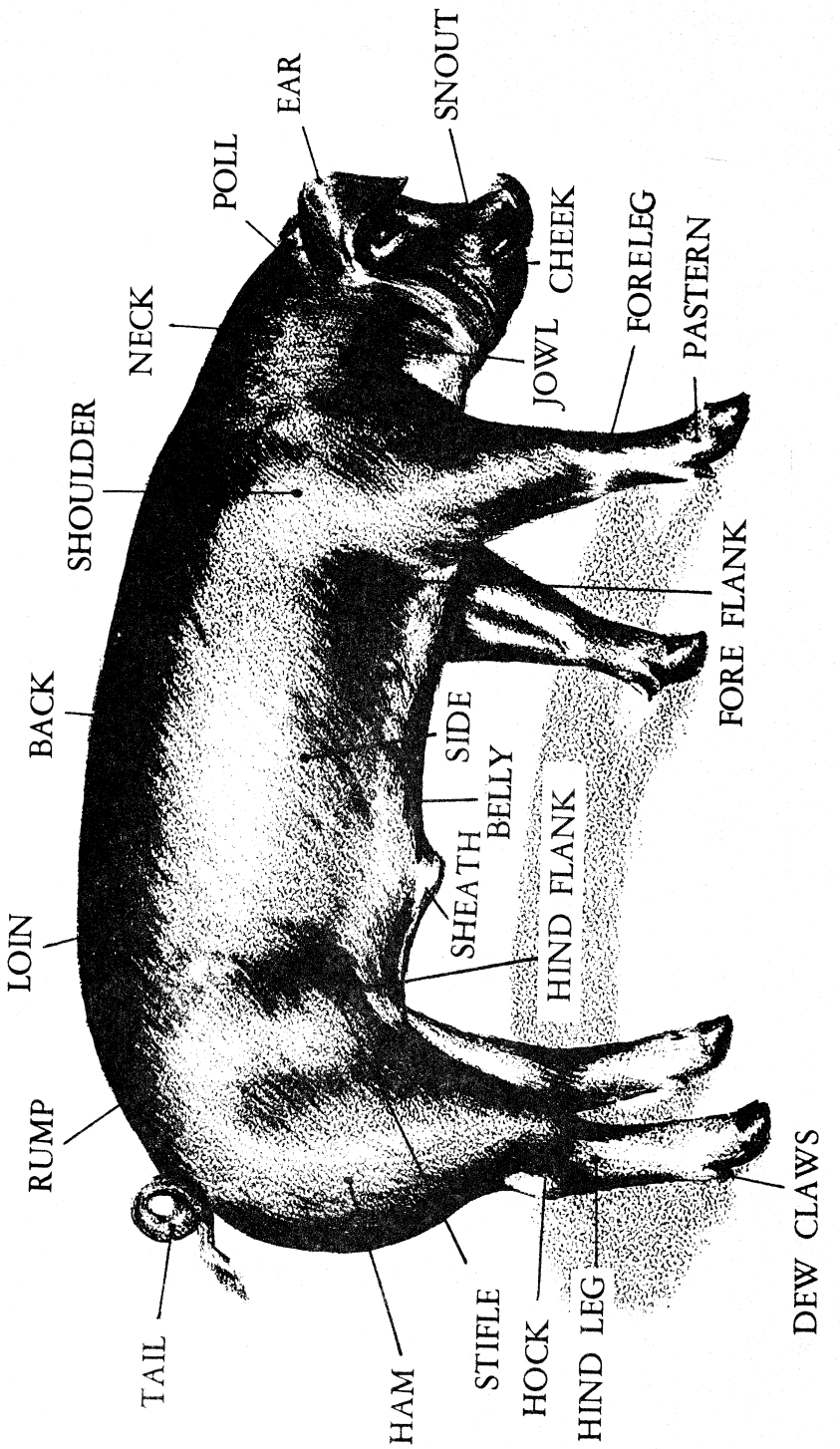
Use	Sex	Weight	Grades
HOGS			
Slaughter hogs	Barrows and gilts	Under 180	U.S. No. 1, 2, 3 & 4
	Barrows and gilts	181 - 260	U.S. No. 1, 2, 3 & 4
	Barrows and gilts	over 261	U.S. No. 1, 2, 3, 4 & Utility
	Sows	over 270 and up to 600	U.S. No. 1, 2, 3, 4 & Utility
	Boars	All Weights	Ungraded
	Stags	All Weights	Ungraded
Feeder hogs	Barrows and gilts	120 - 180	U.S. No. 1, 2, 3, 4 & Utility
PIGS			
Slaughter pigs	All classes	Under 30 30 - 60 60 - 100	Ungraded Ungraded Good, Medium, Cull
Feeder pigs	Barrows and gilts	Under 80	U.S. No. 1, 2, 3, 4 & Utility
		80 - 100	U.S. No. 1, 2, 3, 4 & Utility
		100 - 120	U.S. No. 1, 2, 3, 4 & Utility

Handout #2

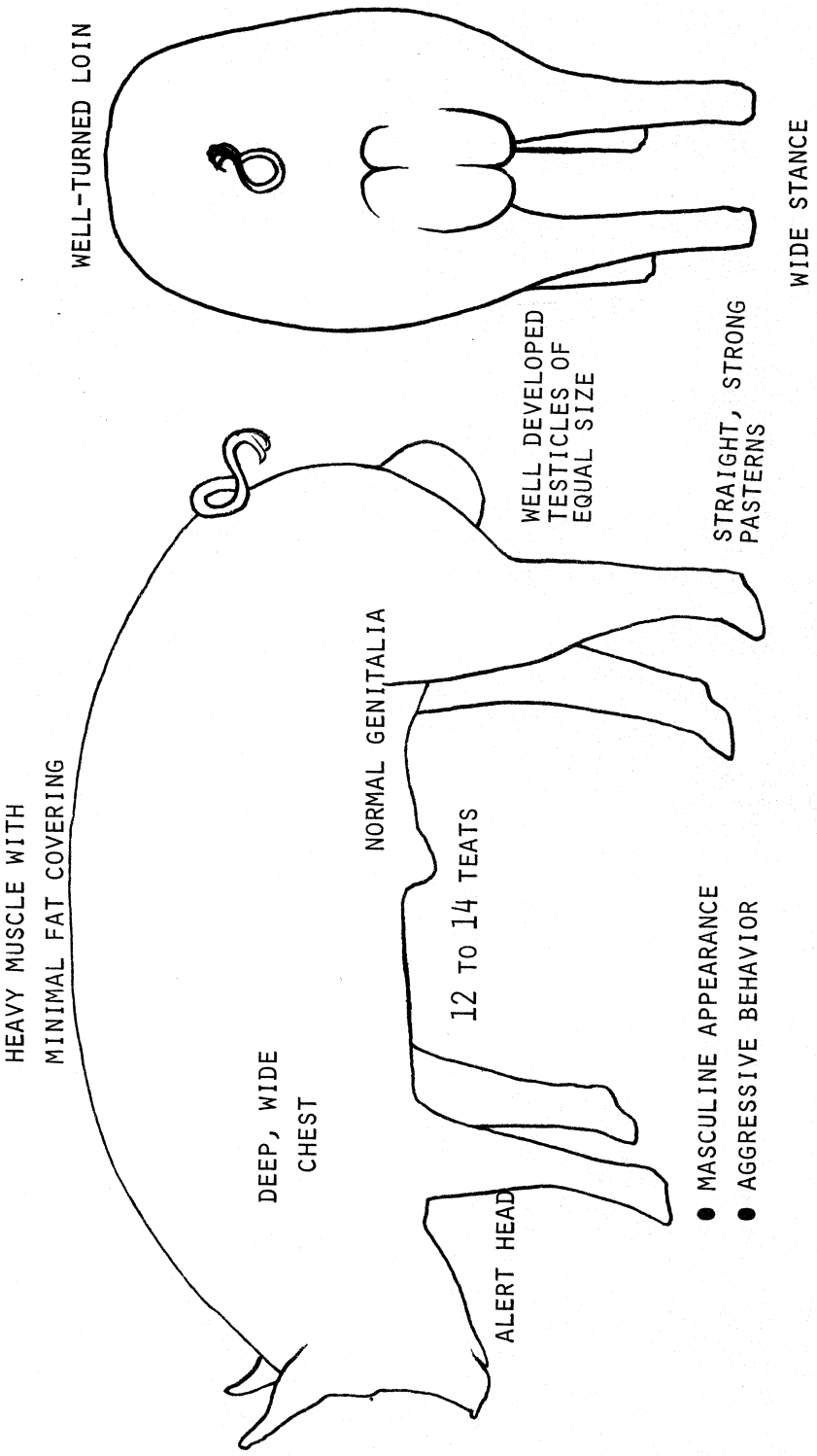
EXPECTED YIELD OF LEAN CUTS BASED ON GRADE

GRADE	PERCENT YIELD
U.S. No. 1	53 percent and over
U.S. No. 2	50 to 52.9 percent
U.S. No. 3	47 to 49.9 percent
U.S. No. 4	Less than 47 percent

Parts Of The Swine



Desirable Characteristics Of A Boar



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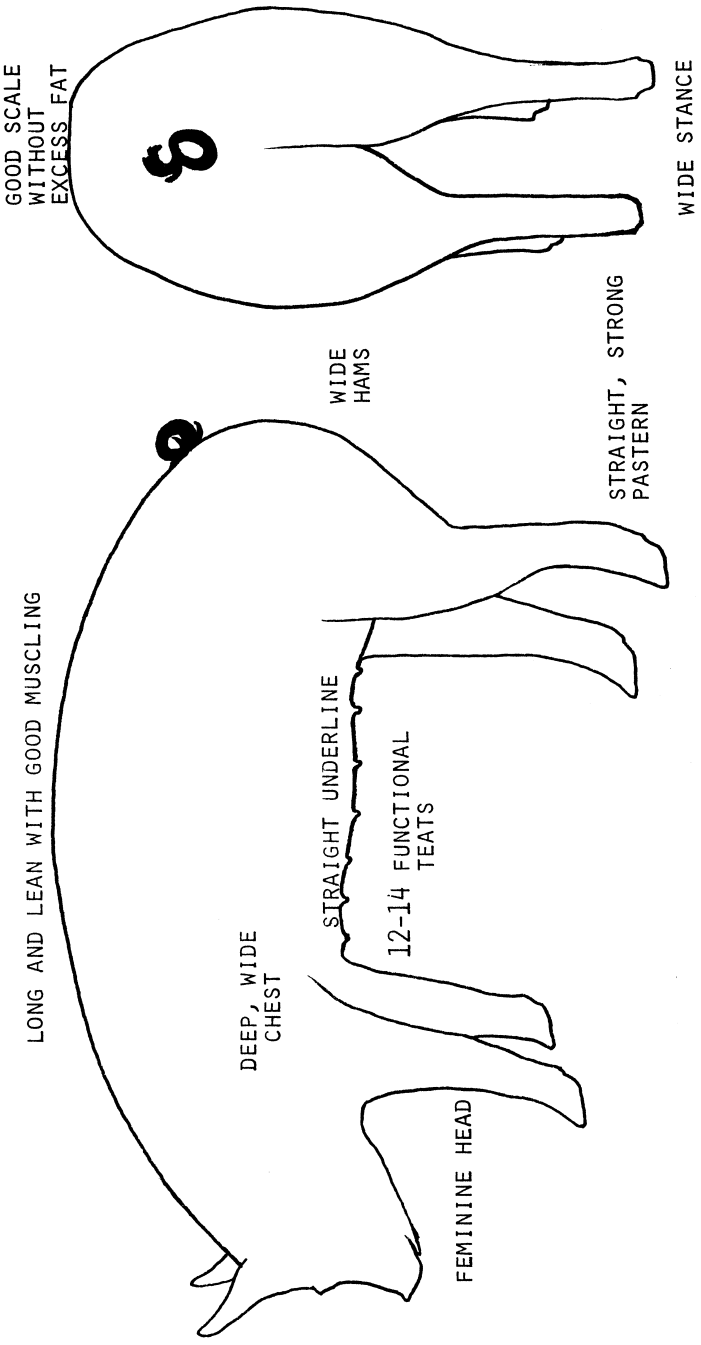
Desirable Characteristics Of A Gilt



TM 3

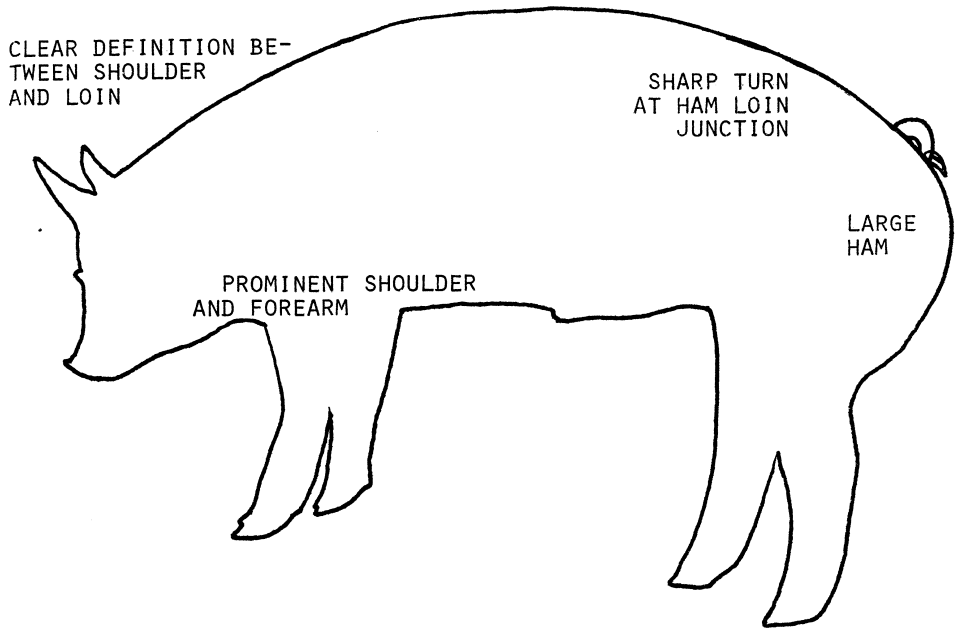
SWINE HERITABILITY ESTIMATES

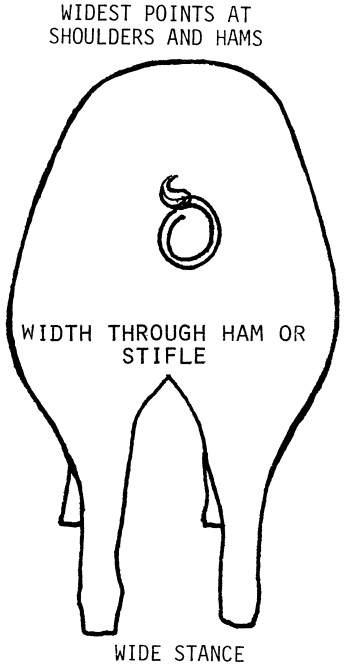
TRAITS	APPROXIMATE HERITABILITY	
Production traits:		
Litter size at birth	10%	
Litter size at weaning	10%	LOW
Litter weaning weight	15%	
Feedlot traits:		
Post-weaning weight	30%	MEDIUM
Feed Efficiency	35%	
Carcass traits:		
Length	50%	
Backfat thickness	50%	HIGH
Loin eye area	50%	
Yield of lean cuts	55%	

Indicators Of Finish

TM

Indicators Of Muscling





CHARACTERISTICS OF A MEAT TYPE HOG

1. YIELD 55% OF LIVE WEIGHT IN PRIMAL CUTS: HAM, LOIN, PICNIC AND BOSTON BUTT

2. WEIGH 200 TO 210 POUNDS AT 5 1/2 MONTHS OF AGE

3. BACKFAT THICKNESS LESS THAN 1.2 INCHES

4. LENGTH OF CARCASS 30 INCHES OR LONGER AT 5 1/2 MONTHS OF AGE

5. LOIN EYE 4.5 SQ. INCHES OR MORE

6. FEED CONVERSION OF 1 POUND GAIN TO 3.5 POUNDS OR LESS OF FEED

7. FEMALES PRODUCE AND RAISE 8 OR MORE PIGS PER LITTER

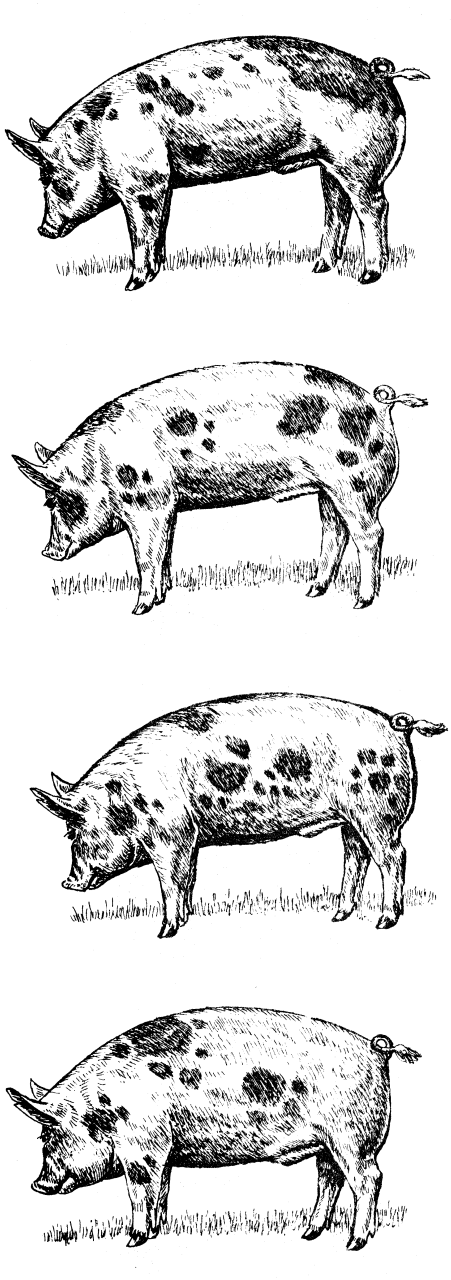
Ideal Swine Conformation

REAR VIEW

SIDE VIEW

TM 8

U.S.D.A. Swine Quality Grades



NO. 1

NO. 2

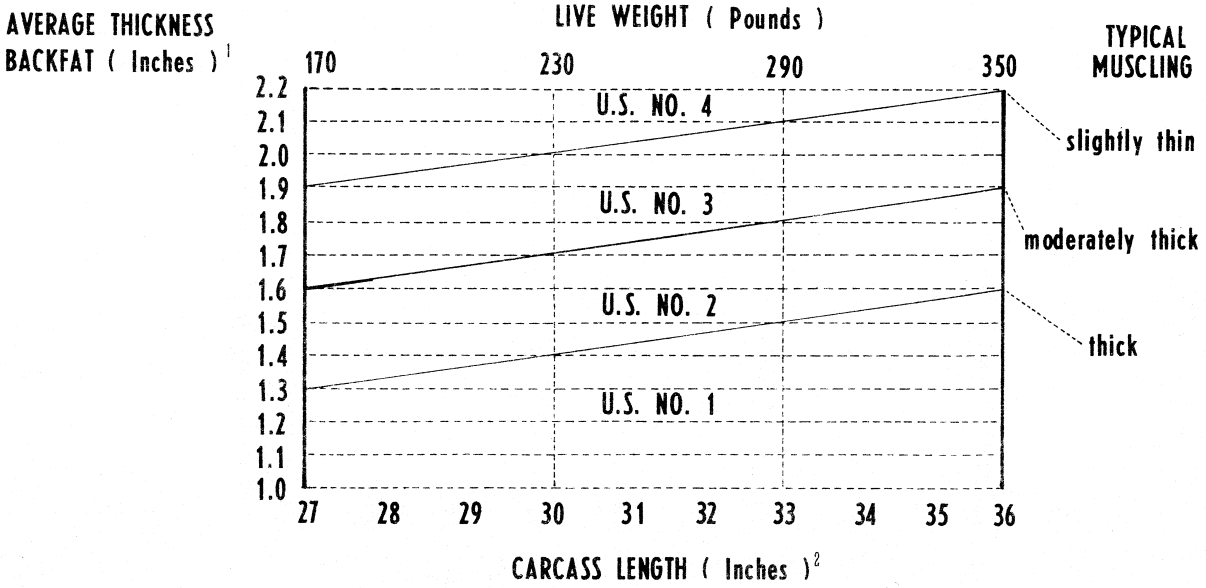
NO. 3

NO. 4

TM 9

Swine Grading Standards

RELATIONSHIP BETWEEN AVERAGE THICKNESS OF BACKFAT, WEIGHT OR CARCASS LENGTH, AND GRADE FOR BARROWS AND GILTS WITH MUSCLING TYPICAL OF THEIR DEGREE OF FATNESS



1/ AN AVERAGE OF THREE MEASUREMENTS INCLUDING THE SKIN MADE OPPOSITE THE FIRST AND LAST RIBS AND THE LAST LUMBAR VERTEBRA. IT ALSO REFLECTS ADJUSTMENT, AS APPROPRIATE, TO COMPENSATE FOR VARIATIONS - FROM - NORMAL FAT DISTRIBUTION.

2/ CARCASS LENGTH IS MEASURED FROM THE ANTERIOR POINT OF THE AITCH BONE TO THE ANTERIOR EDGE OF THE FIRST RIB.

SWINE EVALUATION AND SELECTION

AG 140-D

ASSIGNMENT SHEET #1--CALCULATE ESTIMATED IMPROVEMENT FROM GENETIC SELECTION

Name_____ Score_____

Swine herd improvement is accomplished by providing the proper environment and by selecting animals with superior genetic potential.

Calculate the expected increase in carcass length of the offspring of a boar that measured 1.2 inches longer than the herd average and gilts that measured .8 inches longer than the herd average.

Calculation for gilt contribution:

Gilt contribution _____

Calculation for boar contribution:

Boar contribution _____

Expected increase in carcass length _____

If the herd carcass length average was 29.3 inches,
what would the new expected average be? _____

SWINE EVALUATION AND SELECTION

AG 140-D

ASSIGNMENT SHEET #2—EVALUATE AND PLACE
A CLASS OF FOUR MARKET SWINE

Name_____ Score _____

Based on your evaluation of four market swine (either on slide or live) place them in order from most to least desirable. Mark your placing in the official scorecard below.

Example: You have decided No.4 is the best, with No. 2 being the next best and No.3 being the third best with No.1 being the least desirable. You would mark the card as follows.

Tabulator's Score

_____

3-4-2-1	
4-1-2-3	
4-1-3-2	
4-2-1-3	
4-2-3-1	✓
4-3-1-2	
4-3-2-1	

Official Scorecard to use for your placings

STANDARD JUDGING CARD

Contestant no.

_____

Contest

_____

Class Name

_____

Class No.

_____

Tabulator's Score

_____

Placing	✓
1-2-3-4	
1-2-4-3	
1-3-2-4	
1-3-4-2	
1-4-2-3	
1-4-3-2	
2-1-3-4	
2-1-4-3	
2-3-1-4	
2-3-4-1	
2-4-1-3	
2-4-3-1	
3-1-2-4	
3-1-4-2	
3-2-1-4	
3-2-4-1	
3-4-1-2	
3-4-2-1	
4-1-2-3	
4-1-3-2	
4-2-1-3	
4-2-3-1	
4-3-1-2	
4-3-2-1	

SWINE EVALUATION AND SELECTION

AG 140-D

ASSIGNMENT SHEET #3--GIVE ORAL REASONS FOR PLACING
PREVIOUS CLASS OF FOUR MARKET SWINE

Name_____ Score_____

The ability to critically evaluate animals is greatly improved when a person is able to explain exactly why the animals were placed as they were. Look again at the four market animals and review the specific reference points for muscling and finish. Then write reasons for your placings before sharing them with the class.

Example: I placed 4 over 1 because of four's superior muscling and length. Four has deeper and wider hams with a sharper turn over loin. Four stands wider in the rear and is trimmer through the twist and flank area. Four also has a trimmer jowl and possesses more breed character, although market hog number one possesses greater structural soundness as is evidenced by stronger pasterns and well placed legs.

Write reasons for placings:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

SWINE EVALUATION AND SELECTION

AG 140-D

ASSIGNMENT SHEET #4—EVALUATE LIVE MARKET SWINE
FOR USDA QUALITY GRADE

Name _____ Score _____

Using the grading sheet below, estimate the best quality grades of market swine. Use the Swine Grading Standards (TM-10) to help determine quality grade.

(Note: A packing plant would be the best place to do this since the actual yield and quality grades could then be determined after slaughter.)

MARKET SWINE EVALUATION

	Animal No._____		Animal No._____		Animal No._____		Animal No._____	
	Estimate	Actual	Estimate	Actual	Estimate	Actual	Estimate	Actual
Live Weight								
Sex								
Breed								
Dressing %								
Hot Carcass Wt.								
Backfat								
Length								
Quality Grade								

SWINE EVALUATION AND SELECTION

AG 140-D

LABORATORY EXERCISE #1 – MEASURE BACKFAT THICKNESS ON MARKET SWINE

Name _____ Score _____

Backfat thickness is an indication of the amount of muscling in market swine. A modern meat – type hog should not have greater than 1.2 inches of backfat.

Use the following procedure to measure the amount of backfat on a market hog.

I. Tools and materials

A. Sharp Knife

B. Small metal ruler with sliding gauge

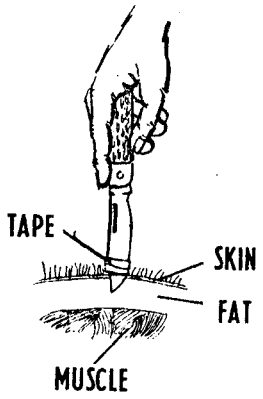
C. Tape

D. Disinfectant

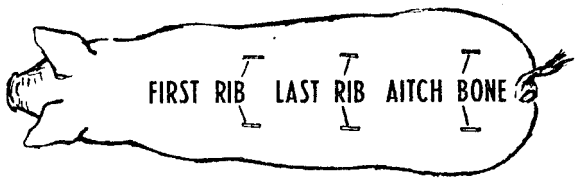
II. Procedure

A. Wrap tape around knife blade about 3.8 inches from the tip

(Note: This should be used to control the depth of penetration)

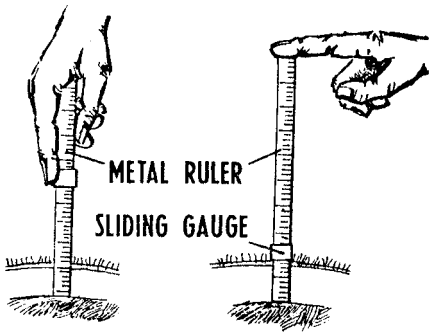


B. Make an incision 1 ½ to 2 inches from the back bone at the first rib. See the location



LOCATIONS OF PROBES

C. Push a small metal ruler through the incision and through the fat until it reaches back muscle



D. Read backfat thickness and record the measurement

E. Repeat procedure at the last rib and record the measurement

F. Repeat the procedure at the aitch bone and record the measurement

G. Average the three measurements to obtain the correct backfat thickness.

H. Although the procedure is painless to the animal, disinfectant should always be applied to any break in the skin

Record your measurements

a. _____ inches of backfat at first rib

b. _____ inches of backfat at last rib

c. _____ inches of backfat at aitch bone

d. _____ average backfat thickness

SWINE EVALUATION AND SELECTION

AG 140-D

ANSWERS TO ASSIGNMENT SHEETS AND LABORATORY EXERCISE

Assignment Sheet #1

Gilt contribution	.2 "
Boar contribution	.3 "
Expected increase in carcass lengths	.5 "
New herd average	29.8 "

Assignment Sheet #2

Evaluated to the satisfaction of the instructor

Assignment Sheet #3

Evaluated to the satisfaction of the instructor

Assignment Sheet #4

Evaluated to the satisfaction of the instructor

Laboratory exercise #1

Evaluated to the satisfaction of the instructor

SWINE EVALUATION AND SELECTION

AG 140-D

UNIT TEST

Name_____ Score_____

1. Match terms on the right with the correct definitions.

____a.	Ability of an animal to produce offspring	1.	Reproduction traits
____b.	Meat on an animal	2.	Quality grade
____c.	Difference between a trait of a particular animal and the average of the group from which it was chosen	3.	Pedigree
____d.	Specific characteristics that affect an animal's ability to produce offspring	4.	Backfat
____e.	External reproductive organs	5.	Type
____f.	Organization established for the promotion and registry of a specific herd	6.	Breed Association
____g.	Evaluation of the tenderness and flavor of meat	7.	Genitalia
____h.	Size of the animal as determined by skeletal structure	8.	Finish
____i.	Record of ancestry	9.	Breed characteristics
____j.	Physical form of an animal	10.	Scale
____k.	Area between the hams on a swine	11.	Conformation
____l.	Percentage of differences in a trait that can be explained by inheritance	12.	Growth traits
		13.	Muscle
____m.	Combination of characteristics which indicate an animal's usefulness for a specific purpose	14.	Heritability
____n.	Temperament or expected behavior	15.	Soundness
____o.	Characteristics indicating the ability to produce a large quantity of desirable meat cuts	16.	Prolificness
____p.	Fat covering on an animal		
____q.	Ability to produce abundant offspring	17.	Reproductive efficiency

____r. Correct skeletal structure

____s. Combination of traits possessed by an animal that are characteristic of its breed or ancestry

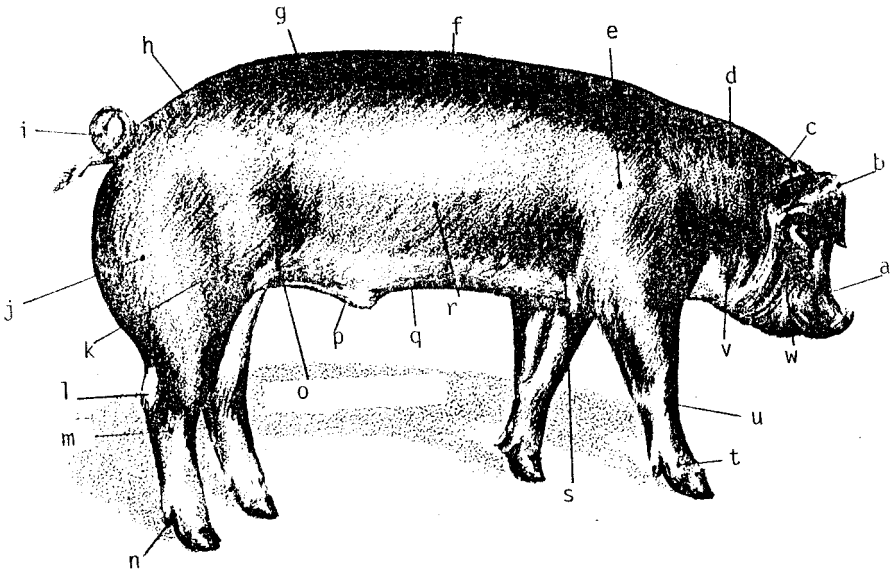
____t. Fat covering back and loin of an animal

18. Disposition

19. Selection differential

20. Twist

2. Label the parts of the swine.



a._____ i._____ q._____

b._____ j._____ r._____

c._____ k._____ s._____

d._____ l._____ t._____

e._____ m._____ u._____

f._____ n._____ v._____

g._____ o._____ w._____

h._____ p._____

3. Describe five major breeds of swine including their origin and characteristics.

Breed	Origin	Characteristics
a.		
b.		
c.		
d.		
e.		

4. List seven factors to consider in selecting a swine breed.

a._____

b._____

c._____

d._____

e._____

f._____

g._____

5. Identify the basic methods of selection that are described by the examples on the right. Write the correct method in the blank provided.

a. _____ Selecting a boar with a sire that set breed records for rate of gain over a boar straight from your farm herd

b. _____ Selecting a gilt with a well-turned loin over a gilt with wasty jowls and excess fat over the tailhead

c. _____ Selecting the County Fair Grand Champion gilt over a red-ribbon winner for your replacement herd

d. _____ Selecting a boar with a backfat thickness of 1.1 inches and a rate of gain of 3.5 lb of feed per pound of gain over a less efficient boar

6. Describe two desirable characteristics and two undesirable characteristics to look for in each of the following areas when evaluating breeding stock.

		Desirable	Undesirable
a.	Characteristics indicating reproductive efficiency of a boar	_____	_____
		_____	_____
b.	Characteristics indicating reproductive efficiency of a sow	_____	_____
		_____	_____
c.	Characteristics indicating muscling, freedom from waste and size	_____	_____
		_____	_____
d.	Characteristics indicating structural soundness	_____	_____
		_____	_____

7. Describe the reasons for considering the following factors in selecting swine breeding stock.

a. Structural soundness: _____

_____

_____

b. Ability to reproduce: _____

_____

_____

c. Underline: _____

_____

_____

d. Conformation and type: _____

_____

_____

e. Disposition : _____

_____

_____

f. Muscling : _____

_____

_____

8. Match the traits to their heritability percentages.
(Note: Some percentages may be used more than once.)

____a.	Backfat thickness	1.	10-15%
____b.	Litter size at birth	2.	30-35%
____c.	Yield of lean cuts	3.	50-55%
____d.	Post-weaning weight		
____e.	Litter weaning weight		
____f.	Carcass length		
____g.	Feed efficiency		

9. Calculate the estimated increase in loin eye area due to genetic selection in the following problem. Answer should reflect the average increase for the herd.

Data: Select gilts that have .8 sq. in. larger loin eye area than the herd average.
Select a boar that has 1.4 sq. in. larger loin eye area than the herd average.
Loin eye area has a heritability of 50%.

Answer_____

10. Describe four indicators of muscling and four indicators of finish in market swine.

a. Muscling	b. Finish
_____	_____
_____	_____
_____	_____
_____	_____

11. Describe the characteristics of a meat-type hog by filling in the blanks below with the correct answer.

    a. A meat-type hog will yield _____% of live weight in the primal cuts of ham, loin, picnic and Boston butt.

    b. A meat-type hog will have a backfat thickness of _____ in. or less.

    c. A meat-type hog will have a carcass length of _____ in. at 5 1/2 months of age.

    d. A meat-type hog will weigh _____ pounds in 5 1/2 months.

    e. A meat-type hog will have a loin eye area of _____ square inches or greater.

    f. A meat-type hog will have a feed conversion efficiency of 1 pound of gain to every _____ pounds or less of feed.

    g. A female meat-type hog will raise _____ or more pigs per litter.

12. Describe the conformation of the ideal market swine.

_____

_____

_____

_____

_____

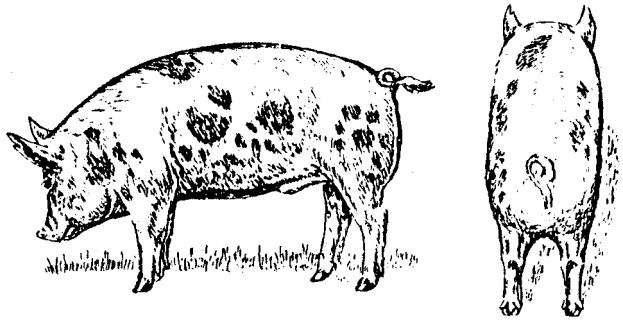
13. List the two considerations in quality grading swine carcasses.

    a. _____

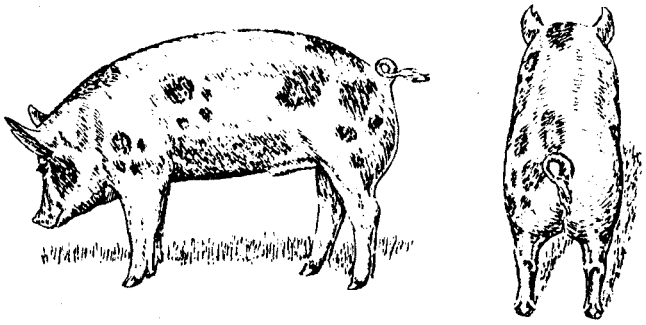
    b. _____

14. Distinguish among the four market swine represented according to their USDA quality grade. Write the correct quality grade in the blank provided.

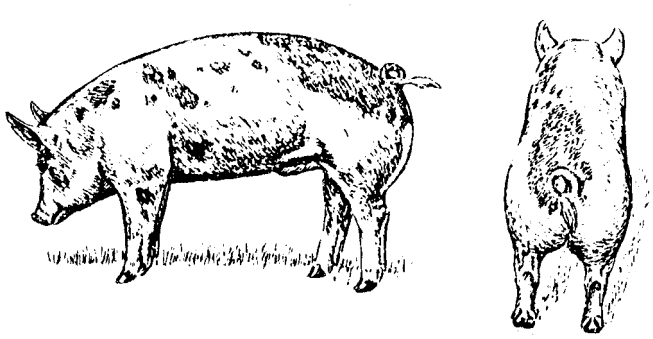
    a. _____



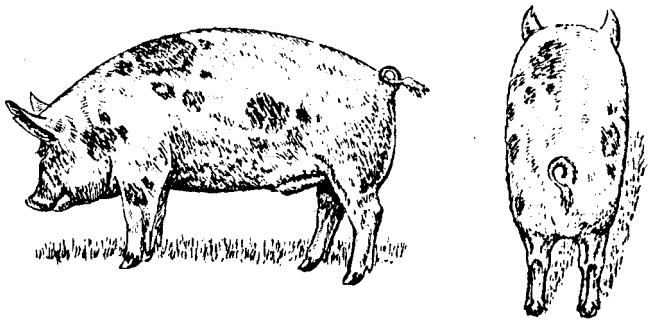
b. _____



c. _____



d. _____



SWINE EVALUATION AND SELECTION

AG 140-D

ANSWERS TO TEST

1.

a.	17	g.	2	m.	5	s.	9
b.	13	h.	10	n.	18	t.	4
c.	19	i.	3	o.	12		
d.	1	j.	11	p.	8		
e.	7	k.	20	q.	16		
f.	6	l.	14	r.	15		

2.

a.	snout	i.	tail	q.	belly
b.	ear	j.	ham	r.	side
c.	poll	k.	stifle	s.	fore flank
d.	neck	l.	hock	t.	pastern
e.	shoulder	m	hind leg	u.	foreleg
f.	back	n.	dew claw	v.	jowl
g.	loin	o.	hind flank	w.	cheek
h.	rump	p	sheath		

3. Answers should include five of the following:

Duroc--Origin--New England states; Characteristics--Red, light golden to dark red; medium length; slightly dished face; droopy ears

Hampshire--Origin--Kentucky; Characteristics--Black with white belt encircling the shoulders, white front feet and legs; erect ears

Poland China--Origin--Ohio; Characteristics--Black, six white points (feet, nose, tail); drooping ears

Spotted Poland China--Origin--Ohio; Characteristics--Spotted, fifty percent white and fifty percent black; drooping ears

Chester White--Origin--Pennsylvania; Characteristics--White; drooping ears

Yorkshire--Origin--England; Characteristics--White; erect ears

Berkshire--Origin--England; Characteristics--Black, six white points (feet, face, tail); erect ears; short snout

4. Availability of breeding stock; Prolificness; Growth ability; Disposition; Carcass quality; Efficient use of feed; Market demand

5.

a.	Pedigree	c.	Show-ring winnings
b.	Appearance	d.	Performance records

6. Answer should include two of each of the following:

   a. Desirable: Well developed testicles of equal size; Normal genitalia; Twelve to fourteen teats; Aggressive behavior; Masculine, alert head; Deep, wide chest; Heavy muscling with minimal fat covering

      Undesirable: Unbalanced or small testicles; Sleepy or inactive; Swollen or damaged sheath and genitalia; Excess finish

   b. Desirable: Twelve to fourteen evenly spaced functional teats; Feminine head; Straight underline; Normal genitalia; Good scale without excess fat deposits; Long and lean with good muscling

      Undesirable: Blind or inverted teats; Infantile vulva; Excess finish; Small frame; Masculine appearance; High-strung and nervous disposition

   c. Desirable: Long body with well arched back; Deep sides and ample chest capacity; Deep, full hams; Trim head and jowls; High tail setting with a lack of fat deposits; Minimum amount of backfat covering; Wide stance

      Undesirable: Short body; Close to the ground; Excess fat deposits over back, tailhead, jowls, brisket and flanks; Shallow hams and poorly developed loins

   d. Desirable: Toes of equal size and spread; Strong and ample bone; Sound feet and legs with straight, strong pasterns; Legs set out on the corners

      Undesirable: Toes of unequal size that lead to breakdown of pasterns; Legs that turn out and appear "cowhocked from the rear"; postleggedness

7. a. Sound feet and legs are especially important in swine raised on concrete and in confinement; Sound skeletal structure will increase longevity in the breeding herd

   b. Infantile vulvas are becoming more common, preventing many gilts from being used as replacements; Swollen or abnormal testicles and sheath on boars may lead to sterility

   c. Gilts and boars should have twelve to fourteen evenly spaced, functional nipples; Blind or inverted nipples should be selected against as they are highly heritable

   d. Breeding swine should possess those traits for meat-type swine as well as specific breeding traits; Breed characteristics are important to look for

   e. Bold, aggressive boars tend to be better breeders; Aggressive gilts tend to be better mothers and more prolific

   f. Excessive muscling is not always desirable in breeding stock as it may lead to Porcine Stress Syndrome--PSS; Breeding swine should be as muscled as top quality market animals, as such traits are highly heritable

8.

a.	3	e.	1
b.	1	f.	3
c.	3	g.	2
d.	2		

9.

Selection differential for gilt	.8 sq. in.
Heritability estimate (50%)	x .5
Expected increase from gilt	.40 sq. in.
Contribute 1/2 from offspring	x .5
	.20 sq. in.
Selection differential for boar	1.4 sq. in.
Heritability estimate (50%)	x .5
Expected increase from boar	.70 sq. in.
Contribute 1/2 to offspring	x .5
	.35 sq. in.
Increase in loin eye area	.55 sq. in.

10. Answers should include four of the following:

a. Bulging shoulder and forearm; Sharp turn over the back and loin; Deep, wide ham; Wide stance in front and rear; Widest through the shoulders and hams; Well arched back

b. Wasty jowls; Fat deposits around tailhead; Narrow stance in front and rear; Deep twist; Little movement in shoulders; Fullness of flank; Wrinkles in belly; Square over back and loin

11.

a.	55%	c.	30 in.	e.	4.5 sq. in.	g.	8
b.	1.2 in.	d.	200-210 lb	f.	3.5 lb		

12. The ideal market swine is long with a well arched back. The animal shows trimness in the Neck, jowls and belly, with trim and straight underlines. He stands well off the ground on strong legs with short, straight pasterns. The animal exhibits ample muscling with deep, wide hams and bulging loins. He has a well-turned back with a minimum amount of backfat and finish in the flanks and twist.

13. a. Quality of the lean meat
b. Belly thickness

14. a. USDA No. 3
b. USDA No. 2
c. USDA No. 1
d. USDA No. 4

SHEEP EVALUATION AND SELECTION

AG 140 - E

UNIT OBJECTIVE

After completion of this unit, students should be able to identify the different breeds of sheep and be able to distinguish between desirable and undesirable sheep based on visual characteristics. Students should also be able to tell the age of a sheep and be able to describe criteria for evaluating fleece. This knowledge will be demonstrated by completion of assignment sheets and unit test with a minimum of 85 percent accuracy.

SPECIFIC OBJECTIVES AND COMPETENCIES

After completion of this unit, the student should be able to:

1. Match terms associated with sheep evaluation and selection to their correct definition.
2. List five advantages of sheep production
3. List five disadvantages of sheep production.
4. Describe five major breeds of sheep, including origin and characteristics.
5. Match the six breed classifications by wool type to their correct description.
6. Distinguish between the characteristics of ewe breeds and ram breeds.
7. Label the parts of a sheep.
8. Describe the primary difference between sheep selection and selection of other meat animals.
9. Identify the four basic methods of selection.
10. Match traits of sheep to their respective heritability levels.
11. Calculate estimated annual progress from genetic selection.
12. List the desirable characteristics of breeding sheep.
13. List six characteristics to avoid when selecting breeding stock.
14. Distinguish between indicators of finish and muscling in market lambs.
15. Describe the desirable conformation for a meat-type sheep.
16. Describe the typical difference in conformation between the wool-type lamb and meat-type lamb.
17. List five factors used to evaluate wool quality.
18. Describe the ideal fleece.

19. Describe the procedure for handling a sheep for evaluation.

20. Identify the age of a sheep by its teeth.

21. Distinguish among slaughter lambs representing the four quality grades.

22. Distinguish between a yield grade 2 and a yield grade 4 lamb.

23. Evaluate and place a class of four market lambs.

24. Give oral reasons on placings of a class of four market lambs.

25. Evaluate live market lambs for quality and yield grades.

SHEEP EVALUATION AND SELECTION

AG 140 - E

SUGGESTED ACTIVITIES

I. Suggested activities for instructor

- A. Make transparencies and necessary copies of materials.
- B. Provide students with objectives and discuss.
- C. Provide students with information and discuss.
- D. Provide students with assignment sheets.
- E. Have students write sheep breed associations for more detailed information on specific breeds.
- F. Contact the U.S. Sheep Experiment Station at Dubois, Idaho for information.
- G. Obtain and show slides of sheep for judging.
- H. Arrange a field trip to judge sheep.
- I. Arrange a trip to a slaughterhouse to compare live animals with carcasses for yield and quality grading.
- J. Design game for teaching parts of the sheep.
- K. Obtain a fleece for evaluation.
- L. Review and give test.
- M. Reteach and retest if necessary.

II. Instructional materials

- A. Objective sheet
- B. Suggested activities
- C. Information sheet
- D. Handout
  - 1. HO 1--Market Classes and Quality Grades of Slaughter Sheep
- E. Transparency masters
  - 1. TM 1--Parts of a Sheep
  - 2. TM 2--Indicators of Finish

3. TM 3--Indicators of Muscling

4. TM 4--Ideal Meat-Type Sheep

5. TM 5--Determining Age by the Teeth

6. TM 6--Slaughter Lambs/U.S. Quality Grades

7. TM 7--Slaughter Lambs/U.S. Yield Grades

F. Assignment sheets

1. AS 1--Calculate Estimated Annual Progress From Genetic Selection

2. AS 2--Evaluate and Place a Class of Four Market Lambs

3. AS 3--Give Oral Reasons on Placings of a Class of Four Lambs

4. AS 4--Evaluate Live Market Lambs For Quality and Yield Grades

G. Answers to assignment sheets

H. Test

I. Answers to test

III. Unit references:

A. Barrick, R. Kirby, and Harmon, Hobart L., *Animal Production and Management*. McGraw-Hill, New York, 1988.

B. Ensminger, M.E., *Animal Science*. The Interstate Printers and Publishers, Inc., Danville, Illinois, 1977.

C. Hunsley, Robert E., Beeson, Malcolm W., and Nordby, Julius E., *Livestock Judging, Selection and Evaluation*. The Interstate Printers and Publishers, Inc., Danville, Illinois, 1978.

D. Jacobs, J.A. and Dahmen, J.J., *Meat Animal Evaluation*. University of Idaho, Moscow, Idaho, 1977.

E. *Model Agricultural Core Curriculum.* State Department of Education, University of California, Davis, August 1989.

F. Scott, George E., *The Sheepman's Production Handbook*, Abegg Printing Co. and The Sheep Industry Development Program, Denver, Colorado, 1977.

G. Simmons, Paula, *Raising Sheep the Modern Way*, Garden Way Publishing, Charlotte, Vermont, 1976.

SHEEP EVALUATION AND SELECTION

AG 140 - E

INFORMATION SHEET

I. Terms and definitions

A. Ram--Uncastrated male sheep

B. Ewe--Female sheep

C. Wether--Castrated male sheep

D. Polled--Naturally without horns

E. Mutton--Meat of a sheep over one year of age

F. Conformation--The shape and size of the parts of an animal and how they are put together

G. Type--Combination of characteristics which make an animal most useful for a specific purpose

H. Ruggedness--Quality of having large bones and frame

I. Pelt--Hide and fur of an animal

J. Progeny--Offspring

K. Staple--Lock of individual wool fibers

L. Fleece--Wool from a sheep

M. Condition--Amount of fat covering an animal

N. Heritability--Percentage of differences in a trait that can be explained by inheritance as opposed to environment

O. Selection differential--Difference between a trait of a particular animal and the average of all the animals from which it was chosen

P. Undershot--Bottom teeth stick out past the top pad of the sheep

Q. Overshot--Top of mouth sticks out past the bottom teeth; also called parrot mouth

R. Spring of rib--The amount the ribs arch out from the backbone

S. Crimp--The waves in the wool fibers
(Note: Good crimp keeps the wool together when it is spun.)

T. Yolk--Natural "grease" occurring in the wool

U. Density--Amount of wool fibers per square inch

V. Twist--Area between the thighs

W. Incisors--Lower front teeth
(Note: Sheep have no upper incisors.)

X. Kemp--Chalky white, brittle, weak fibers which will not take dye

II. Advantages of sheep production

A. Sheep make good use of western arid range lands

B. Sheep are more efficient converters of roughage than cattle

C. Sheep produce both lamb and wool

(Note: This diversification gives the farmer a cushion should one of the markets go bad.)

D. Lambs are ready to market only 8 to 10 months after breeding ewes

E. Sheep manure is better for the land than other types of livestock manure

F. Investment costs are often less than with other types of livestock

G. Palatable lamb can be produced solely from milk and roughage

(Note: Most other livestock require grain to produce a highly palatable meat.)

III. Disadvantages of sheep production

A. Consumption of lamb has declined

B. Wool prices often fluctuate because of the effect of political decisions

C. Sheep are easily subject to attack by wild animals

D. Sheep are quite susceptible to diseases and parasites

E. Synthetic fabrics lower the demand for wool

F. Good sheepherders are hard to find

IV. Major breeds of sheep

A. Merino--Fine wool type

(Note: Breed association--American and Delaine-Merino Record Association, Aleppo, Pennsylvania 15310.)

1. Origin--Spain

2. Characteristics--White face and legs; pink skin; reddish lips and nostrils; mature size: rams 175#, ewes 125#; rams horned; ewes polled

B. Rambouillet--Fine wool type

(Note: Breed association--American Rambouillet Sheep Breeders' Association, 2709 Sherwood Way, San Angelo, Texas 76901.)

1. Origin--France

2. Characteristics--White face and legs; flesh colored lips and nostrils; ewes polled, rams polled or horned; size: rams 250#, ewes 150-225#; will breed out of season

(Note: Rambouillet sheep were used to develop the western type sheep that is so popular today in the range part of the country.)

C. Suffolk--Medium wool type

(Note: Breed association--American Suffolk Sheep Society, 55 E. 100 North, Logan, Utah 84321.)

1. Origin--England

2. Characteristics--Polled; black face, ears and legs; ears large and slightly drooped; no wool on face, legs and ears; size: rams 275#, ewes 200#; excellent ram or meat-type breed

D. Hampshire--Medium wool type

(Note: Breed association--American Hampshire Sheep Association, P.O. Box 199, Columbia, Missouri 65201.)

1. Origin--England

2. Characteristics--Polled; brown or black face, ears and legs; ears are large and slightly drooped; size: rams 275#, ewes 175-200#

E. Southdown--Medium wool type

(Note: Breed association--American Southdown Breeders' Association, RR 4 Box 14B, Bellefonte, Pennsylvania 16823.)

1. Origin--England

2. Characteristics--Polled; light gray face, ears and nose; one of the smaller breeds; size: rams 185-200#, ewes 135-155#

F. Shropshire--Medium wool type

(Note: Breed association--American Shropshire Registry Association, Inc., P.O. Box 1970, Monticello, Illinois 61856.)

1. Origin-England

2. Characteristics--Brown face, ears and legs; black hooves; medium in size: rams 225#, ewes 165#

G. Dorset--Medium wool type

(Note: Breed association--Continental Dorset Club, P.O. Box 577, Hudson, Iowa 50643.)

1. Origin--England

2. Characteristics--Horned or polled; white face, ears, nostrils and legs; medium in size: rams 225#, ewes 175#; will breed out of season

H. Panama--Crossbred medium wool type breed

(Note: Breed association--American Panama Registry Association, Route 2, Jerome, Idaho 83338.)

1. Origin--Idaho

2. Characteristics--Cross between Rambouillet rams and Lincoln ewes; white; polled; large; valued primarily as a ewe breed, but does produce a highly desirable carcass; very similar to Columbia breed

I. Targhee--Crossbred medium wool type breed

(Note: Breed association--U.S. Targhee Sheep Association, 726 Terry Ave., Billings, Montana 59102.)

1. Origin--Idaho

2. Characteristics--White; polled; open-faced and medium in size; prolific and well adapted to range conditions; heavy fleece with a long staple wool; fleece is the finest of the crossbred medium wool type breeds

J. Columbia--Crossbred medium wool type breed

(Note: Breed association--Columbia Sheep Breeders' Association of America, P.O. Box 272, Upper Sandusky, Ohio 43351.)

1. Origin--Wyoming and Idaho

2. Characteristics--Cross between Lincoln rams and Rambouillet ewes; similar to Panama breed

K. Polypay--Crossbred medium wool type breed

(Note: Breed association--American Polypay Sheep Association, 1924 E. Rua Branco, Sandy, Utah 84092.)

1. Origin--Idaho

2. Characteristics--Cross of Rambouillet, Finnsheep, Targhee and Dorset sheep; excellent lamb production breed with high potential for twice-a-year lambing; quality carcass

L. Lincoln--Long wool type breed

(Note: Breed association--National Lincoln Sheep Breeders' Association, 5284 S. Albaugh Rd., West Milton, Ohio 45383.)

1. Origin--England

2. Characteristics--Polled; white with fleece covering much of face and legs; largest breed of sheep; heavily fleeced; primarily used in crossbreeding programs

(Note: Other fine wool type sheep include the Texas Delaine, Delaine-Merino and the Debouillet. Other medium wool type sheep include the Oxford, Montadale, Cheviot and Finnsheep. Another crossbred medium wool type sheep is the Corriedale and additional long wool breeds include the Leicester, Cotswald and Romney.)

V. Breed classifications by wool type

(Note: There are other classification systems for sheep such as meat or wool type, black or white faced, horned or polled and mountain, upland or lowland.)

A. Fine wool breeds

1. Bred primarily for wool production

2. About equal emphasis is placed on wool quality and body conformation when judging

(Note: Emphasis for Rambouillets is 65% body conformation and 35% wool quality.)

B. Medium wool breeds including down breeds

1. Bred primarily for meat, with some emphasis on wool

2. Wool is in between coarse long wool breeds and dense fine wool breeds

3. 85% to 95% of the emphasis is on body conformation and 5% to 15% is on wool quality

C. Long wool breeds

1. Bred primarily for meat

2. Largest of all breeds

3. Coarse, long wool

4. Slow maturing and need abundant feed

5. Adapted to wet climates

D. Crossbred medium wool breeds

1. Produce medium wool, but are better suited to the western range than other medium wool breeds

2. Produce better range lambs than the fine wool breeds and have better herding tendencies than the medium or long wool breeds

3. 70% of the emphasis is on body conformation and 30% is on wool quality

E. Carpet wool breeds--Produce coarse, wiry tough fleece used in making carpets

F. Fur breeds

1. Produce soft, fine pelts

2. Taken from very young lambs

VI. Characteristics of ewe, ram and dual purpose breeds

A. Ewe breeds

(Note: These include the Delaine, Rambouillet, Debouillet, Corriedale, Targhee, Finnsheep and Border Leicester.)

1. Used to supply replacement ewes

2. Selected for reproductive efficiency, wool production, long life, milking ability and maternal instincts

3. White-faced sheep

B. Ram breeds

(Note: These include the Suffolk, Hampshire, Shropshire, Oxford, Southdown, Montadale and Cheviot.)

1. Used to supply rams to cross with the ewe breeds

2. Selected for meat production, growthiness and carcass quality

C. Dual purpose breeds--Can be used both as ewe and ram breeds

(Note: These include the Columbia, Panama, Dorset, Lincoln and Romney.)

II. Parts of a sheep (Transparency 1)

Neck	Hind leg	Breast
Back	Flank	Shoulder
Loin	Cannon bone	Muzzle
Rump	Pastern	Face
Hindsaddle	Scrotum or udder	Eye
Hip	Ribs	Ear
Dock	Foreleg	Forehead
Twist	Brisket	Poll
Thigh		

VIII. Sheep selection is different from selecting other meat animals since wool is also an important product and affects the evaluation

(Note: The fleece also makes it more difficult to judge conformation.)

IX. Methods of selection

(Note: Combining two or more of the following is common.)

A. Appearance--Most common method

B. Pedigree--Selection based on ancestors

C. Show-ring winnings--Generally only used with purebred animals

D. Production records

1. Selection based on records kept of performance and/or progeny

2. Primarily used for rams

(Note: Production testing for sheep has been fairly limited.)

X. Heritability percentages for economically important traits

(Note: The higher the percentage, the faster a flock can be improved by selection for that trait. Forty percent and above is generally considered a high heritability, between 20% and 39% medium, and under 20% is low.)

(Caution: These are estimates only. Actual percentages will vary.)

Characteristic		Percentage	Level
A.	Face covering	56%	High
B.	Loin eye area	53%	
C.	Staple length (yearling)	47%	
D.	Yearling weight	40%	
E.	Skin folds	40%	
F.	Grease fleece weight	38%	Moderate
G.	Fleece grade	35%	
H.	Birth weight	30%	
I.	Weaning weight and rate of gain	30%	
J.	Milk Yield	26%	
K.	Finish or condition at weaning	17%	Low
L.	Multiple births and other reproductive traits	15%	
M.	Conformation at weaning	10%	

XI. Calculate annual progress based on genetic selection--Progress is calculated by multiplying heritability by the selection differential and then multiplying by the amount contributed from the animal selected (Assignment Sheet 1)

(Note: Selection differential can be much higher in rams than ewes, because fewer rams need to be kept and therefore selection can be more rigid.)

Example: Goal--improvement in yearling weights
Procedure--select ewes weighing 5 pounds more than the herd average as yearlings
--select rams weighing 20 pounds more than the herd average as yearlings

Selection differential for ewes	5 lb
Heritability estimate (40%)	x .4
Expected increase from females	2 lb
Contribute 1/2 to offspring	x .5
Ewe contribution	1 lb

Selection differential for rams	20 lb
Heritability estimate (40%)	x .4
Expected increase from males	8 lb
Contribute 1/2 to offspring	x .5
Ram contribution	4 lb

Expected increase in yearling weights of progeny 5 lb

(Note: While selection for heredity is important, overall genetic improvement only accounts for about 30% compared to an overall of 70% for environmental and management factors. This is why it is also important to select among animals in the same environmental conditions.)

XII. Desirable characteristics of breeding sheep

A. Healthy, vigorous

B. Soundness (mouth, udder, feet)

C. Uniformity

D. Body conformation--Straight and strong in topline, well balanced, stands straight on legs, large for breed, good body length, free from excess fat

XIII. Characteristics to avoid when selecting breeding animals

(Note: These characteristics should be avoided when selecting breeding animals.)

A. Missing teeth

B. Overshot or undershot jaw

C. Extreme fatness or thinness

D. Lumps or swelling under chin

E. Wool covering face

F. Fine-boned

G. Narrow, short or shallow bodied

H. Ragged, coarse or open fleeces

I. Excessive skin folds

J. Abnormal testicles

K. Unsound feet and legs

XIV. Indicators of finish and muscling in market lambs (Transparencies 2, 3)

A. Finish (Transparency 2)

1. Deep, full breast

2. Fat over ribs behind shoulder

3. Fat over top of shoulders

4. Fat over the backbone

5. Fat around the dock

6. Full, deep flank

7. Deep body

8. Square back

9. Deep twist

10. Deep, wide belly

11. Narrow stance

B. Muscling (Transparency 3)

1. Bulging shoulders and forearms

2. Wide leg

3. Bulging loin

4. Widest through the stifle region

5. Topline is widest at shoulders and rear legs

6. Wide stance

XV. Conformation of a meat-type sheep (Transparency 4)

A. Desirable conformation

1. Large size

2. Long body

3. Adequate spring of rib

4. Wide, muscular back and loin

5. Widely set legs

6. Adequate but not excessive chest depth

7. Long and level rump

8. Full, thick, muscular leg

9. Large bone

(Note: Heavier boned sheep have more muscling. Rams need more rugged bone than ewes. The best place to determine the amount of bone is at the cannon bone.)

10. "Coke bottle" shaped with a trim neck blending into prominent shoulders when viewed from the top.

XVI. Wool type versus meat type lamb

(Note: Modern breeding efforts have gone a long way towards combining the ideal meat-type and wool-type sheep into one animal.)

XVII. Factors used to evaluate wool quality

A. Fineness

B. Staple length

C. Density and uniformity

(Note: Fleece is usually the most dense at the top and gets less dense towards the belly.)

D. Crimp

E. Amount of yolk

F. Purity

G. Amount of foreign matter

H. Shrinkage

XVIII. Ideal fleece--Fleece fibers should be long with a fine, distinct crimp; the fleece should be dense, sound and uniform in length and fineness and should be bright and clean with a medium amount of yolk; it should contain no black fibers or kemp

(Note: Black fleeces are becoming more popular and actually are worth more if a market can be found.)

XIX. Procedure for handling a sheep for evaluation

A. Use pads of fingers and keep fingers extended and together

B. Be gentle--do not jab or shove

C. Weave fingertips through the wool before applying pressure

D. Check fat covering over back by pressing lightly

E. Place hands on points of shoulders to determine width and fat covering

F. Feel firmness of brisket and determine depth of chest

G. Grasp hind leg with fingers on the inside and thumbs on the outside to determine degree of muscling

H. Check width of back, loin and rump

I. Measure depth of twist with one hand on the top of the rump and the other in the middle of the thighs

J. Part fleece well down on the side of the sheep with the back of the hands

(Note: Parting the fleece on the back allows water to run into it.)

XX. Determining the age of sheep (Transparency 5)

(Note: A sheep has an upper dental pad with no upper incisors.)

A. A lamb has eight temporary incisors in front

B. A yearling has one pair of permanent incisors

C. A 2-year-old has one pair of permanent incisors

D. A 3-year-old has three pairs of permanent incisors

E. A 4-year-old has four pairs of permanent incisors

F. As sheep get older the teeth wear down and start to break out

G. A sheep with no incisors is called a gummer

XXI. Quality grades (Handout #1 and Transparency 6)

A. Similar to beef but depend more on maturity. The grades for lamb include Prime, Choice, Select, Utility and Cull

B. There are three maturity grades

1. Lamb

2. Yearling mutton

3. Mutton

C. Consumers in the U.S. demand almost exclusively lamb. Most lambs grade Choice

XXII. Comparing yield grades (Transparency 7)

(Note: Both lambs compared in this example have a choice quality grade.)

A. Yield grade 2

1. Thick muscling with little fat
2. High proportion of lean to bone
3. Legs are thick through stifle region and lamb has a wide stance
4. Forearm is thick and plump
5. Back is rounded

B. Yield grade 4

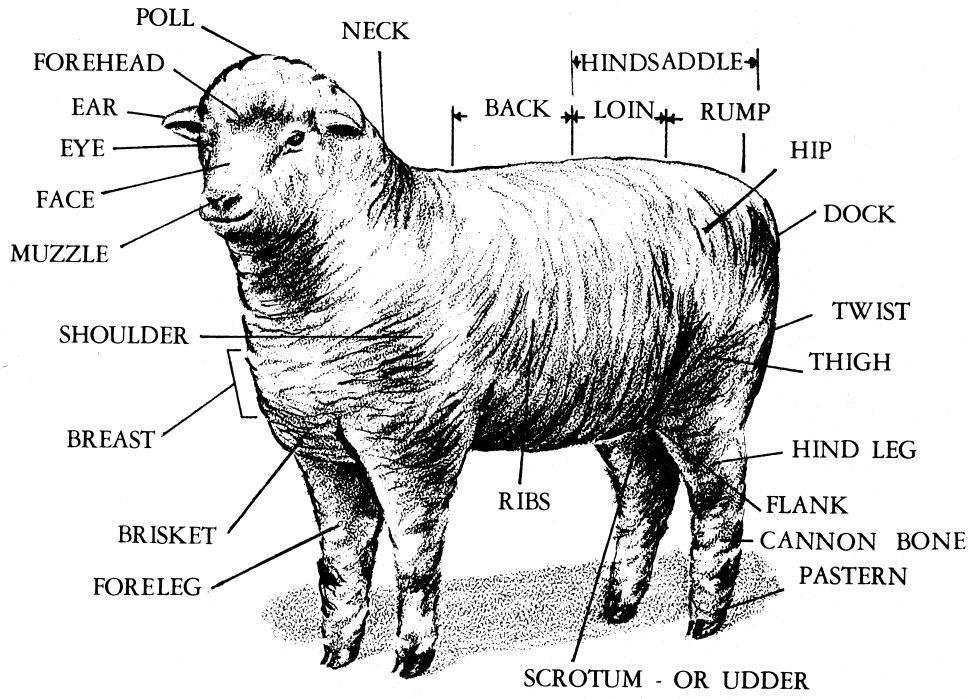
1. Thin muscling with a lot of fat
2. Legs are thinner with little muscling
3. Stance is narrower
4. Flank and brisket are fuller or wastier

Handout #1

MARKET CLASSES AND QUALITY GRADES OF SLAUGHTER SHEEP

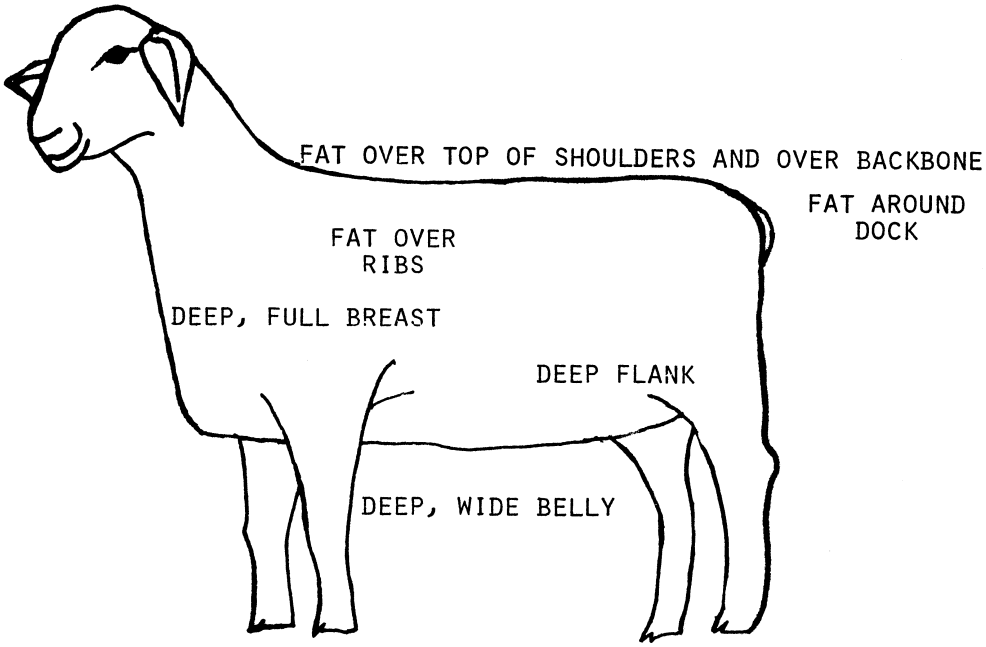
Sheep or lambs	Sex	Age	Weight	Pounds	Quality Grade
Sheep	Ewes	Yearlings	Light	under 90	Prime, choice,
			Medium	90 - 100	select,
			Heavy	over 100	utility, cull
		Mature	Light	under 120	Choice,
			Medium	120 - 140	select,
			Heavy	over 140	utility, cull
	Wethers	Yearlings	Light	under 100	Prime, choice,
			Medium	101 - 110	select,
			Heavy	over 111	utility, cull
		Mature	Light	under 115	Choice,
			Medium	116 - 130	select,
			Heavy	over 131	utility, cull
	Rams	Yearlings	All Weights		Choice, select, utility, cull
		Mature	All Weights		Choice, select, utility, cull

Parts Of A Sheep

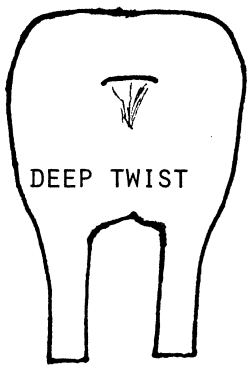


TM 1

Indicators Of Finish

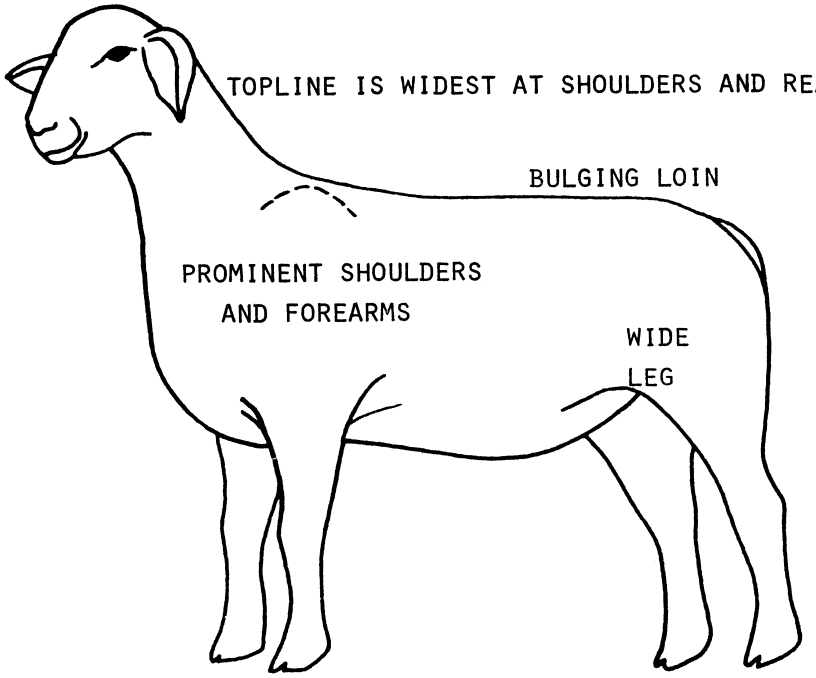


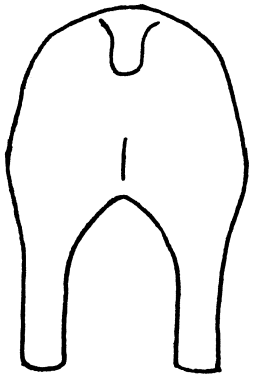
SQUARE BACK



NARROW STANCE

Indicators Of Muscling



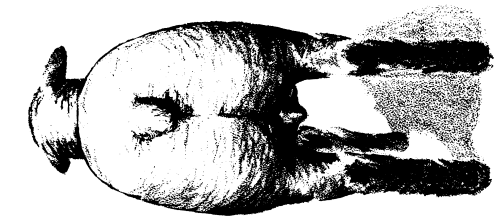


WIDE THROUGH THE STIFLE

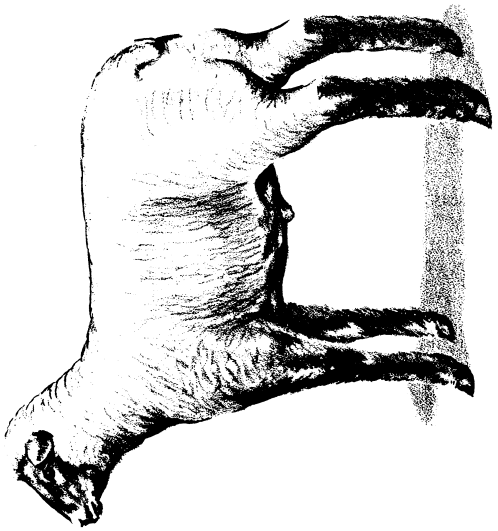
WIDE STANCE

TM 3

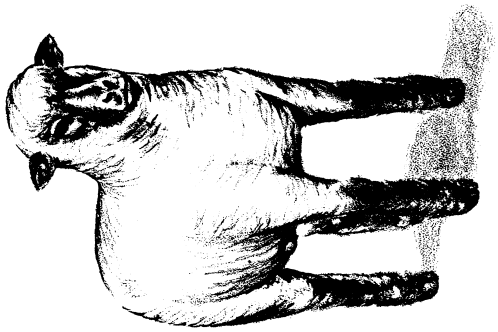
Ideal Meat-Type Sheep



REAR VIEW



SIDE VIEW



FRONT VIEW

Determining Age By The Teeth

LAMB MOUTH

8 temporary incisors

YEARLING MOUTH

2 permanent middle incisors

2—YEAR—OLD MOUTH

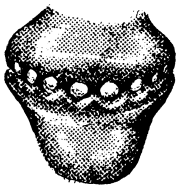
4 permanent incisors

3—YEAR— OLD MOUTH

6 permanent incisors

4—YEAR—OLD MOUTH

all permanent incisors

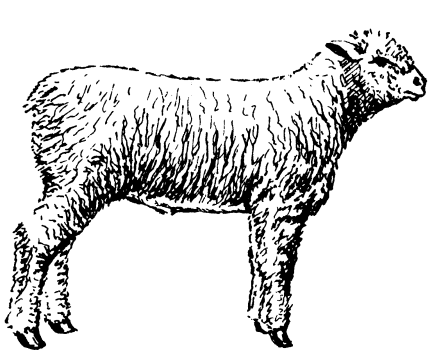


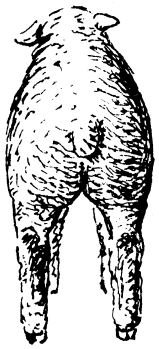
OLD SHEEP MOUTH

teeth well worn

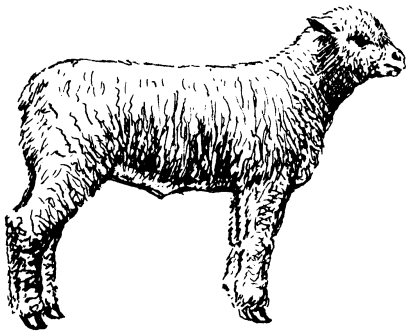
Slaughter Lambs

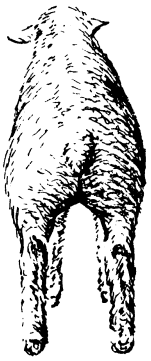
U.S. Quality Grades



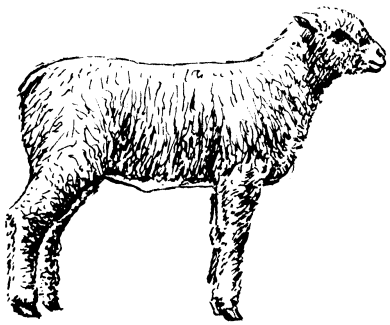


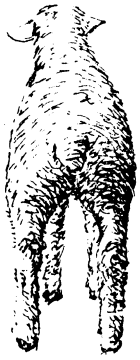
PRIME



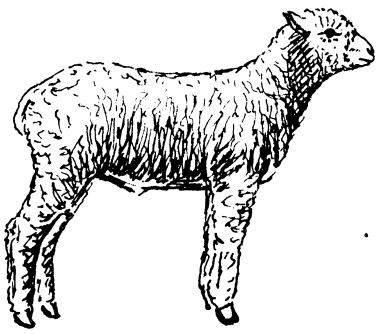


CHOICE





SELECT

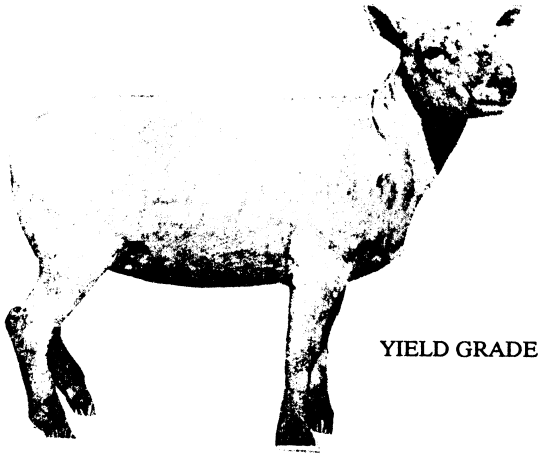


UTILITY

TM 6

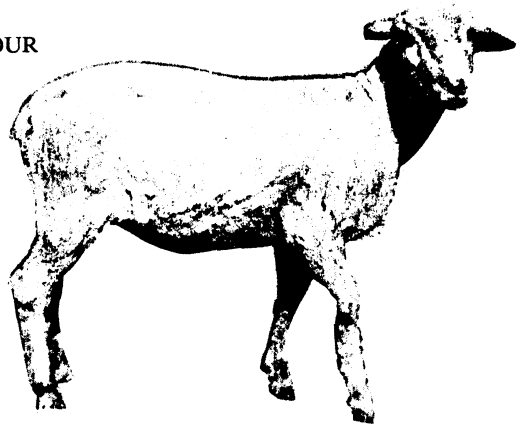
Slaughter Lambs

U.S. Yield Grades



YIELD GRADE TWO

YIELD GRADE FOUR



TM 7

SHEEP EVALUATION AND SELECTION

AG 140 - E

ASSIGNMENT SHEET #1--CALCULATE ESTIMATED
ANNUAL PROGRESS FROM GENETIC SELECTION

Name_____ Score_____

Sheep improvement is accomplished by providing the proper environment and by selecting animals with superior genetic potential. Selection has not received major emphasis in sheep production, but can increase profits especially through selection of quality rams.

Calculate the expected increase in fleece weight of the offspring of a ram that has a grease fleece weight 8 pounds more than the flock average at weaning and ewes that have a grease fleece weight 3 pounds more than the flock average at weaning. Use a 38% heritability for grease fleece weight.

Calculations for ewe contribution:

Ewe contribution _____

Calculations for ram contribution:

Ram contribution _____

Expected increase in grease fleece weights _____

If the flock grease fleece weight average was 10 pounds, what would the new expected average be? _____

SHEEP EVALUATION AND SELECTION

AG 140-E

ASSIGNMENT SHEET #2 – EVALUATE AND PLACE
A CLASS OF FOUR MARKET LAMBS

Name _____ Score _____

Based on your evaluation of four lambs (either on slides or live), place them in order form most to least desirable. Mark your placing on the official scorecard below.

Example: You have decided that No. 4 is the best, with No. 2 being the next best and No. 3 being the third best with No. 1 being the least desirable. You would mark the card as follows.

Tabulator's Score

_____

3-4-2-1	
4-1-2-3	
4-1-3-2	
4-2-1-3	
4-2-3-1	✓
4-3-1-2	
4-3-2-1	

Official Scorecard to use for your placings

STANDARD JUDGING CARD

Contestant no. _____

Contest _____

Class Name _____

Class No. _____

Tabulator's Score _____

Placing	✓
1-2-3-4	
1-2-4-3	
1-3-2-4	
1-3-4-2	
1-4-2-3	
1-4-3-2	
2-1-3-4	
2-1-4-3	
2-3-1-4	
2-3-4-1	
2-4-1-3	
2-4-3-1	
3-1-2-4	
3-1-4-2	
3-2-1-4	
3-2-4-1	
3-4-1-2	
3-4-2-1	
4-1-2-3	
4-1-3-2	
4-2-1-3	
4-2-3-1	
4-3-1-2	
4-3-2-1	

SHEEP EVALUATION AND SELECTION

AG 140 - E

ASSIGNMENT SHEET #3--GIVE ORAL REASONS ON
PLACINGS OF A CLASS OF FOUR LAMBS

Name_____ Score_____

The ability to critically evaluate animals is greatly improved when a person is able to explain exactly why the animals were placed as they were. Look again at the four lambs and review the specific reference points for muscling and finish. Then write reasons for your placings before sharing them with the class. Write your reasons on the page provided.

Example: "I placed this class of market lambs 4-1-3-2, feeling that this was definitely a two-pair class with 4 and 1 being the top pair and 3 and 2 being the bottom pair. I started this class with 4 and placed it over 1 in a rather close placing. 4 is a longer, stretchier, meatier, hardier, firmer, straighter-lined, more correctly balanced, higher quality wether than 1. 4 stands wider and more correct on his rear legs and has a thicker, meatier, more heavily-muscled leg that has more muscle expression through the stifle and is especially thicker through both the inner and outer portions of the lower leg than 1. 4 is straighter and stronger-topped than 1 and is neater and trimmer through the breast and chest area, in the rear flank, and especially through the twist or crotch area than 1. 4 is a firmer-handling, more correctly finished, better balanced carcass and will yield a higher percentage of leg, loin and rack than 1. However, I grant that 1 is a larger, growthier wether that stands on more substance and ruggedness of bone. 1 is wider through the chest floor than 4 and exhibits more constitution and capacity as viewed from the front than 4. 1 shows more muscle development through the arm and forearm than 4. 1 has more spring to the rear rib, is wider through the loin, is thicker through the top part of the leg and is deeper in the twist than 4. 1 is also a bit trimmer and tighter along the underline than 4.

For my middle pair I placed 1 over 3 in the easiest placing in the class. 1 is a bigger, more rugged, stouter wether than 3 and has more size and scale, length of body, capacity and ruggedness. 1 is wider through the chest floor, shows more spread and thickness all down the top being thicker over the shoulders with more spring to the fore-rib and rear rib, thicker over the loin and exhibits more muscling and meatiness through the top part of the leg and through the stifle than 3. 1 stands on more substance of bone and is firmer and more correctly finished over the ribs, back and through the leg than 3. 1 is trimmer-middled than 3 as viewed from the rear and will hang a longer, thicker, meatier, more heavily muscled carcass than 3 and will have a greater percentage of lean meat and muscle in the high-priced cuts. However, I grant that 3 is a bit stronger-topped than 1. 3 is more level at the rump than 1 and is squarer at the dock. 3 is also thicker through the lower leg than 1, especially through the inner portion.

In the bottom pair, I placed 3 over 1 in a very close placing. 3 is a thicker, meatier, and more heavily muscled wether than 2. 3 stands wider on both the front and rear legs than 2 and stands on more substance of bone. 3 is thicker over the fore-rib and rear rib, wider at the loin and shows more over-all spread, spring, expression and muscling down the top than 2. 3 is squarer at the dock, drops down into a deeper leg than 2 and is thicker and meatier through the top and through the stifle muscle area. 3 will hang a thicker, meatier, more heavily muscled carcass than 2. However, I grant that 2 is stronger-topped, longer through the rib, loin and rump and is a harder, firmer-handling, more correctly finished wether than 3. 2 is neater through the breast and

chest, cleaner and tighter through the middle and particularly trimmer through the twist than 3. 2 is also thicker on the outside of the lower leg than 3.

I placed 2 at the bottom of the class because it is a narrow-topped, light-muscled lamb that lacks the size, scale, substance of bone and total muscle volume and would hang the least desirable carcass of any lamb in the class.

From Roger E. Hunsley, et al, *Livestock Judging, Selection and Evaluation*, 2nd edition, Interstate Printers and Publishers, Inc., Danville, Illinois, 1978. Used with permission.

ASSIGNMENT SHEET #3

Write reasons for placings:

SHEEP EVALUATION AND SELECTION

AG 140-E

ASSIGNMENT SHEET #4 – EVALUATE LIVE MARKET LAMBS FOR QUALITY AND YIELD GRADES

Name _____ Score _____

Using the grading sheet below, estimate the quality and yield grades of market lambs.

(Note: A packing plant would be the best place to do this since the actual yield and quality grades could then be determined after slaughter.)

MARKET LAMB EVALUATION

	Animal No._____		Animal No._____		Animal No._____		Animal No._____	
	Estimate	Actual	Estimate	Actual	Estimate	Actual	Estimate	Actual
Live Weight								
Sex								
Breed								
Fat Thickness								
% Internal Fat								
Leg Score								
Yield Grade								
Quality Grade								

Estimated Animal Placing_____ Actual Animal Placing_____

SHEEP EVALUATION AND SELECTION

AG 140 - E

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

Ewe contribution	.57 lb
Ram contribution	1.52 lb
Expected increase in grease fleece weights	2.09 lb
New flock average	12.09 lb

Assignment Sheet #2

Evaluated to the satisfaction of the instructor.

Assignment Sheet #3

Evaluated to the satisfaction of the instructor.

Assignment Sheet #4

Evaluated to the satisfaction of the instructor.

SHEEP EVALUATION AND SELECTION

AG 140 - E

UNIT TEST

Name_____ Score_____

1. Match the terms on the right to their definitions.

____a.	Amount of wool fibers per square inch	1.	Wether
____b.	Area between the thighs	2.	Ram
____c.	Lock of individual wool fibers	3.	Crimp
____d.	Combination of characteristics which make an animal most useful for a specific purpose	4.	Kemp
____e.	Top of mouth sticks out past the bottom teeth; also called parrot mouth	5.	Staple
____f.	Female sheep	6.	Overshot
____g.	Amount of fat covering an animal	7.	Spring of rib
____h.	Uncastrated male sheep	8.	Ewe
____i.	Quality of having large bones and frame	9.	Progeny
____j.	Meat of a sheep over one year of age	10.	Fleece
____k.	The amount the ribs arch out from the backbone	11.	Condition
____l.	Difference between a trait of a particular animal and the average of all the animals from which it was chosen	12.	Polled
____m.	Wool from a sheep	13.	Incisors
____n.	Percentage of differences in a trait that can be explained by inheritance as opposed to environment	14.	Ruggedness
____o.	Chalky white, brittle, weak fibers which will not take dye	15.	Heritability
____p.	Natural "grease" occurring in the wool	16.	Yolk
____q.	Lower front teeth	17.	Density
____r.	The waves in the wool fiber	18.	Conformation

____s. The shape and size of the parts of an animal and how they are put together

____t. Bottom teeth stick out past the top pad of the sheep

____u. Hide and fur of an animal

____v. Naturally without horns

____w. Offspring

____x. Castrated male sheep

19. Pelt

20. Twist

21. Type

22. Selection differential

23. Mutton

24. Undershot

2. List five advantages of sheep production.

a._____

b._____

c._____

d._____

e._____

3. List five disadvantages of sheep production.

a._____

b._____

c._____

d._____

e._____

4. Describe five major breeds of sheep including origin and characteristics.

Breed	Origin	Characteristics
a.		
b.		

Breed	Origin	Characteristics
c.		
d.		
e.		

5. Match the six breed classifications by wool type on the right to their correct descriptions.

_____a.	Produce coarse, wiry tough fleece	1.	Fine wool breeds
_____b.	Produce medium wool, but are better suited to the western range than other medium wool breeds; Produce better range lambs than the fine wool breeds and have better herding tendencies than the medium or long wool breeds; 70% of the emphasis is on body conformation and 30% is on wool quality	2.	Medium wool breeds
		3.	Long wool breeds
_____c.	Bred primarily for meat; Largest of all breeds; Coarse, long wool; Slow maturing and need abundant feed; Adapted to wet climates	4.	Crossbred medium wool breeds
_____d.	Produce soft, fine pelts; Taken from very young lambs	5.	Carpet wool breeds
_____e.	Bred primarily for meat, with some emphasis on wool; Wool is in between coarse long wool breeds and dense fine wool breeds; 85% to 95% of the emphasis is on body conformation and 5% to 15% is on wool quality	6.	Fur breeds
_____f.	Bred primarily for wool production; About equal emphasis is placed on wool quality and body conformation when judging		

6. Distinguish between the characteristics of ewe breeds (E) and ram breeds (R) by placing an E or an R in front of the appropriate characteristic.

_____a. Primary source of breeding rams

_____b. Selected for meat production

_____c. Selected for carcass quality

_____d. Selected for reproductive efficiency

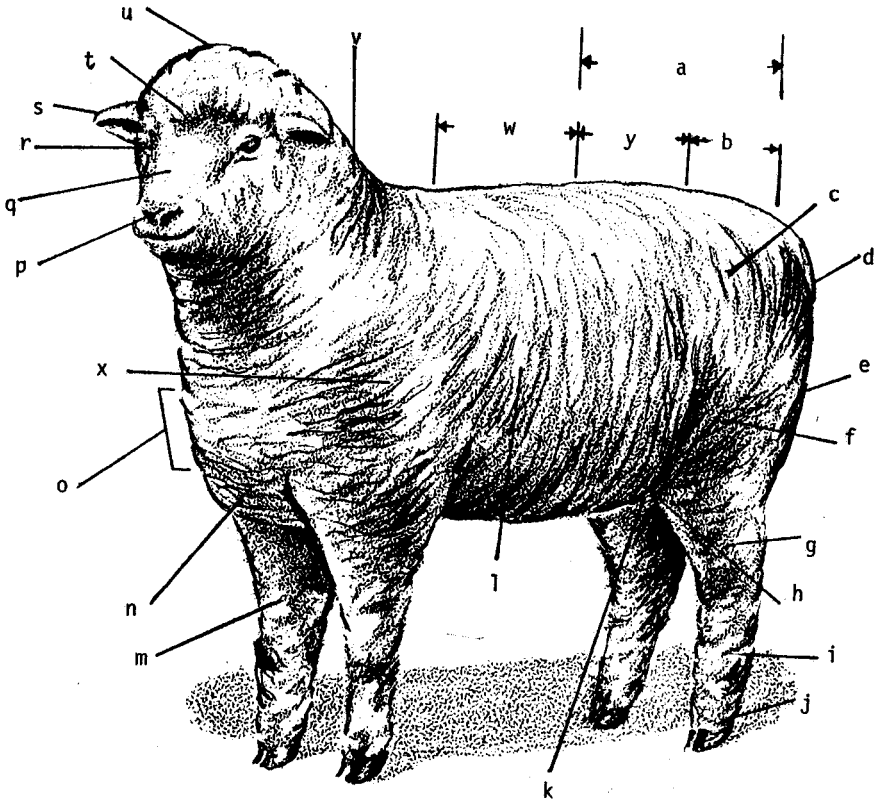
_____e. Selected for milking ability

_____f. Selected for growthiness

_____g. Selected for wool production

_____h. White-faced sheep

7. Label the parts of the sheep below.



a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

g. _____

h. _____

i. _____

j. _____

k. _____

l. _____

m. _____

n. _____

o. _____

p. _____

q. _____

r. _____

s. _____

t. _____

u. _____

v. _____

w. _____

x. _____

y. _____

8. Describe the primary difference between sheep selection and the selection of other meat animals.

_____

_____

_____

9. Identify the four basic selection methods that are being used in the following examples.

a._____ Choosing a ram with a well-muscled leg over a ram with less leg muscling.

b._____ Choosing all rams related to one particularly outstanding sire.

c._____ Choosing a ram that had sired offspring with a high weaning weight.

d._____ Choosing a grand champion ewe.

10. Match the heritability levels on the right to the appropriate traits.
(Note: Heritability levels will be used more than once.)

_____a. Multiple births and other reproductive traits

_____b. Birth weight

_____c. Milk yield

_____d. Face covering

_____e. Fleece grade

_____f. Skin folds

_____g. Finish or condition at weaning

_____h. Grease fleece weight

_____i. Weaning weight and rate of gain

_____j. Yearling weight

_____k. Staple length (yearling)

_____l. Loin eye area

_____m. Conformation at weaning

1. High
2. Moderate
3. Low

11. Calculate the estimated increase in yearling weights due to genetic selection in the following example.

    Ewes weighed 10 pounds more than the average as yearlings and rams weighed 30 pounds more than the average as yearlings. Yearling weight has a heritability of 40%.

    Estimated increase_____

12. List the desirable characteristics of breeding sheep.

    a. _____

    b. _____

    c. _____

    d . _____

13. List six characteristics to avoid when selecting breeding stock.

    a. _____

    b. _____

    c. _____

    d. _____

    e. _____

    f. _____

14. Distinguish between indicators of finish (F) and indicators of muscling (M) by putting an F or an M in front of the appropriate indicators.

    _____a. Fat over ribs behind shoulder

    _____b. Deep twist

    _____c. Full, deep flank

    _____d. Wide leg

    _____e. Square back

    _____f. Deep body

    _____g. Widest through the stifle region

    _____h. Bulging loin

    _____i. Fat around the dock

    _____j. Topline is widest at shoulders and rear legs

_____k. Fat over the backbone

_____l. Deep, wide belly

_____m. Deep, full breast

_____n. Narrow stance

_____o. Wide stance

_____p. Bulging shoulders and forearms

15. Describe the desirable conformation for a meat-type sheep.

_____

_____

_____

_____

_____

16. Describe the typical difference in conformation between the wool-type lamb and the meat-type lamb.

_____

_____

_____

17. List five factors used to evaluate wool quality.

a. _____

b. _____

c. _____

d. _____

e. _____

18. Describe the ideal fleece.

_____

_____

_____

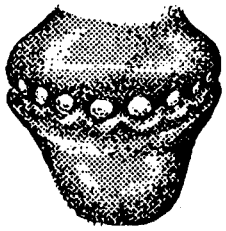
_____

19. Describe a procedure for handling a sheep for evaluation by circling or writing in the words or statements that complete the following:

The examination should be done with the a. (tips; pads) of the fingers with the fingers extended and b. (together; separated). Fingertips should be c. (weaved into the wool; kept on top of the wool) to apply pressure. Fat covering over the back must be checked by pressing d. (firmly; lightly). Hands should then be placed on the e. _____ of the shoulders to determine f._____ and fat covering. Next feel the firmness of the g._____ and determine the depth of the chest. Grasp the hind leg with the fingers on the h._____ and the thumbs on the i._____ to determine the j._____. Then check the width of the back, k._____ and rump. Measure the depth of the l._____ with one hand on the top of the rump and the other in the middle of the thighs. Part the fleece m. (well down on the side; on the back) to check for quality. Part the fleece using the n. (palms; back) of the hands.

20. Identify the age of the sheep as indicated by the mouths pictures. The ages are lamb, yearling, 2 –year old, 3 year old, 4 year old and old sheep.

a. _____



b. _____

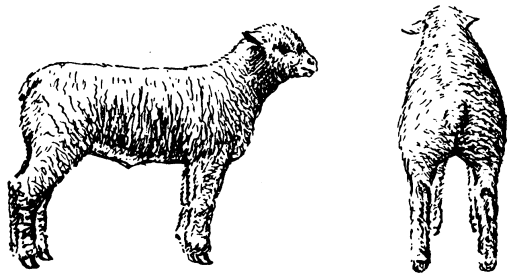
c. _____

d. _____

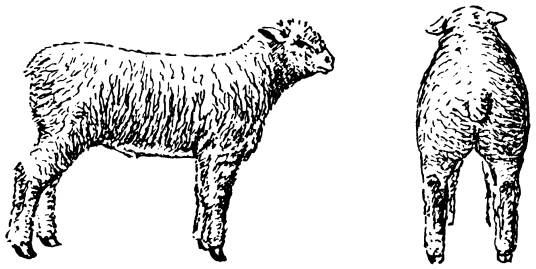
e. _____

f. _____

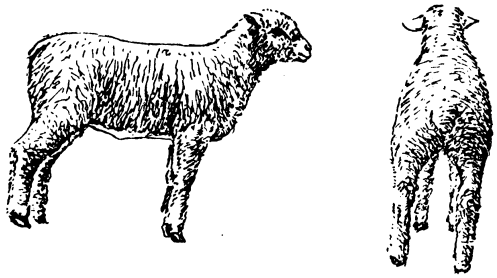
21. Distinguish among the four slaughter lambs below by writing their quality grades.



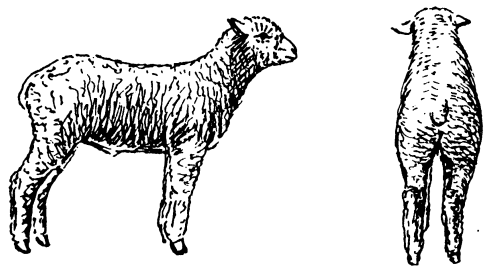
a. _____



b. _____

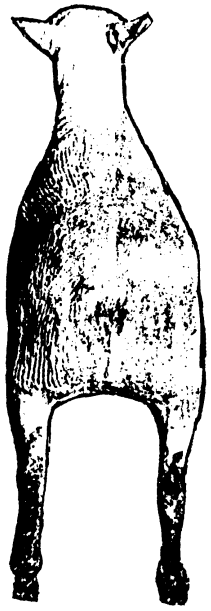


c. _____



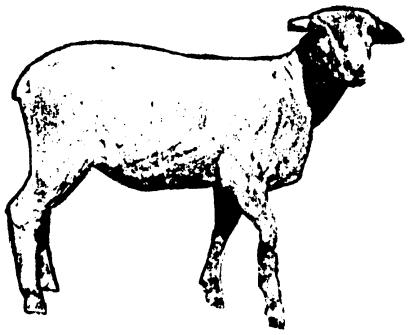
d. _____

22. Distinguish between the yield grade 2 and yield grade 4 lambs pictured below by writing yield grade 2 or 4 by the appropriate lamb.

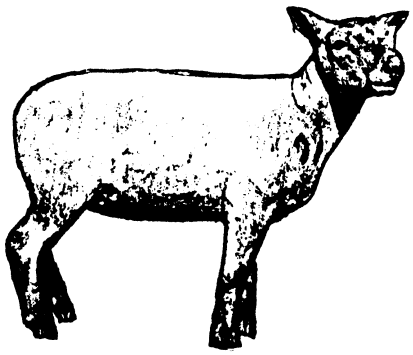


a. _____

b. _____



c. _____



d. _____

SHEEP EVALUATION AND SELECTION

AG 140 - E

ANSWERS TO TEST

1.

a.	17	g.	11	m.	10	s.	18
b.	20	h.	2	n.	15	t.	24
c.	5	i.	14	o.	4	u.	19
d.	21	j.	23	p.	16	v.	12
e.	6	k.	7	q.	13	w.	9
f.	8	l.	22	r.	3	x.	1

2. Answer should include five of the following:

Sheep make good use of western arid range lands; Sheep are more efficient converters of roughage than cattle; Sheep produce both lamb and wool; Lambs are ready to market only 8 to 10 months after breeding ewes; Sheep manure is better for the land than other types of livestock manure; Investment costs are often less than with other types of livestock; Palatable lamb can be produced solely from milk and roughage

3. Answer should include five of the following:

Consumption of lamb has declined; Wool prices often fluctuate because of the effect of political decisions; Sheep are easily subject to attack by wild animals; Sheep are quite susceptible to diseases and parasites; Synthetic fabrics lower the demand for wool; Good sheep herders are hard to find

4. Answer should include five of the following:

Breed	Origin	Characteristics
Merino	Spain	Fine wool; white face and legs; pink skin; reddish lips and nostrils; mature size: rams 175#, ewes 125#; rams horned; ewes polled
Rambouillet	France	Fine wool; white face and legs; flesh colored lips and nostrils; ewes polled, rams polled or horned; size: rams 250#, ewes 150-225#; will breed out of season
Suffolk	England	Medium wool; polled; black face, ears, and legs; ears large and slightly drooped; no wool on face, legs and ears; size: rams 275#, ewes 200#; excellent ram or meat-type breed
Hampshire	England	Medium wool; polled; brown or black face, ears and legs; ears are large and slightly drooped; size: rams 275#, ewes 175-200#

Breed	Origin	Characteristics
Southdown	England	Medium wool; polled; light gray face, ears and nose; one of the smaller breeds; size: rams 185-200#, ewes 135-155#
Shropshire	England	Medium wool; brown face, ears and legs; black hooves; medium in size: rams 225#, ewes 165#
Dorset	England	Medium wool; horned or polled; white face, ears, nostrils and legs; medium in size: rams 225#, ewes 175#; will breed out of season
Panama	Idaho	Crossbred medium wool; cross between Rambouillet rams and Lincoln ewes; white; polled; large; valued primarily as a ewe breed, but does produce a highly desirable carcass; very similar to Columbia breed
Targhee	Idaho	Crossbred medium wool; white; polled; open-faced and medium in size; prolific and well adapted to range conditions; heavy fleece with a long staple wool; fleece is the finest of the crossbred medium wool breeds
Columbia	Wyoming and Idaho	Crossbred medium wool; cross between Lincoln rams and Rambouillet ewes; similar to Panama breed
Polypay	Idaho	Crossbred medium wool; cross of Rambouillet, Finnsheep, Targhee and Dorset sheep; excellent lamb production breed with high potential for twice-a-year lambing; quality carcass
Lincoln	England	Long wool; polled; white with fleece covering much of face and legs; largest breed of sheep; heavily fleeced; primarily used in crossbreeding programs

5.
a. 5
b. 4
c. 3
d. 6
e. 2
f. 1

6.
a. R
b. R
c. R
d. E
e. E
f. R
g. E
h. E

7.

a.	Hindsaddle	j.	Pastern	r.	Eye
b.	Rump	k.	Scrotum or udder	s.	Ear
c.	Hip	l.	Ribs	t.	Forehead
d.	Dock	m.	Foreleg	u.	Poll
e.	Twist	n.	Brisket	v.	Neck
f.	Thigh	o.	Breast	w.	Back
g.	Hind leg	p.	Muzzle	x.	Shoulder
h.	Flank	q.	Face	y.	Loin
i.	Cannon bone				

8. Sheep selection is different from selecting other meat animals since wool is also an important product and affects the evaluation

9.

a. Appearance
b. Pedigree
c. Production records
d. Show-ring winnings

10.

a.	3	e.	2	h.	2	k.	1
b.	2	f.	1	i.	2	l.	1
c.	2	g.	3	j.	1	m.	3
d.	1						

11. 8 pounds (Ewe contribution of 2 pounds and a ram contribution of 6 pounds)

12. Healthy, vigorous; Soundness (mouth, udder, feet); Uniformity; Body conformation--Straight and strong in topline, well balanced, stands straight on legs, large for breed, good body length, free from excess fat

13. Answer should include six of the following:

Missing teeth; Overshot or undershot jaw; Extreme fatness or thinness; Lumps or swelling under chin; Wool covering face; Fine-boned; Narrow, short or shallow bodied; Ragged, coarse or open fleeces; Excessive skin folds; Abnormal testicles; Unsound feet and legs

14.

a.	F	e.	F	i.	F	m.	F
b.	F	f.	F	j.	M	n.	F
c.	F	g.	M	k.	F	o.	M
d.	M	h.	M	l.	F	p.	M

15. Answer should include the following:

Large size; Long body; Adequate spring of rib; Wide, muscular back and loin; Widely set legs; Adequate but not excessive chest depth; Long and level rump; Full, thick, muscular leg; Large bone; "Coke bottle" shaped with a trim neck blending into prominent shoulders when viewed from the top

16. The wool-type lamb is generally more angular with less muscling than the meat-type lamb

17. Answer should include five of the following:

Fineness; Staple length; Density and uniformity; Crimp; Amount of yolk; Purity; Amount of foreign matter; Shrinkage

18. Fleece fibers should be long with a fine, distinct crimp; the fleece should be dense, sound and uniform in length and fineness and should be bright and clean with a medium amount of yolk; it should contain no black fibers or kemp

19.

a.	Pads	f.	Width	k.	Loin
b.	Together	g.	Brisket	l.	Twist
c.	Weaved into the wool	h.	Inside	m.	Well down on the side
d.	Lightly	i.	Outside	n.	Back
e.	Points	j.	Degree of muscling		

20.

a.	2-year-old	d.	Lamb
b.	Old sheep	e.	3-year-old
c.	Yearling	f.	4-year-old

21.
a. Choice
b. Prime
c. Select
d. Utility

22.
a. Yield grade 2
b. Yield grade 4
c. Yield grade 4
d. Yield grade 2

HORSES AND HORSEMANSHIP

AG 140 - F

UNIT OBJECTIVE

After completion of this unit, students should be able to describe and/or demonstrate how to care for a horse and horse related equipment. Students should also be able to select quality horses and determine age by inspecting teeth. This knowledge will be demonstrated by completion of assignment sheets, laboratory exercises and unit test with a minimum of 85 percent accuracy.

SPECIFIC OBJECTIVES AND COMPETENCIES

After completion of this unit, the student should be able to:

1. Match terms associated with horses and horsemanship to their correct definitions.
2. List and describe five major breeds of horses including origin, uses and characteristics.
3. Label the parts of a horse.
4. Describe procedures for determining common measurements pertinent to a horse.
5. List eight common items of horse-related tack and equipment.
6. Identify parts of the western bridle.
7. Match parts of the western saddle.
8. Describe ways to store saddles and bridles.
9. List five reasons for grooming a horse.
10. Match grooming equipment and uses.
11. Select safety factors to consider when around horses.
12. Select steps to take in physically approaching a horse.
13. Match ages of a horse to descriptions of teeth representative of specific ages.
14. Describe the ideal stock horse as viewed from the side, front and rear.
15. Complete a chart on desirable and undesirable characteristics of a horse.
16. Describe a system of examination and characteristics for judging.
17. Demonstrate the ability to:
    a. Clean tack.
    b. Groom a horse.
    c. Determine age of a horse by examining teeth.
    d. Determine height, weight, girth and bone.

HORSES AND HORSEMANSHIP

AG 140 - F

SUGGESTED ACTIVITIES

I. Suggested activities for instructor

A. Make transparencies and necessary copies of materials.

B. Provide students with objectives.

C. Provide students with information and discuss.

D. Provide students with assignment sheets and laboratory exercises.

E. Have students write to horse breed associations for information and pictures.

F. Obtain and show slides of horses for judging.

G. Arrange a field trip to a horse ranch or stable.

H. Design a game for teaching parts of a horse.

(Note: A transparency projected onto the chalkboard makes a useful learning device.)

I. Identify horse enthusiasts in the community and invite them to speak to the class.

J. Prepare a bulletin board using pictures from breed associations.

K. Have students bring in specific items of tack and discuss their use.

L. Have students demonstrate safety practices to observe around horses.

M. Demonstrate laboratory exercise procedures.

N. Review and give test.

O. Reteach and retest if necessary.

II. Instructional materials

A. Objective sheet

B. Suggested activities

C. Information sheets

D. Transparency masters

1. TM 1--Parts of the Horse

2. TM 2--Horse Tooth

3. TM 3--Determining Age by Examining Teeth

4. TM 4--Determining Age by Examining Teeth (continued)

5. TM 5--Ideal Stock Horse Conformation

6. TM 6--Unsoundness of the Front Leg

7. TM 7--Conformation Faults of Front Legs

8. TM 8--Conformation Faults of Hind Legs

E. Assignment sheet

1. AS 1--Complete a Chart on Breeds of Horses

F. Laboratory exercises

1. LE 1--Clean Tack

2. LE 2--Groom a Horse

3. LE 3--Determine Age of a Horse by Examining Teeth

4. LE 4--Determine Height, Weight, Girth and Bone

G. Test

H. Answers to test

III. Unit references:

A. *Instructional Materials for Vocational Agriculture*. Vocational Instructional Services, Agricultural Education Department, Texas A & M University, College Station, Texas.

B. National 4-H Council, *Horses and Horsemanship*. Cooperative Extension Service of the U.S. Department of Agriculture, Washington, D.C., 1965.

C. Rudolph, James A., *Equine Management and Production*. Curriculum and Instructional Materials Center, Oklahoma State Board of Vocational Technical Education, Stillwater, Oklahoma, 1980.

HORSES AND HORSEMANSHIP

AG 140 - F

INFORMATION SHEET

I. Terms and definitions

A. Hand--Unit of measurement in determining height of a horse; one hand equals 4 inches

B. Sound--Being in healthy, proper condition; having correct skeletal structure

C. Conformation--The shape and size of the parts of an animal and how these parts fit together

D. Breed association--Organization of purebred producers united in promotion of a specific breed of animal

E. Girth--Circumference of an animal measured directly behind the shoulder

(Note: Girth is used as an indication of body capacity.)

F. Bone--Circumference of a horse's cannon bone; used as an indicator of skeletal size and structural soundness

G. Tack--Equipment used in the care and use of horses

H. Milk teeth--First teeth present on a horse; present from birth to 2 1/2 years

I. Centrals--Permanent teeth of a horse located in the central part of the mouth

J. Laterals--Permanent teeth of a horse located on outer edges of mouth

K. Cups--Indentations in horse's teeth; exhibit progressive wear with age

L. Parrot-mouth--Condition on a horse when top of mouth sticks out over bottom teeth

M. Scurf--Scaly, dirty skin on a horse

Breed	Address of Breed Association	Place of Origin	Color	Distinguishing Characteristics	Uses
American Saddle Horse	American Saddle Horse Breeders' Association 929 4th Street Louisville, KY 40203 (502) 585-2425	United States: Kentucky	Bay, brown, chestnut, gray, black	Long graceful neck, proud action, easy ride, lot of style and animation; 60"-64"; 1000-1200 lbs	Three-gaited, five-gaited, fine harness, pleasure
Appaloosa	Appaloosa Horse Club, Inc. Box 8403 Moscow, ID 83843 (208) 882-5578	United States: Oregon, Washington, and Idaho regions	Variable, usually dark with white over loin and hips containing spots thereon	Hoofs black and white vertically striped; skin mottled; eyes encircled by white; over 56"	Stock, pleasure, parade
Arabian	Arabian Horse Registry of America, Inc. 3435 S. Yosemite Denver, CO 80231 (303) 750-5626	Arabia	Bay, chestnut, gray, occasionally white or black; skin always dark	Beautiful head, short coupling; docility, endurance, and proud way of going; 56"-61"	Saddle, stock
Connemara Pony	American Connemara Pony Society Hoshiekon Farm, R.D. 1 Goshen, CT 06756 (203) 491-3521	Ireland	Gray, black, bay, brown, dun, cream, with occasional roans and chestnuts	Range in height from 52"-58"; noted for hardiness, docility, and soundness	Jumping, fine harness, hunting
Hackney	American Hackney Horse Society P.O. Box 174 302 W. Clare Pittsfield, IL 62363 (217) 285-2472	England	Chestnut, bay and brown most common; roans and blacks accepted	High natural action; mane pulled and tail docked for show purposes; 48"-64"	Heavy harness, some cross breeding to produce hunter-jumpers

II. Major breeds of horses (cont.)

Breed	Address of Breed Association	Place of Origin	Color	Distinguishing Characteristics	Uses
Missouri Fox-Trotting Horse	Missouri Fox-Trotting Horse Breed Association, Inc. 201 S. E. Third Street P.O. Box 637 Ava, MO 65608 (417) 683-2468	United States: Ozark Mountains of Missouri	Sorrel, white points	Fox-trot gait; 58"-62"	Pleasure, trail, show
Morgan	American Morgan Horse Association P.O. Box 1 Westmoreland, NY 13490 (315) 736-8306	United States: New England states	Bay, brown, black, and chestnut	Endurance, docility; 58"-64"	Saddle, stock
Paint	American Paint Horse Association P.O. Box 18519 Fort Worth, TX 76118 (817) 439-3400	United States	White plus any other color, but must be recognizable paint	Over 56"	Appaloosa coloring or breeding; adult horses under 56"
Palomino	Palomino Horse Breeders of America P.O. Box 249 Mineral Wells, TX 76067 (817) 325-2848	United States	Golden with light colored mane and tail; white points acceptable	Color breed; 58"-64"	Stock, pleasure, parade, saddle, fine harness
Pinto	Pinto Horse Association of America, Inc. 7525 Mission Gorge Road Suite C San Diego, CA 92120 (714) 286-1570	United States	Half dark and half white colors with many spots well placed	Glass eyes acceptable; over 56"	Show, pleasure, parade
Pony of the Americas	Pony of the Americas Club, Inc. 1452 Federal P.O. Box 1477 Mason City, IA 50401 (515) 424-1586	Unites States: Iowa	Similar to Appaloosa	46"-52" in height	Children's mounts

II. Major breeds of horses (cont.)

Breed	Address of Breed Association	Place of Origin	Color	Distinguishing Characteristics	Uses
Quarter Horse	American Quarter Horse Association P.O. Box 200 Amarillo, TX (806) 376-4811	United States	Chestnut, sorrel, bay, dun; some are Palomino, black, brown, and roan	Well muscled, powerfully built; 56"-62"	Stock, pleasure, racing, show
Shetland Pony	American Shetland Pony Club P.O. Box 435 Fowler, IN 47944 (317) 884-1242	Shetland Isles	All colors acceptable	Small size; less than 46"	Children's mounts, some fine harness
Standardbred	United States Trotting Association 750 Michigan Ave. Columbus, OH 43215 (614) 224-2291	United States	Bay, brown, chestnut, and black; grays, roans, and duns acceptable	More rugged than thoroughbred; 60"-64"	Racing, show, buggy
Tennessee Walking Horse	Tennessee Walking Horse Breeders' and Exhibitors' Association of America 250 N. Ellington Parkway Box 286 Lewisburg, TN 37091 (615) 359-1574	United States: Tennessee	Sorrel, chestnut, black, roan, white, bay, brown, gray, and golden; white points common	Running walk gait; around 62"	Pleasure, some stock horses
Thoroughbred	The Jockey Club 300 Park Avenue New York, NY 10022 (212) 355-6146	England	Bay, brown, chestnut, and black; some roan and gray; white points	Fineness of conformation; long, straight, and well muscled legs; 60"-68"	Racing, stock, saddle, hunter-jumper
Welsh Pony	Welsh Pony Society of America P.O. Drawer A White Post, VA 22663 (703) 667-6195	Wales	Any color except spotted	Small size; 40"-56"	Children's mounts, fine harness, hunter-jumper

III. Parts of the horse (Transparency 1)

Throat latch	Loin	Gaskin
Mouth	Rump	Stifle
Muzzle	Point of hip	Flank
Nostril	Tailhead	Heart girth
Nose	Buttock	Hoof
Face	Thigh	Coronet
Forehead	Hock	Knee
Poll	Pastern	Forearm
Crest	Fetlock	Chest
Withers	Ankle	Point of shoulder
Back	Cannon	Shoulder
Neck		

IV. Procedures for determining common measurements pertinent to a horse

A. Height--Determined by measuring vertical distance from withers to ground; usually expressed in "hands", each "hand" being four inches

Example: If a horse is 58 in. tall, it is said to be 14-2 hands (14 hands and 2 inches)

B. Weight--Best determined by placing animal on scales; approximation may be made with weight tape; expressed in pounds

C. Girth--Circumference of chest behind withers and in front of back; expressed in inches

D. Bone--Usually expressed in inches by measuring circumference of cannon bone

V. Common types of tack and equipment

A. Rubber curry comb

B. Root brush or steel curry comb

C. Body brush

D. Mane and tail comb

E. Sweat scraper

F. Hoof pick or hook

G. Halter

H. Bridle

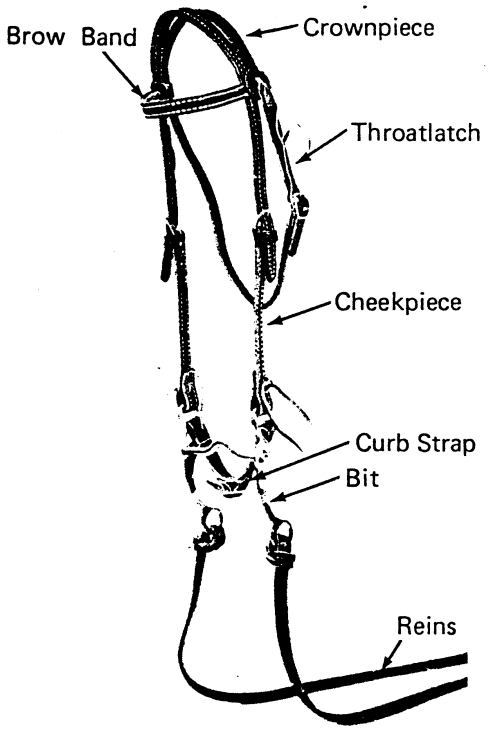
I. Grazing bit

J. Mechanical hackamore

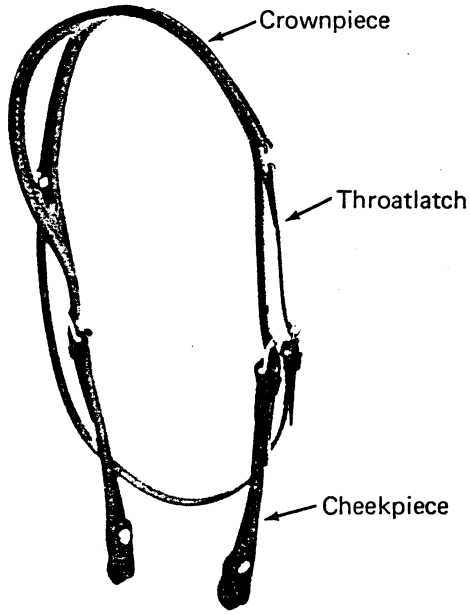
K. Western stock saddle

L. Bit(s)

VI. Parts of the western bridle

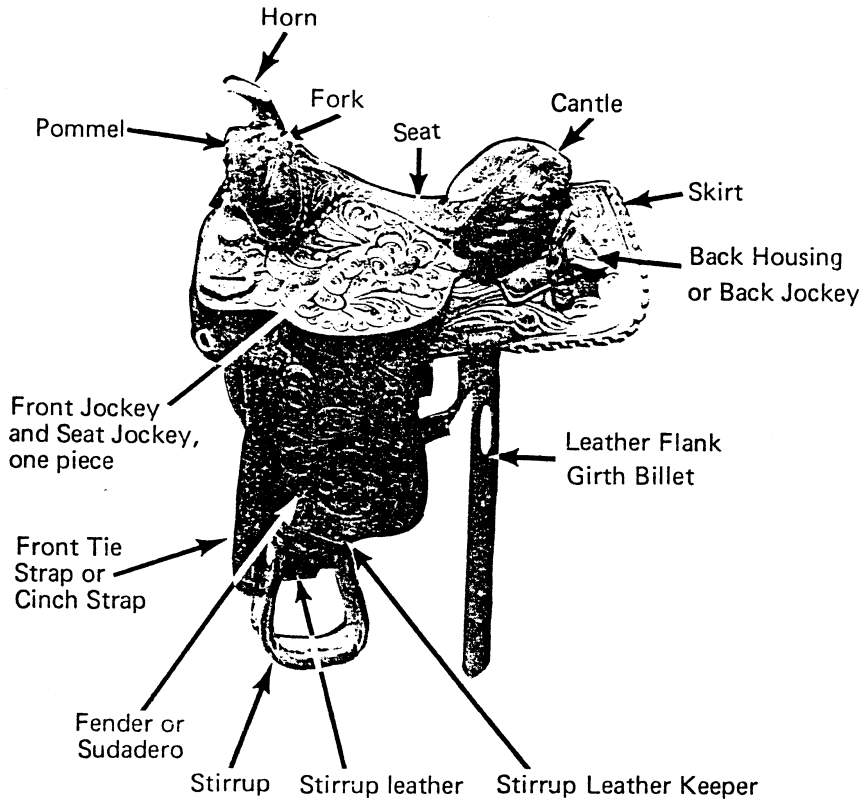


Standard Western Bridle



Western Headstall (One-Ear)

VII. Parts of a western saddle



VIII. Storing saddles and bridles

A. Western saddles

1. Hang with rope

2. Place on saddle rack

B. Bridles--Hang on rack so bridle and reins will not get twisted

IX. Reasons for grooming a horse

A. Remove dirt from horse's hair

B. Stimulate skin

C. Aid in circulation

D. Give horse more attractive appearance

E. Guard against skin disorders

X. Grooming equipment and uses

A. Hoof pick--Clean horse's hooves

B. Rubber curry comb--Lift dry sweat and dirt from the skin and act as a body massage comb

C. Spring steel curry comb--Remove dried mud and dirt from well-muscled parts of the body

D. Rake or six bar curry comb--Remove mud and dirt from the coat with the side containing six rows of teeth; comb mane and tail with the single row of longer teeth

(Caution: Combing mane and tail with metal comb causes ends of hairs to break and split.)

E. Plastic massage comb--Massage skin and loosen dirt and scurf

F. Mane comb--Comb mane and tail

G. Shed'n blade--Remove loose, matted hair with teeth down; scrape sweat with smooth side

H. Root brush--Remove dried sweat and dirt from thick coats

I. Body brush--Remove dust from short coats

J. Large animal clippers--Clip fetlock area and bridle path

(Caution: To allow horse to overcome fear of clippers, introduce clippers to horse in a slow, deliberate manner.)

K. Small animal clippers--Trim hair from ear, face and jaw

L. Roaching or fetlock shears--Trim fetlock and bridle path

M. Sweat scraper--Remove sweat and water (after a bath)

N. Cloth or rag--Increase shine by removing small particles missed by brushes

XI. Safety factors to consider when around horses

A. Always speak to horse when approaching horse in close quarters; do not surprise your horse

B. Make physical contact with a horse by first placing your hand on its shoulder and neck; do not dab at end of horse's nose

C. Move in a slow deliberate manner, approaching horse from near (left) side if possible

D. Lead a horse by walking slightly ahead of it on its near (left) side

E. Tie horse to secure object, using quick release knot

F. Tie horse far enough away from other horses so they cannot fight; do not crowd other horses

G. Always walk around horse, never under or over tie rope

H. Always untie lead shank before taking halter off horse

I. Remove or return horse from or to stall by standing in line with door before passing through it

J. Handle horse with confidence; the horse will be the first to sense if you are frightened

K. Respect horse for its strength and ability

L. Be considerate; kindness and gentleness are important in getting the horse's cooperation

M. Do not take chances of getting stepped on, kicked or bitten

XII. Physical approach to the horse

A. Speak to the horse as you approach

B. Observe reactions of horse for indications of its intentions

(Note: The ears are very good indicators.)

C. Avoid any quick or unexpected movements

D. Move toward horse slowly and quietly, but positively

E. Approach horse by moving to its shoulder

(Note: This is the safest location because a horse cannot paw or kick you in this area.)

F. Place hand on shoulder and rub gently to reassure horse

G. Hold halter shank in hand nearest the horse and halter in opposite hand if attempting to catch the horse

(Caution: Never surprise a horse from behind. You are mostly likely to get kicked if you surprise a horse from the rear.)

XIII. Stages of tooth development (Transparencies 2, 3, 4)

A. First period--birth to 2 1/2 years

1. Temporary or milk teeth

2. Small; white with distinct neck

B. Second period--2 1/2 to 5 years

1. 2 1/2 years--temporary centrals loosen; permanent centrals erupt

(Note: Age is most accurately determined from 2 - 5 years.)

2. 3 1/2 to 4 years--permanent laterals erupt

3. 4 1/2 to 5 years--permanent corners erupt

C. Third period--6 to 9 years

(Note: Age during this stage is estimated by size, shape and disappearance of cups.)

1. 6 years--cups begin disappearing beginning with lower centrals

2. 8 years--cups have disappeared in lower centrals and laterals

D. Fourth stage--aged

(Note: After 9 years accuracy of age determination becomes much more difficult.)

1. 10-12 years--angle of bite begins to slant outward; horse has a "smooth mouth"

2. 15 years--dental stars are smaller but more distinct and centrally located

3. 20-21 years--teeth are shorter; triangular in shape; noticeable spacing stars are larger; bite is even more slanted

XIV. Ideal stock horse conformation (Transparency 5)

A. Side view

1. Feet should be round and proportionate in size to the animal's body and legs

2. Forearm should be long

3. Cannon should be short in length

4. Fore and hind cannon bones should be flat

5. Pasterns should be of moderate length

6. Muscling in the legs should be well developed and defined in the forearm and gaskin and continue smoothly into hip and shoulder

7. Shoulders should be well-muscled, tapering up into well defined withers

8. Body should appear symmetrical and exhibit a long, well-muscled underline

9. Back should be short and well-muscled through the loin

10. Rump should appear long and slope gradually from the top to the buttock

11. Muscling should be pronounced through the round and thigh and into leg with a bulging stifle muscle

12. Neck should blend well into the shoulder

13. Neck should be slender, well-muscled and clean in the throat latch

14. Head should be small and blend into neck

15. Mouth should be shallow

16. Nostrils should be large

17. Ears should be small

18. Eyes should be large and set on corners of the head

B. Front view

1. Should stand up well on straight legs

2. Front legs should be straight through knee and fetlocks with no turns in the joints

3. Legs should fit squarely into corners of shoulders

4. Chest should appear deep and well-muscled, exhibiting a good "V" muscle

5. Head should look intelligent with alert ears and wide set eyes

C. Rear view

1. Overall shape of hindquarters should look like an apple

2. Widest point should be through the stifle

3. Stifle muscles should be well defined with hips sloping upward and inward, rounding at the top

4. Hind legs should be set wide apart but straight and in the center of the hip

5. Gaskin should exhibit long, well defined muscling inside and outside

XV. Desirable and undesirable characteristics of horse's anatomy and structure

Anatomy and Structure	Desirable Characteristics	Undesirable Characteristics
Head	Size of head in proportion to size of body; good breed type and attractiveness	Long, narrow, Roman-nosed
Ears	Medium sized; erect, clean cut; set well apart	Flop-eared; motionless; set too high or too low
Eyes	Big, full, prominent with a dark, rich hazel color	Pig-eyed; glass-eyed
Nostrils	Large with skin clear; mucous membranes rosey-colored at rest and deep red with clear liquid discharge following exercise	Small
Mouth	Teeth meet evenly	Parrot-mouthed; money-mouthed
Neck	Rather long and trim with trim throatlatch	Short, bulky, and thick; ewe-necked
Withers	Prominent	Too rounded; mutton-withered
Back	Straight with proportionate length	Sagging or sway-backed; convex or roached back
Loin	Short, heavy muscling	Weak muscling
Croup	Uniform width with hips and turned to allow rear legs to be in proper position	Too steep; too level

XV. Desirable and undesirable characteristics of horse's anatomy and structure (cont'd)

Anatomy and Structure	Desirable Characteristics	Undesirable Characteristics
Chest	Proportionate width to house heart and lungs	Too narrow; too wide
Shoulder	Long and sloping	Short, straight, and steep
Forearm	Long	Short
Knee	Wide, thick, deep, and clean cut	Calf-kneed, buck-kneed, bench-kneed
Hock	Lean, wide, and deep in its proportion; well open as viewed from side and and properly directed as viewed from rear	Cow-hocked; open in hocks; rotating hocks; sickle-hocked
Cannon	Flat with substance; short in comparison to forearm	Round and lacking substance; too long in comparison to forearm
Fetlock	Clean-cut	Thick, coarse, round
Pastern	Springy; length in correlation with well-sloped shoulder	Too straight; coon-footed
Feet	Large enough to support body; front usually larger than hind	Too small; too large

XVI. System of examination and characteristics of judging (Transparencies 6, 7, 8)

(Note: your primary goal should be to find the animal in the class that conforms most closely to the ideal type. Look for general appearance, type, balance and muscling. Observe from a distance of 25-30 feet for first impression.)

A. Viewing from side

1. Stature and scale

2. Length

3. Depth of heart girth and flanks

4. Carriage and shape of head and neck

5. Shortness of back and coupling

6. Levelness of top line

7. Length and straightness of underline

8. Height and shape of withers

9. Length and slope of shoulder

10. Position and conformation of knees

11. Turn of croup

12. Set of tail

B. Viewing from front

1. Muscling

2. Temperament and disposition

3. Features of the head

4. Width and depth of chest

5. Position and conformation of forelegs and feet

C. Viewing from rear

1. Width and roundness of hips

2. Fullness of thigh and quarters

3. Position and conformation of hind legs

D. Viewing horse while in motion

1. Length

2. Directness

3. Promptness

4. Height

5. Spring

6. Regularity

7. Straightness of movement of feet and legs

E. Viewing at close inspection

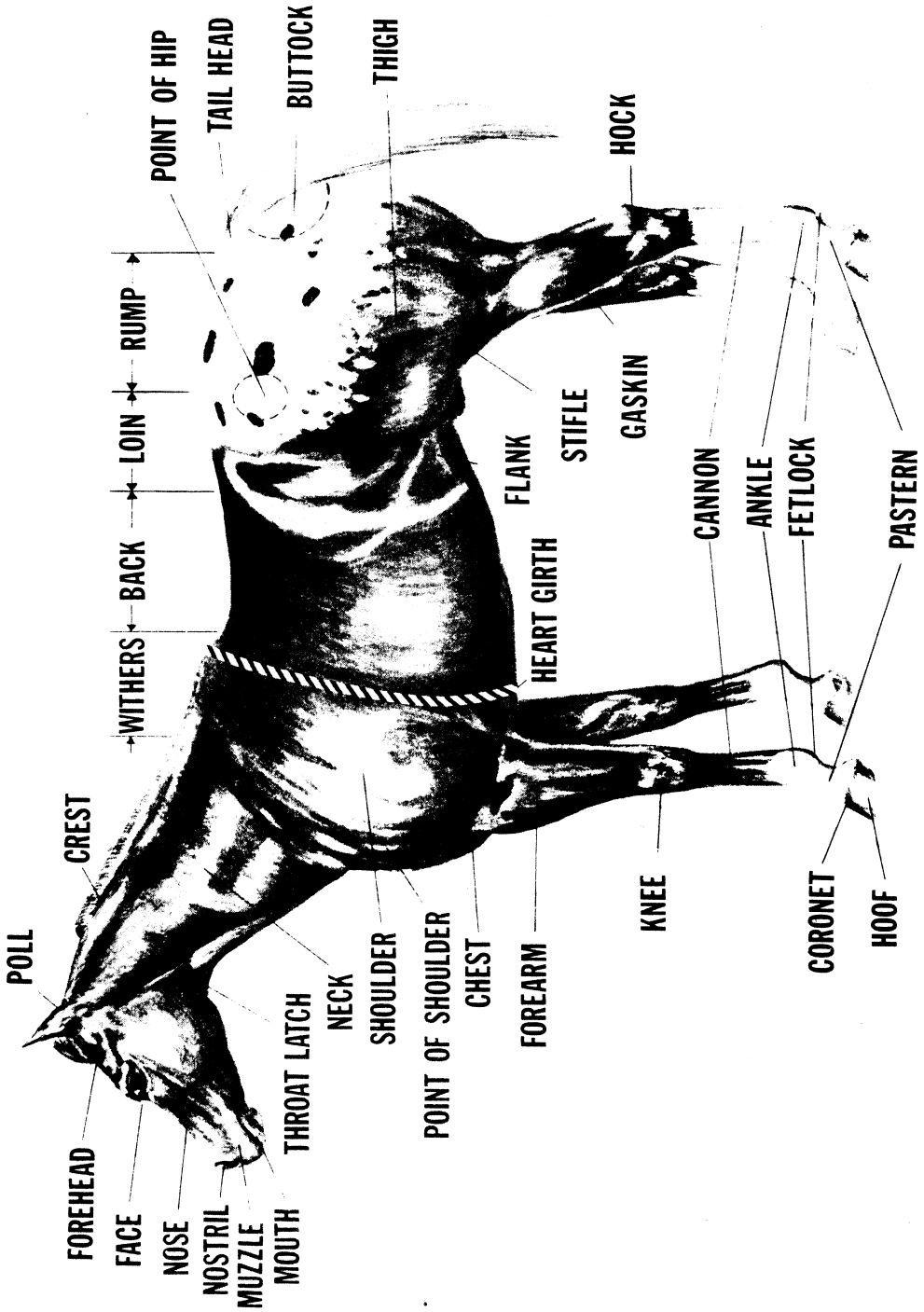
1. Unsoundness

2. Muscling

3. Quality of feet and legs

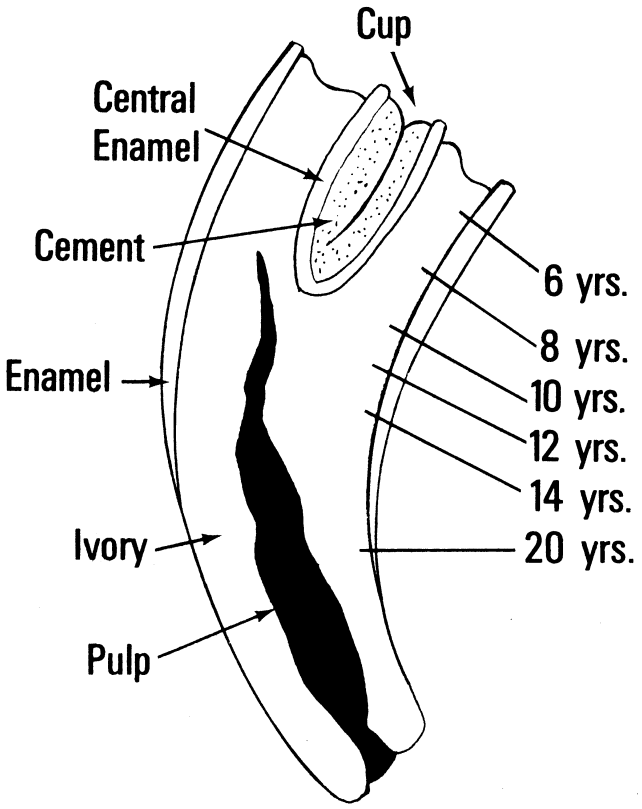
4. Withers

Parts Of The Horse

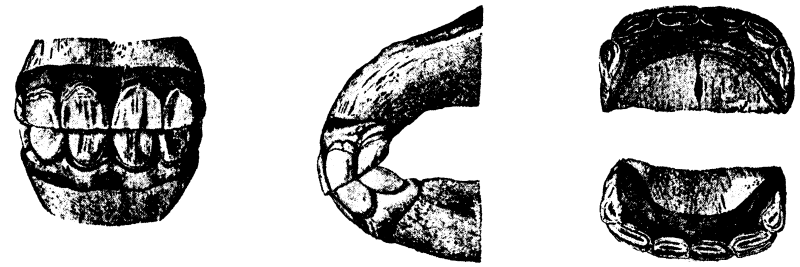


TM 1

Horse Tooth

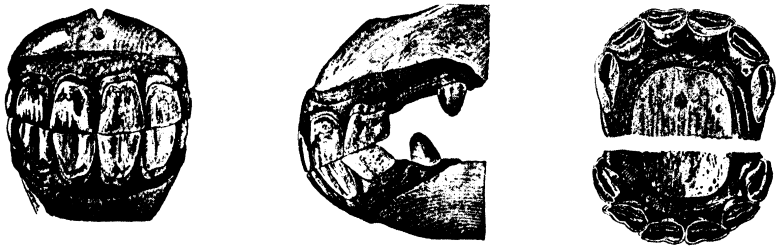

Cup
Central Enamel
Cement
Enamel
Ivory
Pulp
6 yrs.
8 yrs.
10 yrs.
12 yrs.
14 yrs.
20 yrs.

Determining Age By Examining Teeth



TEETH OF THE TWO-YEAR-OLD COLT
ALL MILK TEETH IN WEAR

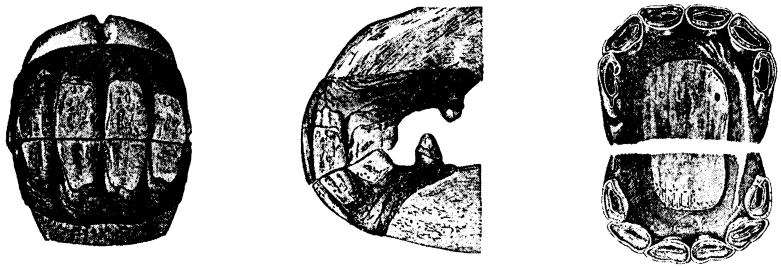
TEETH OF THE THREE-YEAR-OLD COLT



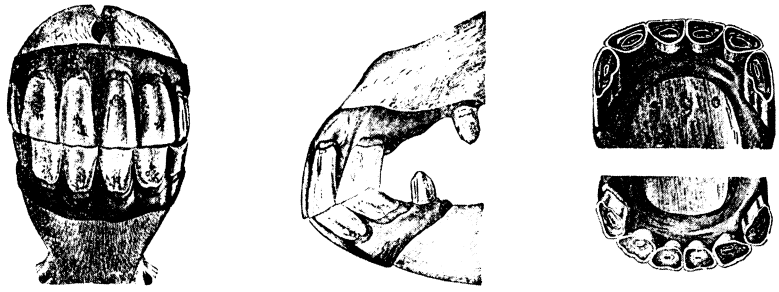
TEETH OF THE FIVE-YEAR-OLD HORSE

TM

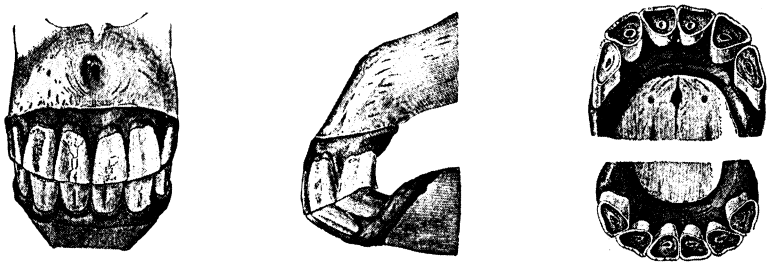
Determining Age By Examining Teeth



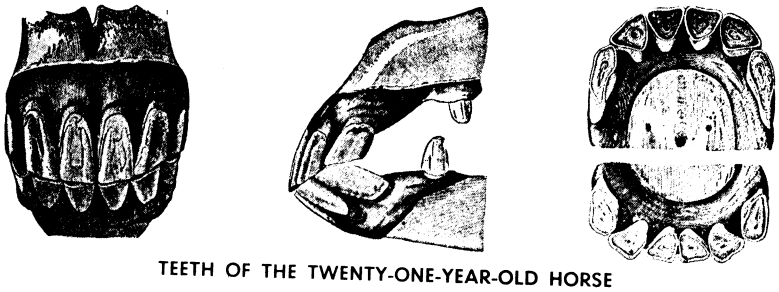
TEETH OF THE SEVEN-YEAR-OLD HORSE



TEETH OF THE TWELVE-YEAR-OLD HORSE



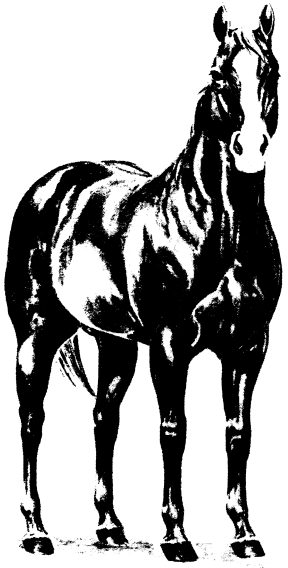
TEETH OF THE FIFTEEN-YEAR-OLD HORSE



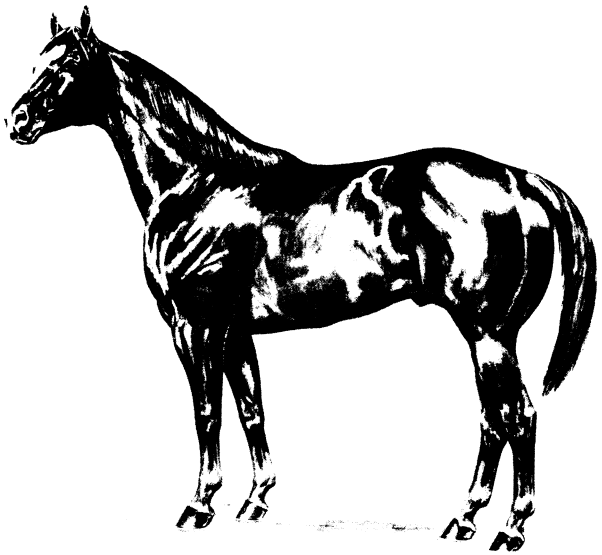
TEETH OF THE TWENTY-ONE-YEAR-OLD HORSE

TM

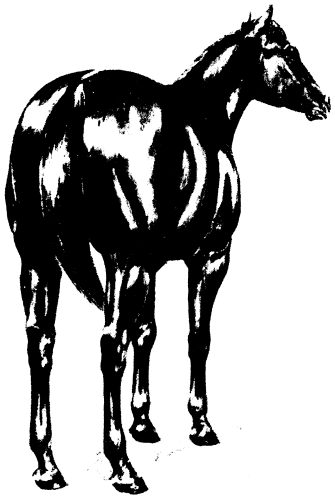
Ideal Stock Horse Conformation



FRONT VIEW

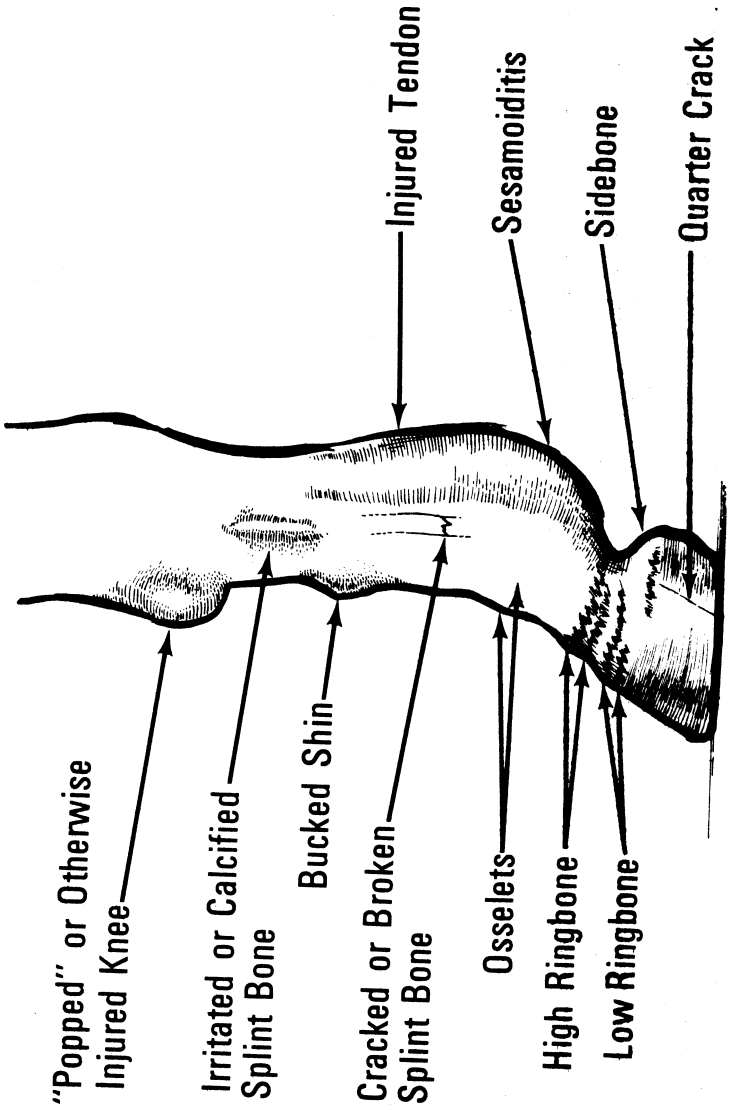


SIDE VIEW



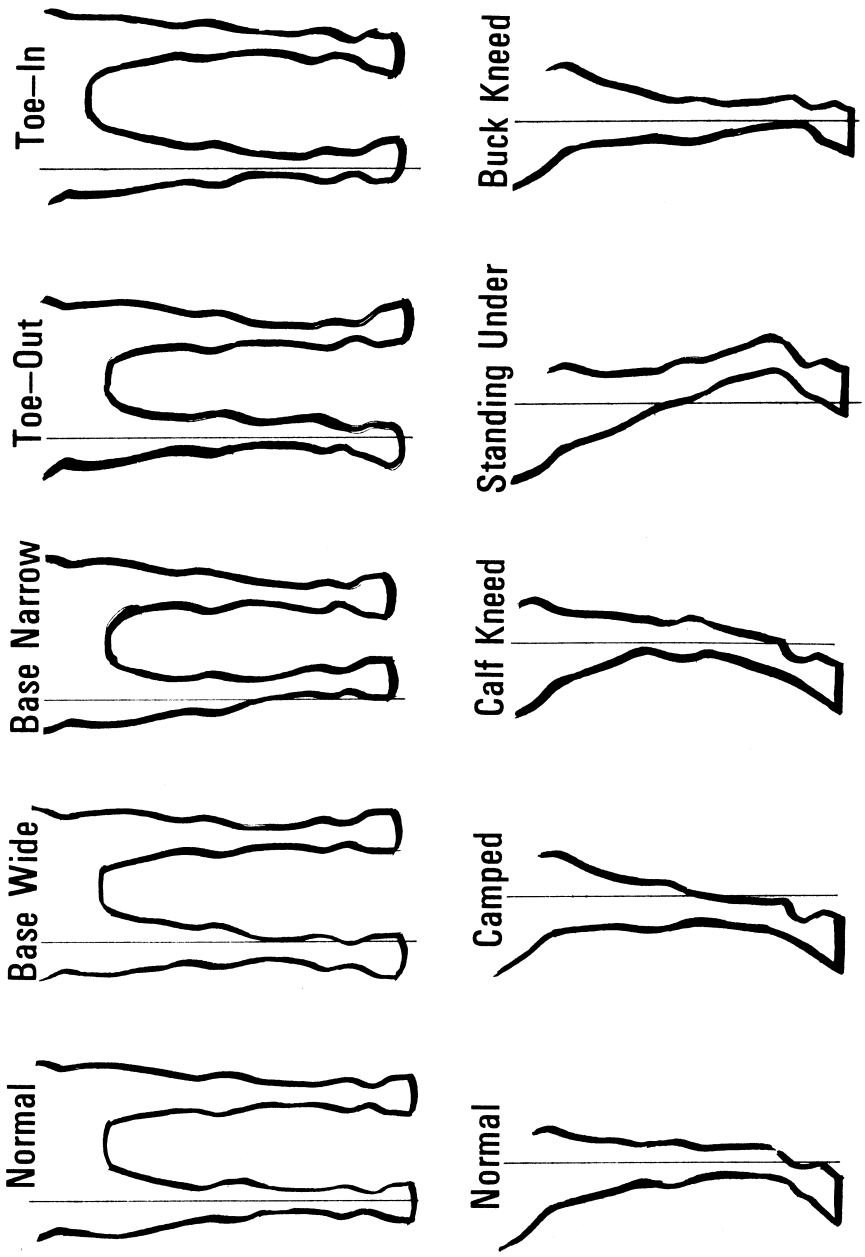
REAR VIEW

Unsoundnesses Of The Front Leg



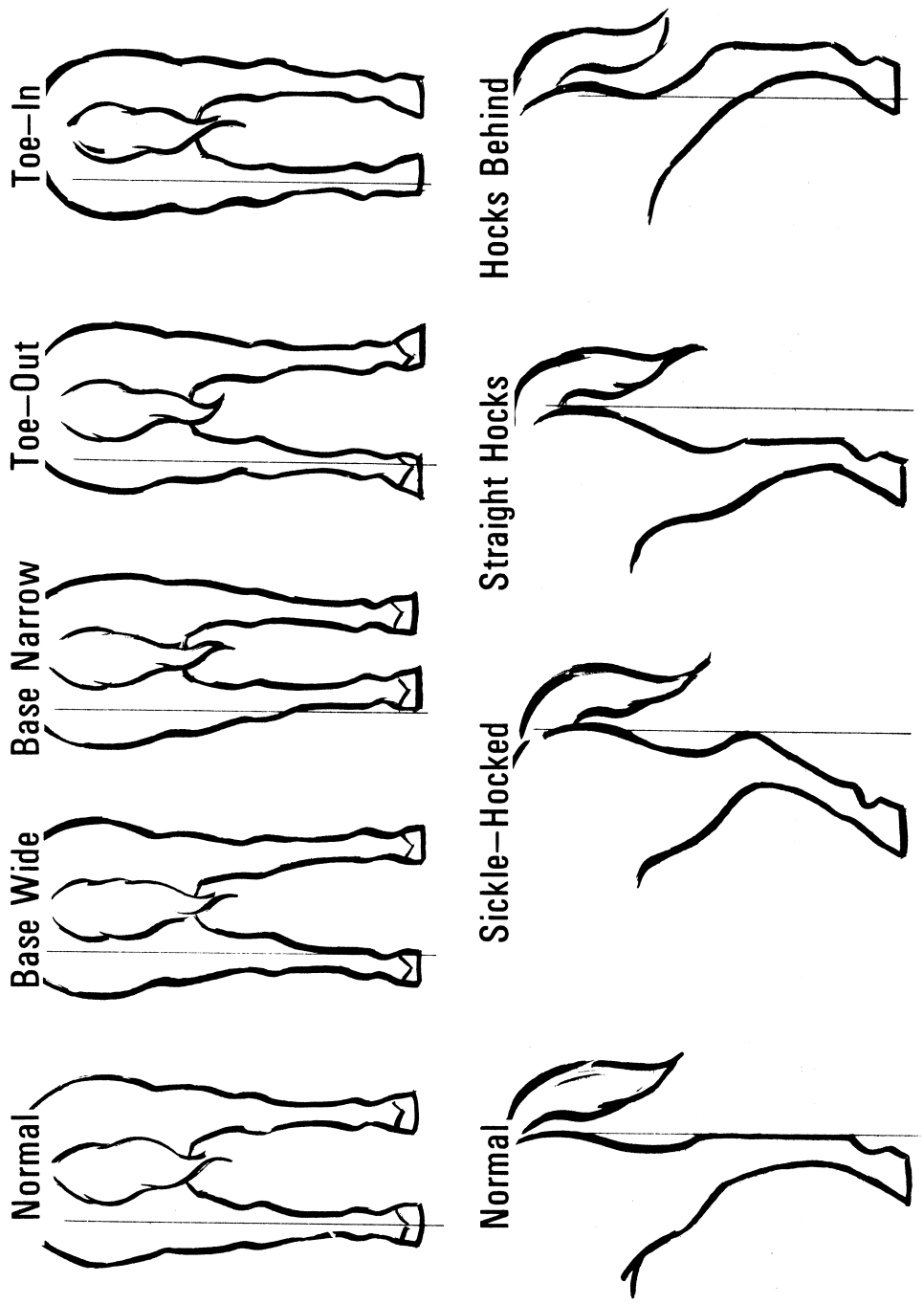
TM 6

Conformation Faults Of Front Legs



TM 7

Conformation Faults Of Hind Legs



HORSES AND HORSEMANSHIP

AG 140 - F

ASSIGNMENT SHEET #1--COMPLETE CHART ON BREEDS OF HORSES

Name_____ Score_____

Most individuals have a preference for a certain breed or breeds. Select three breeds of greatest interest to you and complete the chart.

Breed	Address of Breed Assoc.	Place of Origin	Color	Distinguishing Characteristic	Uses

HORSES AND HORSEMANSHIP

AG 140 - F

LABORATORY EXERCISE #1--CLEAN TACK

Name_____ Score_____

I. Equipment and materials

A. Saddle soap

B. Neatsfoot oil

C. Sponge

D. Soft, dry cloth

E. Small buckets for water

F. Leather equipment

II. Procedure

A. Remove all loose particles

B. Rub dampened sponge on soap

C. Work lather into leather

(Note: Apply to small area at a time.)

D. Wipe with clean sponge, squeezed as dry as possible

E. Polish leather with soft cloth

(Note: Leather should be dry before polishing.)

F. Oil underneath portions of leather, especially seat jockey and fenders

(Caution: Oil on light-colored saddles may cause spotting.)

HORSES AND HORSEMANSHIP

AG 140 - F

LABORATORY EXERCISE #2--GROOM A HORSE

Name_____ Score_____

I. Equipment needed

A. Grooming tools

1. Plastic massage comb
2. Curry comb, spring steel or six bar
3. Root brush or steel curry comb
4. Body brush
5. Mane comb
6. Large animal clippers
7. Small animal clippers
8. Hoof pick
9. Cloth or rag

B. Horse that needs grooming

II. Procedure

(Caution: All grooming equipment is safe but may create situations of danger when used inappropriately.)

A. Start grooming procedure on left side of neck by using plastic massage comb

(Note: If dried mud or manure is present, a curry comb will have to be used first.)

B. Brush horse with massage comb, using a scrubbing motion

C. Work your way backward, grooming carefully in areas that have bones near the surface

D. Stay near horse as you move backward, observing its reaction to the grooming

E. Use body or root brush when grooming over the hip bone and thigh area

F. Walk back and away from the horse when changing sides

(Caution: You are passing from the line of vision of one eye to the other with a blind spot between.)

G. Brush off right side of horse in same manner as left side

H. Repeat procedure used with massage comb; then, use root brush if hair is long or body brush if hair is short

I. Use short, flicking strokes to remove loose dirt and scurf

(Note: The root or body brush will be good to use on head and face.)

J. Brush mane with massage comb and then comb with mane comb

K. Trim bridle path and fetlocks with large animal clippers

(Note: When trimming bridle path, approach area from behind horse's head rather than from in front.)

L. Trim head and face area with small animal clippers

M. Clean feet with hoof pick

N. Wipe horse with cloth or towel to increase shine

(Note: Steps in procedure may vary to some degree depending on individual preference.)

HORSES AND HORSEMANSHIP

AG 140-F

LABORATORY EXERCISE #3 – DETERMINE AGE OF HORSE BY EXAMINING TEETH

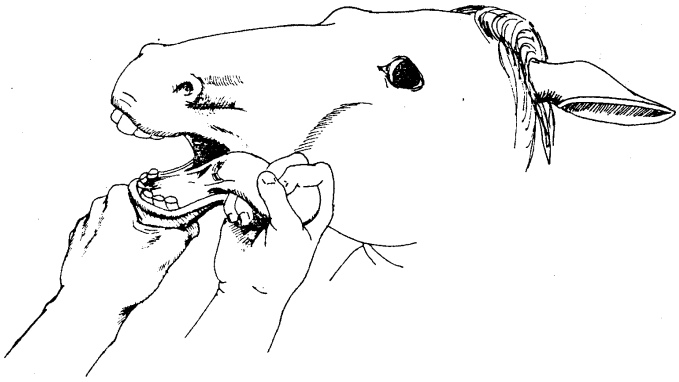
Name _____ Score _____

I. Equipment and materials – Three horses of different ages

II. Procedure

(Note: You may wish to review the information sheet pertaining to determination of age by examining teeth)

A. Grasp lower jaw with left hand and tongue in right hand (Figure 1)



B. Observe teeth to determine age

C. Move to other horses and follow same procedure as in steps A and B

D. Record your observations on the following table

	ESTIMATED AGE	OBSERVATIONS
Horse #1		
Horse #2		
Horse #3		

HORSES AND HORSEMANSHIP

AG 140 - F

LABORATORY EXERCISE #4--DETERMINE HEIGHT, WEIGHT, GIRTH AND BONE

Name_____ Score_____

I. Equipment and materials

A. Three horses

B. Measuring stick

C. Measuring tape

D. Weight tape or scales

II. Procedure

(Note: You may wish to review the information sheet pertaining to normal measurements pertinent to a horse.)

A. Determine height of each horse by placing stick in ground and cross-member over withers

(Note: Make sure horse is standing squarely and on level ground.)

B. Determine weight by measuring with weight tape or by placing horse on scales

C. Determine girth and bone by measuring with tape

D. Move to other horses and follow same procedure as in steps A - C

E. Record your measurements on the following table

MEASUREMENTS

	Height	Weight	Girth	Bone
Horse #1				
Horse #2				
Horse #3				

HORSES AND HORSEMANSHIP

AG 140 - F

UNIT TEST

Name_____ Score_____

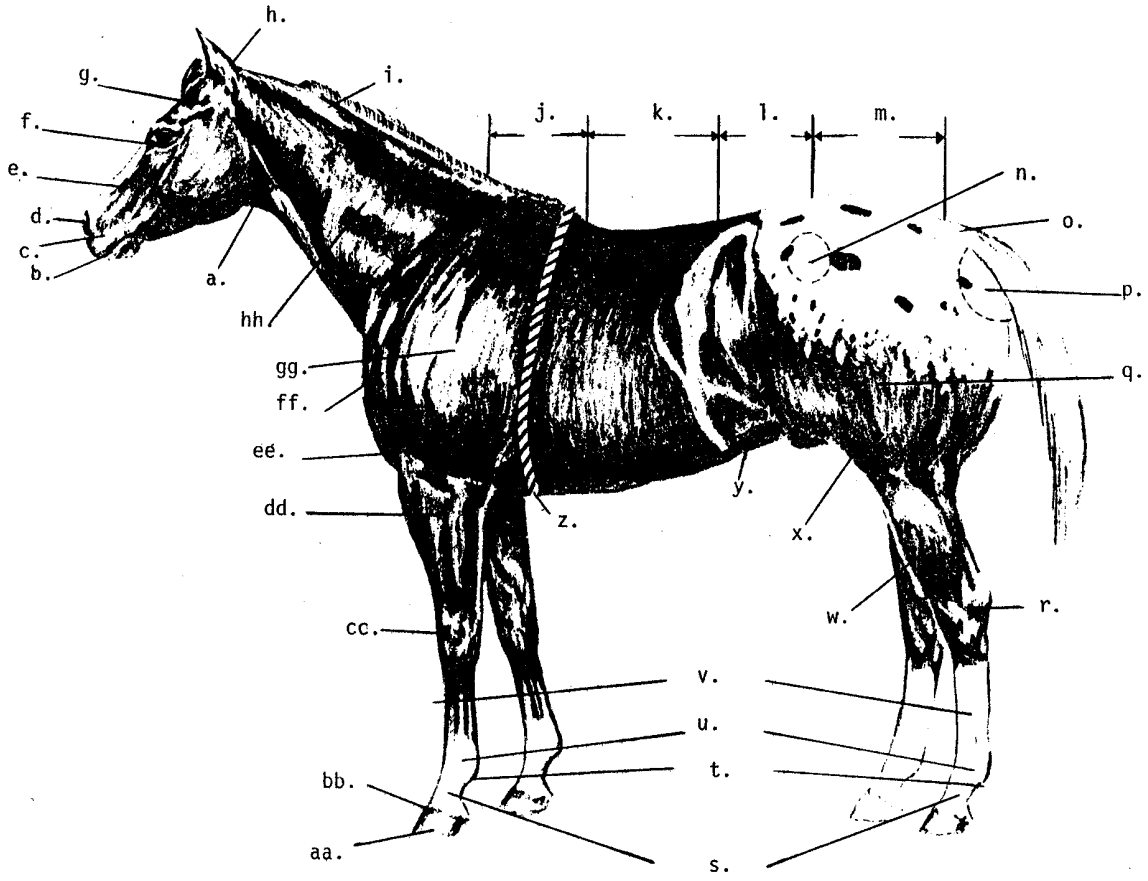
1. Match the terms on the right to their correct definitions.

_____a.	Permanent teeth of a horse located on outer edges of mouth	1.	Hand
_____b.	Indentations in horse's teeth; exhibit progressive wear with age	2.	Sound
_____c.	Circumference of a horse's cannon bone; used as an indicator of skeletal size and structural soundness	3.	Centrals
_____d.	Being in healthy, proper condition; having correct skeletal structure	4.	Laterals
_____e.	Equipment used in the care and use of horses	5.	Girth
_____f.	First teeth present on a horse; present from birth to 2 1/2 years	6.	Conformation
_____g.	Unit of measurement in determining height of a horse; equals 4 inches	7.	Parrot-mouth
_____h.	The shape and size of the parts of an animal and how these parts fit together	8.	Breed association
_____i.	Condition on a horse when top of mouth sticks out over bottom teeth	9.	Cups
_____j.	Permanent teeth of a horse located in the central part of the mouth	10.	Tack
_____k.	Circumference of an animal measured directly behind the shoulder	11.	Milk teeth
_____l.	Organization of purebred producers united in promotion of a specific breed of animal	12.	Bone
_____m.	Scaly, dirty skin on a horse	13.	Scurf

2. List and describe five major breeds of horses including origin, uses and characteristics.

Breed	Origin	Uses	Characteristics
a.			
b.			
c.			
d.			
e.			

3. Label the parts of the horse below by writing the correct names in the blanks provided.



a. _____ l. _____ w. _____

b. _____ m. _____ x. _____

c. _____ n. _____ y. _____

d. _____ o. _____ z. _____

e. _____ p. _____ aa. _____

f. _____ q. _____ bb. _____

g. _____ r. _____ cc. _____

h. _____ s. _____ dd. _____

i. _____ t. _____ ee. _____

j. _____ u. _____ ff. _____

k. _____ v. _____ gg. _____

hh. _____

4. Describe procedures for determining common measurements pertinent to a horse

   a. Height_____

   _____

   b. Weight_____

   _____

   c. Girth_____

   _____

   d. Bone_____

   _____

5. List 8 common items of horse-related tack and equipment.

   a._____

   b._____

   c._____

   d._____

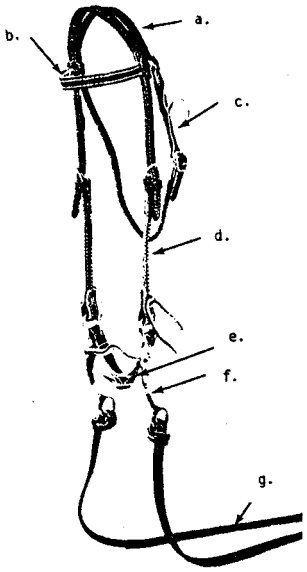
   e._____

   f._____

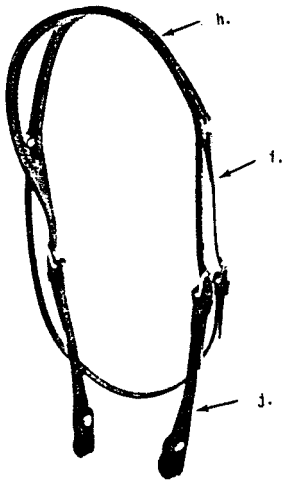
   g._____

   h._____

6. Identify the parts of the western bridle by writing the correct names in blanks provided.



Standard Western Bridle



Western Headstall (One-Ear)

a. _____ f. _____

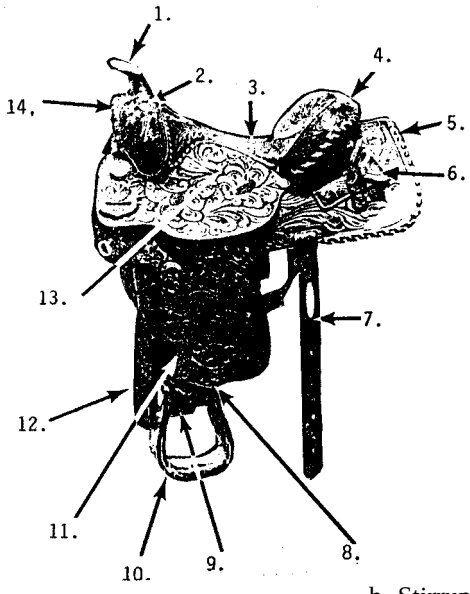
b. _____ g. _____

c. _____ h. _____

d. _____ i. _____

e. _____ j. _____

7. Match the parts of the western saddle to the correct names. Place the correct numbers in the blanks provided.



_____a. Stirrup Leather

_____b. Front tie strap or cinch strap

_____h. Stirrup

_____i. Fender or Sudadero

_____c. Pommel

_____d. Cantle

_____e. Leather flank girth billet

_____f. Back housing or back jockey

_____g. Skirt

_____j. Horn

_____k. Stirrup leather keeper

_____l. Fork

_____m. Seat

_____n. Front jockey and seat jockey, one piece

8. Describe ways to store saddles and bridles.

a. Western saddles _____

_____

_____

b. Bridles_____

_____

_____

9. List 5 reasons for grooming a horse.

a. _____

b. _____

c. _____

d. _____

e. _____

10. Match the grooming equipment on the right to the correct uses by placing the appropriate numbers in the blanks provided.

_____a.	Massage skin and loosen dirt and scurf	1.	Hoof pick
_____b.	Remove dried mud and dirt from well-muscled parts of the body	2.	Rubber curry comb
_____c.	Increase shine by removing small particles missed by brushes	3.	Spring steel curry comb
_____d.	Trim hair from ear, face and jaw	4.	Rake or six bar curry comb
_____e.	Clean horse's hooves	5.	Plastic massage comb
_____f.	Remove dried sweat and dirt from thick coats	6.	Mane comb
_____g.	Comb mane and tail	7.	Shed'n blade
_____h.	Trim fetlock and bridle path	8.	Root brush

_____i.	Remove loose, matted hair with teeth down; scrape sweat with smooth side	9.	Body brush
_____j.	Clip fetlock area and bridle path	10.	Large animal clippers
_____k.	Remove sweat and water (after a bath)	11.	Small animal clippers
_____l.	Lift dry sweat and dirt from the skin and act as a body massage comb	12.	Roaching fetlock shears
_____m.	Remove dirt from short coats	13.	Sweat scraper
_____n.	Remove mud and dirt from the coat with the side containing six rows of teeth; comb mane and tail with the single row of longer teeth	14.	Cloth or rag

11. Select from the list below safety factors to consider when around horses. Place an "X" in the appropriate blanks.

_____a. Lead a horse by walking slightly ahead of it on its far (right) side

_____b. Do not take chances of getting stepped on, kicked or bitten

_____c. Move in a slow deliberate manner, approaching horse from the front so it will be sure to see you

_____d. Handle horse with confidence; the horse will be the first to sense if you are frightened

_____e. Tie horse far enough away from other horses so they cannot fight; do not crowd other horses

_____f. Tie horse with hard knot so it cannot get away

_____g. Make physical contact with a horse by first placing your hand on its shoulder and neck; do not dab at end of horse's nose

12. Select from the list below steps to take in physically approaching the horse. Place an "X" in the appropriate blank.

_____a. Approach horse by moving to its shoulder

_____b. Speak to the horse as you approach

_____c. Slap horse on rear when approaching so it will know of your presence

_____d. Observe reactions of horse for indications of its intentions

_____e. Hit horse on head if it won't hold still while you are trying to halter it

_____f. Move toward horse slowly and quietly, but positively

_____g. Hold halter shank in hand nearest the horse and halter in opposite hand if attempting to catch the horse

13. Match the age of the horse on the right with the most appropriate description of its teeth.

_____a. Cups begin to disappear beginning with lower centrals

_____b. Small; white teeth with distinct necks; temporary or milk teeth

_____c. Angle of bite slants outward; develops a smooth mouth; teeth become shorter, triangular in shape

_____d. Time at which teeth can provide most accurate estimate of age; temporary centrals loosen, permanent centrals erupt

1. Birth to 2 1/2 years
2. 2 1/2 to 5 years
3. 6 - 9 years
4. Aged

14. Describe the ideal stock horse as viewed from the side, front and rear.

a. Side view _____

_____

_____

_____

_____

b. Front view_____

_____

_____

_____

_____

c. Rear view _____

_____

_____

_____

_____

15. Complete the following chart on desirable and undesirable characteristics of horse's anatomy and structure.

Anatomy and Structure	**Desirable Characteristics**	**Undesirable Characteristics**
Head	a. _____ _____ _____	Long, narrow, Roman-nosed
Ears	Medium sized, erect, clean cut; set well apart	b. _____ _____ _____
Eyes	c. _____ _____	Pig-eyed; glass-eyed
Nostrils	Large with skin clear; mucous membranes rosey-colored at rest and deep red with clear liquid discharge following exercise	d. _____
Mouth	e. _____	Parrot-mouthed;monkey-mouthed
Neck	Rather long and trim with trim throatlatch	Short, bulky, and thick; ewe-necked
Withers	f. _____	Too rounded; mutton-withered
Back	Straight with proportionate length	Sagging or sway-backed; convex or roached back
Loin	g. _____	Weak muscling
Croup	Uniform width with hips and turned to allow rear legs to be in proper position	h. _____
Chest	Proportionate width to house heart and lungs	i. _____
Shoulder	j. _____	Short, straight, and steep
Forearm	k. _____	Short
Knee	l. _____	Calf-kneed, buck-kneed, bench-kneed
Hock	Lean, wide, and deep in its proportion; well open as viewed from side and properly directed as viewed from rear	Cow-hocked; open in hocks; rotating hocks; sickle-hocked

Cannon	Flat with substance; short in comparison to forearm	m. _____
Fetlock	Clean-cut	n. _____
Pastern	o._____	Too straight; coon-footed
Feet	p._____ _____	Too small; too large

16. Describe a system of examination and characteristics for judging.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

HORSES AND HORSEMANSHIP

AG 140 - F

ANSWERS TO TEST

1.

a.	4	e.	10	i.	7	m.	13
b.	9	f.	11	j.	3		
c.	12	g.	1	k.	5		
d.	2	h.	6	l.	8		

2. Answer should include 5 breeds from the following list:

(Refer to pages 140-F, 5-7)

3.

a.	Throat latch	l.	Loin	w.	Gaskin
b.	Mouth	m.	Rump	x.	Stifle
c.	Muzzle	n.	Point of hip	y.	Flank
d.	Nostril	o.	Tailhead	z.	Heart girth
e.	Nose	p.	Buttock	aa.	Hoof
f.	Face	q.	Thigh	bb.	Coronet
g.	Forehead	r.	Hock	cc.	Knee
h.	Poll	s.	Pastern	dd.	Forearm
i.	Crest	t.	Fetlock	ee.	Chest
j.	Withers	u.	Ankle	ff.	Point of shoulder
k.	Back	v.	Cannon	gg.	Shoulder
				hh.	Neck

4. a. Height--Determined by measuring vertical distance from withers to ground; usually expressed in "hands", each "hand" being four inches

b. Weight--Best determined by placing animal on scales; approximation may be made with weight tape; expressed in pounds

c. Girth--Circumference of chest behind withers and in front of back; expressed in inches

d. Bone--Usually expressed in inches by measuring circumference of cannon bone

5. Answers should include eight items from the following list:

Rubber curry comb; Root brush or steel curry comb; Body brush; Mane and tail comb; Sweat craper; Hoof pick or hook; Halter; Bridle; Grazing bit; Mechanical hackamore; Western stock saddle; Bit(s)

6.

a.	Crownpiece	f.	Bit
b.	Brow band	g.	Reins
c.	Throatlatch	h.	Crownpiece
d.	Cheekpiece	i.	Throatlatch
e.	Curb strap	j.	Cheekpiece

7.	a.	9	e.	7	i.	11	m.	3
	b.	12	f.	6	j.	1	n.	13
	c.	14	g.	5	k.	8		
	d.	4	h.	10	l.	2		

8. a. Hang saddles with rope or place on a saddle rack

   b. Hang on rack so bridles and reins will not get twisted

9. Remove dirt from horse's hair; Stimulate skin; Aid in circulation; Give horse a more attractive appearance; Guard against skin disorders

10.	a.	5	e.	1	i.	7	m.	9
	b.	3	f.	8	j.	10	n.	4
	c.	14	g.	6	k.	13		
	d.	11	h.	12	l.	2		

11. b, d, e, g

12. a, b, d, f, g

13.	a.	3	b.	1	c.	4	d.	2

14. Answers should include major points found in the following descriptions:

a.	Side view	Feet should be round and proportionate in size to the animal's body and legs; Forearm should be long; Cannon should be short in length; Fore and hind cannon bones should be flat; Pasterns should be of moderate length; Muscling in the legs should be well developed and defined in the forearm and gaskin and continue smoothly into hip and shoulder; Shoulders should be well-muscled, tapering up into well-defined withers; Body should appear symmetrical and exhibit a long, well-muscled underline; Back should be short and well- muscled through the loin; Rump should appear long and slope gradually from the top to the buttock; Muscling should be pronounced through the round and thigh and into leg with a bulging stifle muscle; Neck should blend well into the shoulder; Neck should be slender, well-muscled and clean in the throat latch; Head should be small and blend into neck; Mouth should be shallow; Nostrils should be large; Ears should be small; Eyes should be large and set on corners of the head
b.	Front view	Should stand up well on straight legs; Front legs should be straight through knee and fetlocks with no turns in the joints; Legs should fit squarely into corners of shoulders; Chest should appear deep and well-muscled, exhibiting a good "V" muscle; Head should look intelligent with alert ears and wide set eyes
c.	Rear view	Overall shape of hindquarters should look like an apple; Widest point should be through the stifle; Stifle muscle should be well defined with hips sloping upward and inward, rounding at the top; Hind legs should be set wide apart but straight and in the center of the hip; Gaskin should exhibit long, well defined muscling inside and outside

15. a. Size of head in proportion to size of body; good breed type and attractiveness
    b. Flop-eared; motionless; set too high or too low
    c. Big, full prominent with a dark, rich hazel color

d. Small
e. Teeth meet evenly
f. Prominent
g. Short, heavy muscling
h. Too steep; too level
i. Too narrow; too wide
j. Long and sloping
k. Long
l. Wide, thick, deep and clean cut
m. Round and lacking substance; too long in comparison to forearm
n. Thick, coarse, round
o. Springy; length in correlation with well-sloped shoulder
p. Large enough to support body; front usually larger than hind

16. Explanation should include major points from the following list:

a.	Side view	Stature and scale; Length; Depth of heart girth and flanks; Carriage and shape of head and neck; Shortness of back and coupling; Levelness of top line; Length and straightness of underline; Height and shape of withers; Length and slope of shoulder; Position and conformation of knees; Turn of croup; Set of tail
b.	Front view	Muscling; Temperament and disposition; Features of the head; Width and depth of chest; Position and conformation of forelegs and feet
c.	Rear view	Width and roundness of hips; Fullness of thigh and quarters; Position and conformation of hind legs
d.	View while in motion	Length; Directness; Promptness; Height; Spring; Regularity; Straightness of movement of feet and legs
e.	View at close inspection	Unsoundness; Muscling; Quality of feet and legs; Withers

MEAT TECHNOLOGY

AG 140 - G

UNIT OBJECTIVE

After completion of this unit, students should be able to describe the uses and the standards for grading livestock. Students should also be able to describe the various steps in meat processing and be able to identify the basic wholesale and retail cuts of meat. This knowledge will be demonstrated by completion of assignment sheets and unit test with a minimum of 85 percent accuracy.

SPECIFIC OBJECTIVES AND COMPETENCIES

After completion of this unit, the student should be able to:

1. Match terms associated with meat technology to their correct definitions.
2. Describe basic regulations affecting meat distribution in the United States.
3. List in order the steps meat goes through from slaughter to market.
4. Describe how aging occurs and the three types of aging.
5. Distinguish between quality grades and yield grades.
6. List in order from highest to lowest the quality grades for beef, lamb and pork.
7. Match the sex condition of beef animals to the carcass characteristics that indicate that condition.
8. Match the carcass maturity categories for beef to a description of their carcass characteristics.
9. Describe the standards for grading beef, pork and lamb.
10. Calculate yield grades for beef and lamb.
11. Calculate yield grades for beef and lamb using the preliminary yield grade method.

    (Note: The student should probably determine which method of calculating yield grade he or she would rather use and concentrate on that method. The student would therefore accomplish objective 10 or 11 instead of both.)
12. Label wholesale cuts of beef, lamb and pork.
13. Distinguish between desirable and undesirable characteristics of wholesale cuts of beef and pork.
14. Identify seven basic retail meat cuts.
15. List retail cuts of beef under the wholesale cut from which they originate.
16. List retail cuts of lamb under the wholesale cut from which they originate.

17. List retail cuts of pork under the wholesale cut from which they originate.

18. List the variety meats.

19. Identify wholesale and retail cuts of meat.

20. Demonstrate the ability to:

    a. Determine quality grades of beef, pork and lamb from a description of the carcasses.

    b. Grade beef carcasses for quality and yield.

MEAT TECHNOLOGY

AG 140 - G

SUGGESTED ACTIVITIES

I. Suggested activities for instructor

A. Make transparencies and necessary copies of materials.

B. Provide students with objectives and discuss.

(Note: Objectives 10 and 11 are two different methods of calculating yield grade. The instructor may want to teach just one of these methods to the class to avoid confusion.)

C. Provide students with information and discuss.

D. Provide students with assignment sheets.

E. Obtain slides of carcasses and of various meat cuts.

F. Order charts of retail cuts of beef, pork and lamb--National Live Stock and Meat Board.

G. Obtain copies of the Meat Board Meat Book by Barbara Block.

H. Arrange a field trip to a slaughterhouse to see a steer, lamb and hog butchered.

I. Arrange a field trip to the local supermarket or butcher shop to look at wholesale and retail meat cuts.

J. Arrange a field trip to a packing plant to grade carcasses.

K. Arrange for a home economist to talk about safe meat storage and preparation.

L. Review and give test.

M. Reteach and retest if necessary.

II. Instructional materials

A. Objective sheet

B. Suggested activities

C. Information sheet

D. Transparency masters

1. TM 1--Meat Inspection Stamp
2. TM 2--Yield and Quality Grade Stamps
3. TM 3--Comparison of Yield Grades/Live Animals
4. TM 4--Comparison of Yield Grades/Carcasses
5. TM 5--Sex Indicators in a Steer Carcass
6. TM 6--Sex Indicators in a Heifer Carcass
7. TM 7--Skeletal Indicators of Age
8. TM 8--Effect of Marbling and Maturity on Quality Grades of Beef
9. TM 9--Determining Specific Quality Grades for Beef
10. TM 10--Lamb Conformation
11. TM 11--Minimum Quality Requirements for Lamb Carcass Grades
12. TM 12--Break and Spool Joints
13. TM 13--Swine Carcass Grades and Yield Percentage
14. TM 14--Measuring Swine Backfat and Carcass Length
15. TM 15--Relationship of Backfat Thickness and Degree of Muscling Score
16. TM 16--Degrees of Muscling in Swine Carcasses
17. TM 17--Grid For Measuring Rib Eye Area
18. TM 18--Location of Fat Measurement Over Rib Eye Muscle
19. TM 19--Wholesale Meat Cuts
20. TM 20--Wholesale Cuts of Beef
21. TM 21--Wholesale Cuts of Beef (continued)
22. TM 22--Parts of a Ham
23. TM 23--Basic Retail Meat Cuts
24. TM 24--Basic Retail Meat Cuts (continued)

E. Handouts

(Note: Copies of these can be obtained from the National Live Stock and Meat Board for a nominal fee.)

1. HO 1--Retail Cuts of Beef

2. HO 2--Retail Cuts of Lamb

3. HO 3--Retail Cuts of Pork

F. Assignment sheets

1. AS 1--Calculate Yield Grades for Beef and Lamb

2. AS 2--Identify Wholesale and Retail Cuts of Meat

3. AS 3--Determine Quality Grades of Beef, Pork and Lamb From a Description of the Carcasses

4. AS 4--Grade Beef Carcasses for Quality and Yield

G. Answers to assignment sheets

H. Test

I. Answers to test

III. Unit references

A. Block, Barbara, *The Meat Board Meat Book.* National Live Stock and Meat Board and The Benjamin Company, 1977.

B. *Instructional Materials for Vocational Agriculture*. Vocational Instructional Services, Agriculture Education Department, Texas A & M University, College Station, Texas.

C. Jacobs, J.A. and Dahmen, J.J., *Meat Animal Evaluation*. Department of Animal Sciences, College of Agriculture, University of Idaho, Moscow, Idaho.

D. *Official United States Standards For Grades Of Carcass Beef*. USDA.

E. *Official United States Standards For Grades Of Lamb, Yearling Mutton and Mutton Carcasses*. USDA.

MEAT TECHNOLOGY

AG 140 - G

INFORMATION SHEET

I. Terms and definitions

A. Carcass--Body of animal with skin or hide, entrails and other extremities removed

B. Quality--Edibility of the meat

C. Yield--Amount of meat in comparison to bone and fat, not to be confused with dress yield or dressing percentage

D. Aging--Allowing time for enzymes naturally in the meat to break down meat fibers

E. Enzyme--A type of protein which causes changes in other substances without being changed itself

F. Lean--Part of the flesh consisting of muscle without the fat

G. Rib eye--Large muscle laying outside of the rib; used as an indicator of quality and yield

H. Pizzle eye--Attachment of the retractor penis muscle

I. Bullock--Young bull

J. Crest--Hump over the back of a bull above the shoulders

K. Cod--Part of scrotum left after castration

L. Ossification--Cartilage changing into bone

M. Cartilage--Firm, resilient tissue forming parts of the skeleton; more abundant in young animals

N. Marbling--Flecks of fat within the meat

O. Conformation--Visual appearance of the carcass

P. Hot carcass weight--Weight of carcass before cooling

Q. PYG--Preliminary yield grade

R. Maturity--Age of animal as indicated by carcass characteristics

(Note: This is related to the actual age of the animal, but the actual age itself is not considered when grading carcasses.)

S. Roast--Thick cut of meat usually 2 inches thick or more

T. Steak--Thin cut of meat usually less than 1 1/2 inches

U. Sweetbreads--Thymus glands or pancreas

II. Basic regulations affecting meat distribution (Transparencies 1, 2)

A. Meat packing plants must operate according to federal or state standards

B. State standards must be equal to federal standards

C. Meat inspection is carried out by federal or state inspectors

D. Federally approved carcasses carry an inspection stamp made from edible, purple vegetable dye (Transparency 1)

(Note: This does not indicate a quality or yield grade, but simply that the meat is safe to eat.)

E. Approved carcasses must meet basic requirements

1. Must be from healthy animals

2. Must be slaughtered and processed under sanitary conditions

3. Must be suitable for human consumption

4. Must not carry misleading statements about the meat

F. Quality and yield grading is voluntary

(Note: This service is provided by federal officials, but is paid for by the packer.)

G. All graded beef must be graded for quality and yield grade, not just one or the other (Transparency 2)

(Note: Bull carcasses are yield graded only.)

III. Steps from slaughter to market

A. Slaughter

B. Dressing out
(Note: This involves skinning and removing the extremities and entrails.)

C. Aging

D. Carcass inspection and grading

E. Shipment to retailers

F. Packaging and labeling

IV. Aging

A. Enzymes naturally found in the meat break down the fibers making the meat taste better

B. Types of aging

1. Most meat simply ages as it moves through the regular channels of distribution; this usually takes three to five days

2. Dry-aging method--Meat is held two to three weeks at 34oF to 38oF

3. Fast-aging method--Meat is held for two days or less at 70oF and high humidity under ultraviolet lights

(Note: Since additional aging is more expensive, usually only high priced meats such as the ribs and loin of high quality beef are specially aged.)

(Caution: Aging must be done with careful temperature and humidity control to maintain a safe bacterial level. It should not be attempted at home.)

V. Comparing quality grades and yield grades (Transparencies 3, 4)

A. Quality grades

1. Reflect the edibility of the meat

2. Primarily determined from carcass maturity and amount of fat within the meat

B. Yield grades (Transparencies 3, 4)

1. Reflect the ratio of lean to fat

2. Primarily determined from external and internal fat and size of rib eye muscle

VI. Quality grades

A. Beef

1. Prime

2. Choice

3. Select

4. Standard

5. Commercial

6. Utility

7. Cutter

8. Canner

(Note: Commercial, utility, cutter and canner beef are rarely marketed as retail cuts.)

B. Lamb

1. Prime

2. Choice

3. Good

4. Utility

5. Cull

C. Pork

1. U.S. No. 1

2. U.S. No. 2

3. U.S. No. 3

4. U.S. No. 4

5. U.S. Utility

VII. Sex condition of beef carcass (Transparencies 5, 6)

A. Steer carcass (Transparency 5)

1. Has a pizzle muscle and a related pizzle eye next to the rear end of the aitchbone

2. Pizzle muscle is light in color and relatively small and pizzle eye is small

3. Has rough, irregular fat in cod region

B. Bull and bullock carcass

1. Pizzle muscle is large and dark red and pizzle eye is large

2. Usually has noticeable crest

3. Has small round muscle next to the hipbone

4. Has rough, irregular fat in cod region

(Note: The difference between a bull and bullock carcass is determined by the maturity as indicated by the skeletal condition.)

C. Heifer carcass (Transparency 6)

1. Has no pizzle muscle or pizzle eye

2. Has no rough, irregular fat where the cod would be

3. Has a relatively large area of lean exposed under the aitchbone

4. Has a slightly curved aitchbone

5. Has a relatively small pelvic cavity

D. Cow carcass

1. Has a nearly straight aitchbone

2. Has a relatively large pelvic cavity

3. Has no pizzle muscle or pizzle eye

4. Has no rough, irregular fat where the cod would be

5. Has a relatively large area of lean exposed under the aitchbone

(Note: There is no sex differentiation for grades of steers, heifers and cows except that cows cannot grade prime. Bullock carcasses are quality graded, but only in five classes, prime through utility. Bull carcasses are yield graded only.)

VIII. Age or maturity categories for beef (Transparency 7)

A. A maturity 15 - 30 months of age

1. Sacral vertebrae still separated

2. Slight ossification of lumbar vertebrae

3. Rib bones slightly rounded and red

B. B maturity 30 - 42 months of age

1. Sacral vertebrae fused

2. Cartilage on lumbar vertebrae ossified

3. Rib bones white and flat

4. Feather bones still have soft cartilage on tips

C. C maturity — 42 - 72 months of age--Tips of feather bones beginning to ossify in center

D. D maturity — 72 - 96 months of age--Only a thin ring of cartilage left on tips of feather bones

E. E maturity — 96+ months of age--Tips of feather bones completely ossified

F. Bullock carcass bordering on a bull carcass

1. Slightly red and slightly soft chine bones

2. Cartilage on ends of thoracic vertebrae is starting to ossify

3. Sacral vertebrae are fused

4. Cartilage on lumbar vertebrae is almost completely ossified

(Note: A judgment of maturity is made using a combination of the above characteristics. Sometimes one factor may not seem typical for a particular age, but that factor will not necessarily change the grade if other factors do not support the change.)

IX. Standards for quality grades (Transparencies 8, 9)

A. Beef

1. Maturity (Transparency 8)

a. Carcasses under 42 months may grade Prime through Standard

b. Carcasses over 42 months grade Commercial through Canner

c. Carcasses between 30 and 42 months (B maturity) need more marbling to remain in the same grade as a carcass under 30 months

2. Marbling (Transparency 9)

a. Marbling is determined in the rib eye muscle cut between the 12th and 13th ribs

b. Carcass grade goes up as marbling increases

c. Marbling is divided into nine different official degrees

3. Dark-cutting beef or beef that is dark in color can lower the quality grades of Prime, Choice or Select one full grade and Standard or Commercial 1/2 grade; it does not affect the grades of Utility, Cutter and Canner

(Note: When judging a carcass, the rib eye muscle should be firm and not be covered with moisture. The fat should be creamy white to white.)

B. Lamb (Transparencies 10, 11, 12)

1. Grade is determined by combining maturity, conformation and quality (Transparency 10)

(Note: An area that does not meet minimum requirements can be offset by an area that exceeds minimum requirements. However, prime must meet minimum quality requirements.)

2. Quality is based on fullness and firmness of flanks, and fat streaks on the inside of the flanks (Transparency 11)

3. Carcasses must have "break joint" on both front shanks to be graded as lambs (Transparency 12)

C. Pork (Transparencies 13, 14, 15, 16)

1. Quality of lean

a. Animal will grade Utility unless lean is slightly firm, contains a slight amount of marbling, and is grayish pink to moderately dark red; belly must also be slightly thick

b. Soft, oily fat will also cause a carcass to grade Utility

2. Yield of the four lean cuts--ham, loin, picnic shoulder and Boston butt (Transparency 13)

a. Primarily determined by the relationship between length and backfat thickness (Transparencies 14, 15)

(Note: Length and weight are also related, but length is a more
reliable indicator.)

b. Muscling for grades are thick (3), average (2) and thin (1) (Transparency 16)

c. Fat thickness and muscling determines grade for the carcass

X. Determining yield grades (Transparencies 17, 18)

(Note: Yield grades for beef and sheep are 1 through 5 with 1 indicating the highest percentage of retail cuts and 5 indicating the lowest.)

A. Beef

1. Based on the amount of external fat, internal fat, area of the rib eye muscle and hot carcass weight (Transparencies 17, 18)

(Note: External fat thickness is measured on the outside of the rib eye muscle.)

2. Yield grade = 2.5 + (2.5 x adjusted fat thickness, inches) + (.2 x % kidney, pelvic and heart fat) + (.0038 x hot carcass weight) - (.32 x rib eye area, square inches)

Example:	Fat thickness	=	.5	inches
Rib eye area		=	12.5	inches
Kidney, pelvic and heart fat		=	3.0	%
Hot carcass weight		=	600	pounds

2.5 + (2.5 x .5) + (.2 x 3.0) + (.0038 x 600) - (.32 x 12.5) = 2.63

Calculated yield grade = 2.63

3. Final yield grades are rounded to the lowest whole number

Example: A yield grade of 2.63 would round to 2; a yield grade of 2.1 would also round to 2

B. Lamb

1. Based on external fat, internal fat and the conformation grade of the legs

(Note: External fat is measured over the rib eye muscle. Sometimes this thickness is adjusted by .05 to .1 of an inch or in extreme cases .2 of an inch if the fat covering over the rib eye does not seem to be representative of the carcass.)

2. Yield grade = 1.66 - (.05 x leg conformation grade code) + (.25 x % kidney and pelvic fat) + (6.66 x adjusted fat thickness over rib eye, inches)

(Note: The leg conformation code is taken from the quality grade. High prime is coded 15 and low cull is coded 1. Each grade is divided into thirds and given a corresponding number between 1 and 15. This would make average prime 14, high choice 12, and so on.)

Example:	Leg conformation (low prime)	=	13
	Kidney and pelvic fat	=	1.7 %
	Adjusted fat thickness	=	.15 in.

1.66 - (.05 x 13) + (.25 x 1.7) + (6.66 x .15) = 2.434

Calculated yield grade	=	2.434
Yield grade	=	2

XI. Determining yield grades using the preliminary yield grade (Assignment Sheet 1)

A. Beef

1. Preliminary yield grade

Fat Thickness Over Rib Eye (inches)		Preliminary Yield Grade (PYG)
0.0	=	2.0
0.1	=	2.25
0.2	=	2.5
0.3	=	2.75
0.4	=	3.0
0.5	=	3.25
0.6	=	3.5
0.7	=	3.75
0.8	=	4.0
0.9	=	4.25
1.0	=	4.5

2. Carcass weight adjustment

a. No adjustment when carcass is 600 pounds

b. For each 25 pounds under 600 pounds, subtract .1 from PYG

c. For each 25 pounds over 600 pounds, add .1 to PYG

3. Rib eye area adjustment

a. No adjustment when rib eye area is 11 square inches

b. For each square inch over 11 square inches, subtract .3 from PYG

c. For each square inch under 11 square inches, add .3 to PYG

4. Kidney, pelvic and heart fat adjustment

a. No adjustment when fat is 3.5%

b. For each .5% under 3.5%, subtract .1 from PYG

c. For each .5% over 3.5%, add .1 to PYG

Example: 600 pound carcass with .2 inch fat thickness,
13 square inches of rib eye area, and 2.5% kidney fat

PYG	2.5
Carcass weight adjustment	0
Rib eye area adjustment	-.6
Kidney, pelvic and heart fat adjustment	-.2
Calculated yield grade	1.7

Yield grade = 1

B. Lamb

1. Preliminary yield grade

(Note: Fat thickness over the rib eye is adjusted if it is not representative of the rest of the carcass. Adjustments are seldom more than .1 inch.)

Fat Thickness Over Rib Eye (inches)		Preliminary Yield Grade (PYG)
.00	=	2.00
.05	=	2.33
.10	=	2.67
.15	=	3.00
.20	=	3.33
.25	=	3.67
.30	=	4.00
.35	=	4.33
.40	=	4.67
.45	=	5.00
.50	=	5.33
.55	=	5.67
.60	=	6.00
.65	=	6.33

2. Kidney and pelvic fat adjustment

a. No adjustment when fat is 3.5%

b. For each 1% under 3.5%, subtract .25 from PYG

c. For each 1% over 3.5%, add .25 to PYG

3. Leg conformation grade code adjustment

(Note: The leg conformation grade code is taken from the quality grade. High prime is coded 15 and low cull is coded 1. Each grade is divided into thirds and given a corresponding number between 1 and 15. This would make average prime 14, high choice 12 and so on.)

a. No adjustment when grade code is 11 or grade is average choice

b. For each grade code over 11, subtract .05 from PYG

c. For each grade code under 11, add .05 to PYG

Example: .1 inch of fat over the rib eye, 2.5% kidney and pelvic fat and an average prime leg conformation

PYG		2.67
Kidney and pelvic fat adjustment	-	- .25
Leg conformation adjustment (14)	-	- .15
Calculated yield grade		2.27

Yield grade = 2

XII. Wholesale cuts of beef, lamb and pork (Transparency 19)

A. Beef

1. Chuck
2. Rib
3. Short loin
4. Sirloin
5. Round
6. Flank
7. Short plate
8. Brisket
9. Fore shank

B. Lamb

1. Shoulder
2. Rib
3. Loin
4. Leg
5. Breast
6. Fore shank

C. Pork

1. Jowl
2. Picnic shoulder
3. Boston shoulder

4. Loin

5. Leg or Ham if smoked

6. Side pork or Bacon if smoked

7. Spareribs

XIII. Characteristics of wholesale cuts of beef and pork (Transparencies 20, 21, 22)

A. Desirable

1. Well muscled with a minimum of external fat

2. Adequately marbled

3. Firm, fine textured lean

4. Light colored lean

5. White to creamy white fat

6. Skeletal characteristics indicating acceptable maturity

B. Undesirable

1. Small muscles and/or an excess of fat, also excessively marbled

2. Soft, coarse lean

3. Dark colored lean

4. Soft, oily fat

5. Yellow fat

6. Moisture weeping from the lean

(Note: Generally, a darker colored lean indicates an older and tougher animal.)

XIV. Basic retail meat cuts (Transparencies 23, 24)

(Note: A meat cut is identified by the position and shape of the bone and the muscle. A roast is a thick cut of meat while a steak is a thinner cut.)

A. Arm cuts

B. Shoulder blade cuts

C. Rib cuts

D. Short loin cuts

E. Sirloin cuts

F. Leg or round cuts

G. Brisket cuts

XV. Retail cuts of beef listed under the wholesale cuts they come from

A. Chuck

1. Beef Chuck Arm Pot-Roast
2. Beef Chuck Arm Pot-Roast Boneless
3. Beef Chuck Arm Steak
4. Beef Chuck Arm Steak Boneless
5. Beef Chuck Shoulder Pot-Roast Boneless
6. Beef Chuck Shoulder Steak Boneless
7. Beef Chuck Cross Rib Pot-Roast
8. Beef Chuck Cross Rib Pot-Roast Boneless
9. Beef Chuck Short Ribs
10. Beef Chuck Flanken Style Ribs
11. Beef Chuck Blade Roast
12. Beef Chuck Blade Steak
13. Beef Chuck 7-Bone Pot-Roast
14. Beef Chuck Steak
15. Beef Chuck Top Blade Pot-Roast
16. Beef Chuck Top Blade Steak
17. Beef Chuck Under Blade Pot-Roast
18. Beef Chuck Under Blade Steak
19. Beef Chuck Under Blade Pot-Roast Boneless
20. Beef Chuck Under Blade Steak Boneless
21. Beef Chuck Mock Tender
22. Beef Chuck Top Blade Roast Boneless

23. Beef Chuck Top Blade Steak Boneless

(Note: The Top Blade Roast and Steak are naturally boneless.)

24. Beef Chuck Eye Roast Boneless

25. Beef Chuck Eye Steak Boneless

B. Rib

1. Beef Rib Roast Large End

2. Beef Rib Roast Small End

3. Beef Rib Steak Small End

4. Beef Rib Steak Small End Boneless

5. Beef Rib Eye Roast

6. Beef Rib Eye Steak

C. Loin

1. Beef Loin Top Loin Steak

2. Beef Loin Top Loin Steak Boneless

3. Beef Loin T-Bone Steak

4. Beef Loin Porterhouse Steak

5. Beef Loin Wedge Bone Sirloin Steak

6. Beef Loin Round Bone Sirloin Steak

7. Beef Loin Flat Bone Sirloin Steak

8. Beef Loin Pin Bone Sirloin Steak

(Note: The above Sirloin Steaks may also be simply called Beef Loin Sirloin Steak.)

9. Beef Loin Shell Sirloin Steak

10. Beef Loin Sirloin Steak Boneless

11. Beef Loin Top Sirloin Steak Boneless

12. Beef Loin Tenderloin Roast

13. Beef Loin Tenderloin Steak

D. Round

1. Beef Round Steak
2. Beef Round Steak Boneless
3. Beef Round Rump Roast
4. Beef Round Rump Roast Boneless
5. Beef Round Heel of Round
6. Beef Round Bottom Round Roast
7. Beef Round Eye Round Roast
8. Beef Round Eye Round Steak
9. Beef Round Tip Roast
10. Beef Round Tip Roast Cap Off
11. Beef Round Top Round Roast
12. Beef Round Top Round Steak
13. Beef Round Tip Steak Cap Off
14. Beef Round Cubes for Kabobs

E. Flank

1. Beef Flank Steak
2. Beef Flank Steak Rolls

F. Short Plate

1. Beef Plate Skirt Steak Boneless
2. Beef Plate Skirt Steak Rolls Boneless

G. Brisket

1. Beef Brisket Point Half Boneless
2. Beef Brisket Flat Half Boneless

H. Fore Shank--Beef Shank Cross Cuts

I. Miscellaneous cuts

1. Beef for Stew

2. Beef Cubed Steak

(Note: Cubed effect is made by a machine that mechanically tenderizes the meat.)

3. Ground Beef

XVI. Retail cuts of lamb listed under the wholesale cuts they come from

A. Shoulder

1. Lamb Shoulder Square Cut Whole

2. Lamb Shoulder Roast Boneless

3. Lamb Shoulder Blade Chops

4. Lamb Shoulder Arm Chops

5. Lamb Shoulder Neck Slices

B. Rib

1. Lamb Rib Roast

2. Lamb Rib Chops

3. Lamb Rib Crown Roast

C. Loin

1. Lamb Loin Chops

2. Lamb Loin Double Chops

3. Lamb Loin Double Chops Boneless

D. Leg

1. Lamb Leg Sirloin Chops

2. Lamb Leg Whole

3. Lamb Leg Roast Boneless

4. Lamb Leg Short Cut Sirloin Off

5. Lamb Leg Shank Half

6. Lamb Leg Frenched Style Roast

7. Lamb Leg American Style Roast

E. Breast

1. Lamb Breast

2. Lamb Breast Riblets

F. Fore Shank--Lamb Shank

G. Miscellaneous cuts

1. Lamb for Stew

2. Lamb Cubes for Kabobs

3. Ground Lamb

XVII. Retail cuts of pork listed under the wholesale cuts they come from

A. Picnic Shoulder

1. Pork Shoulder Arm Picnic

2. Pork Shoulder Arm Roast

3. Pork Shoulder Arm Steak

4. Pork Hocks

5. Smoked Pork Shoulder Picnic Whole

6. Smoked Pork Hocks

B. Boston Shoulder

1. Pork Shoulder Blade (Boston) Roast

2. Pork Shoulder Blade (Boston) Roast Boneless

3. Pork Shoulder Blade Steak

4. Smoked Pork Shoulder Roll

C. Loin

1. Pork Loin Blade Roast

2. Pork Loin Blade Chops

3. Pork Loin Country Style Ribs

4. Pork Loin Back Ribs

5. Pork Loin Center Rib Roast

6. Pork Loin Rib Chops

   (Note: This may be called Center Cut Chops.)

7. Pork Loin Rib Chops for Stuffing

8. Pork Loin Center Loin Roast

9. Pork Loin Top Loin Chops

10. Pork Loin Butterfly Chops

11. Pork Loin Top Loin Roast Boneless (Double)

12. Pork Loin Chops

13. Pork Loin Sirloin Roast

14. Pork Loin Sirloin Chops

15. Pork Loin Sirloin Cutlets

16. Pork Loin Tenderloin Whole

17. Pork Loin Tenderloin Pieces

18. Smoked Pork Loin Canadian Style Bacon

19. Smoked Pork Loin Rib Chops

20. Smoked Pork Loin Chops

D. Leg or Ham if smoked

1. Pork Leg (Fresh Ham) Whole

2. Pork Leg (Fresh Ham) Roast Boneless

3. Pork Leg (Fresh Ham) Shank Portion

4. Smoked Ham Whole

5. Smoked Ham Shank Portion

6. Smoked Ham Rump Portion

7. Smoked Ham Center Slices

8. Smoked Ham Boneless Center Slices

E. Side Pork or Bacon if smoked

1. Fresh Side Pork

2. Slab Bacon

3. Sliced Bacon

F. Spareribs--Pork Spareribs

G. Miscellaneous cuts

1. Pork Cubed Steaks

2. Pork Cubes for Kabobs

3. Pork Pieces

4. Ground Pork

5. Sausage

XVIII. Variety meats

A. Livers

B. Kidneys

C. Hearts

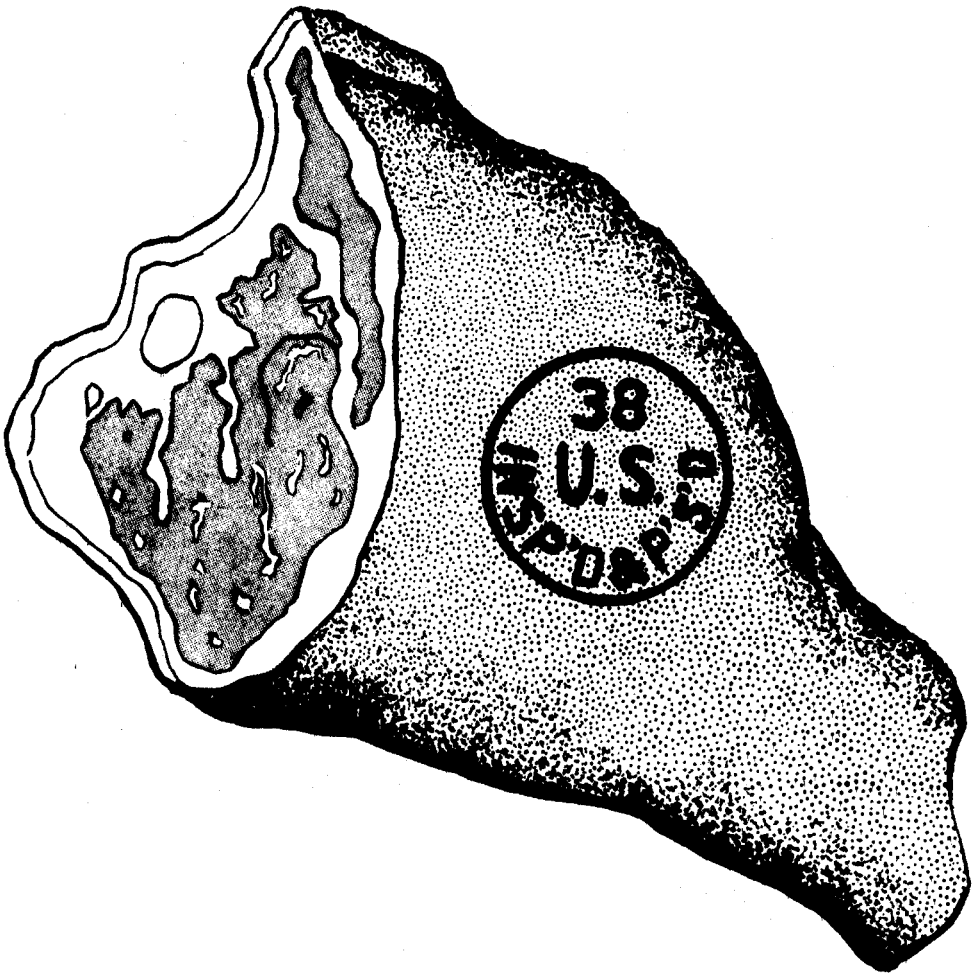
D. Tongues

E. Brains

F. Sweetbreads

(Note: These are the thymus glands or the pancreas.)

Meat Inspection Stamp

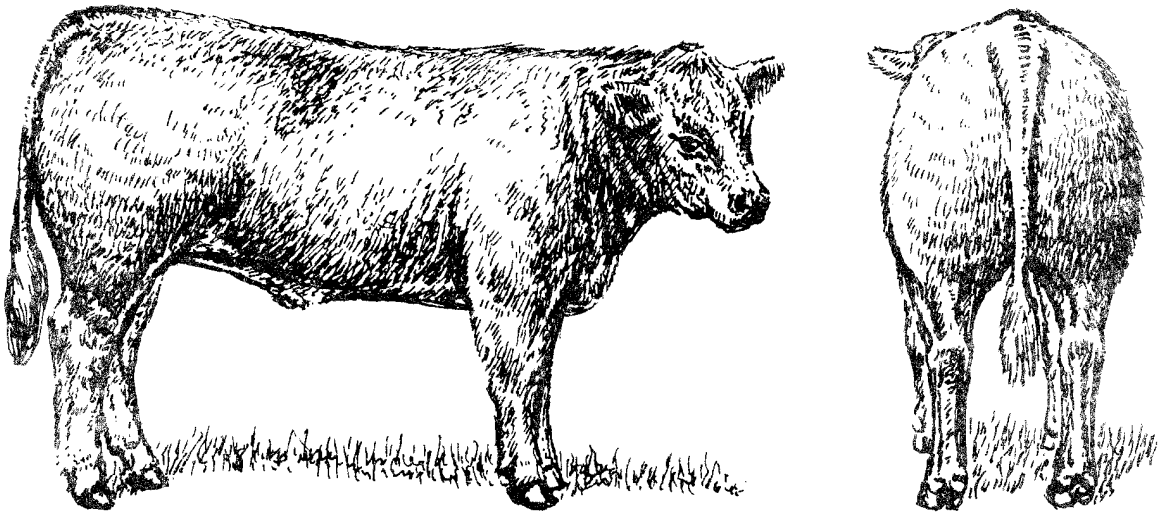


Yield And Quality Grade Stamps

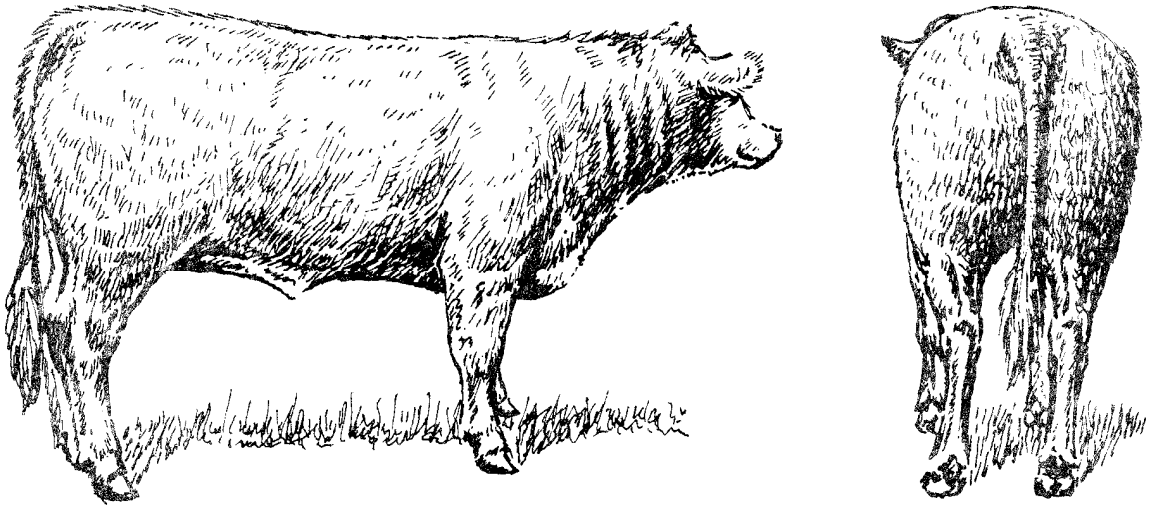
TM 2

Comparison Of Yield Grades

Live Animals



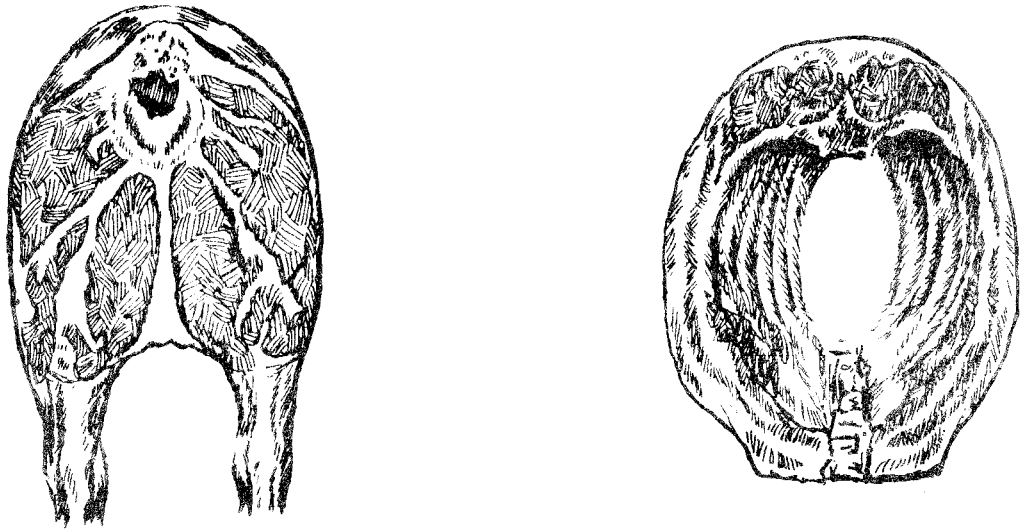
YIELD GRADE 2



YIELD GRADE 4

Comparison Of Yield Grades

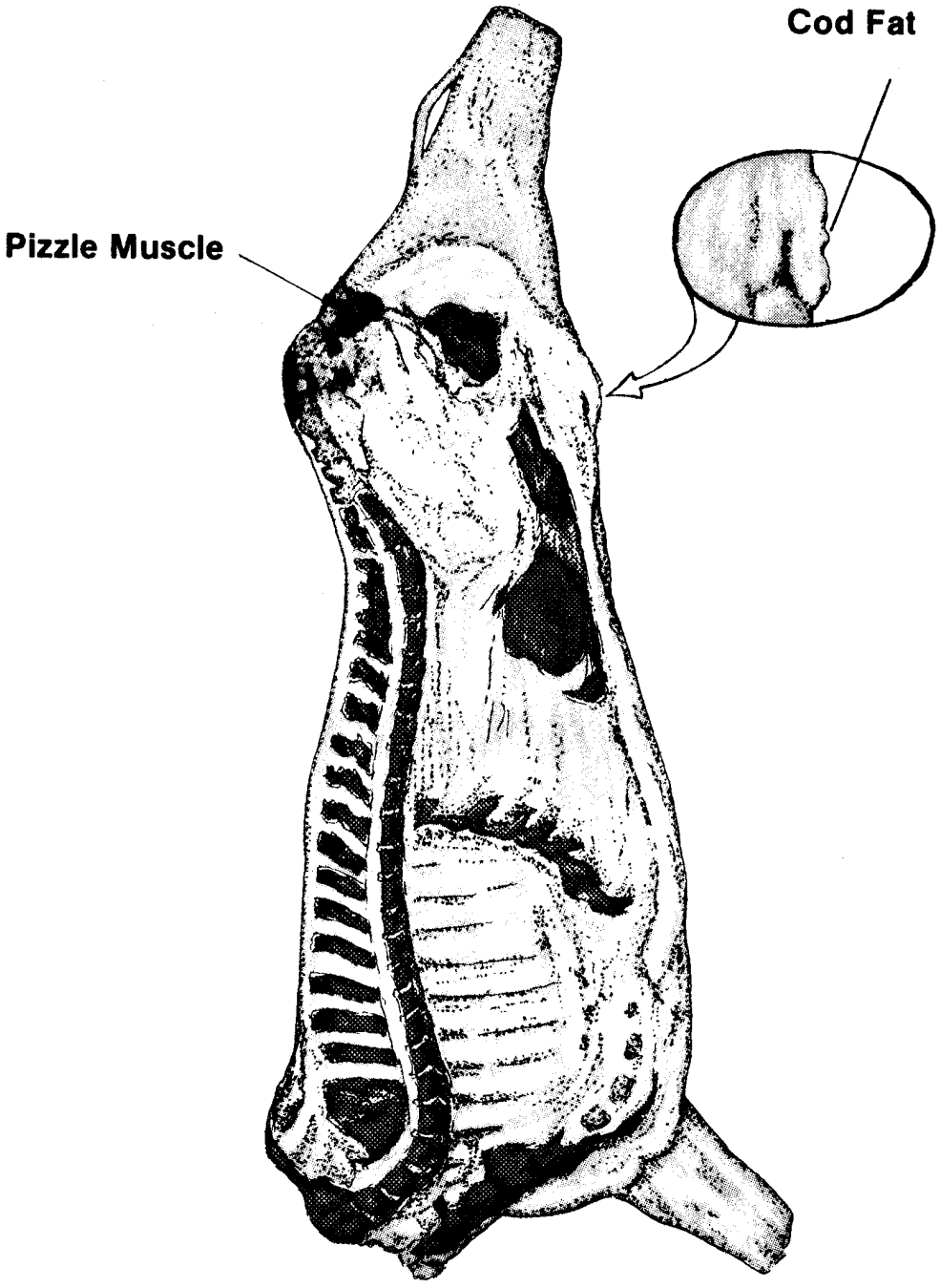
Carcasses



Yield Grade 2

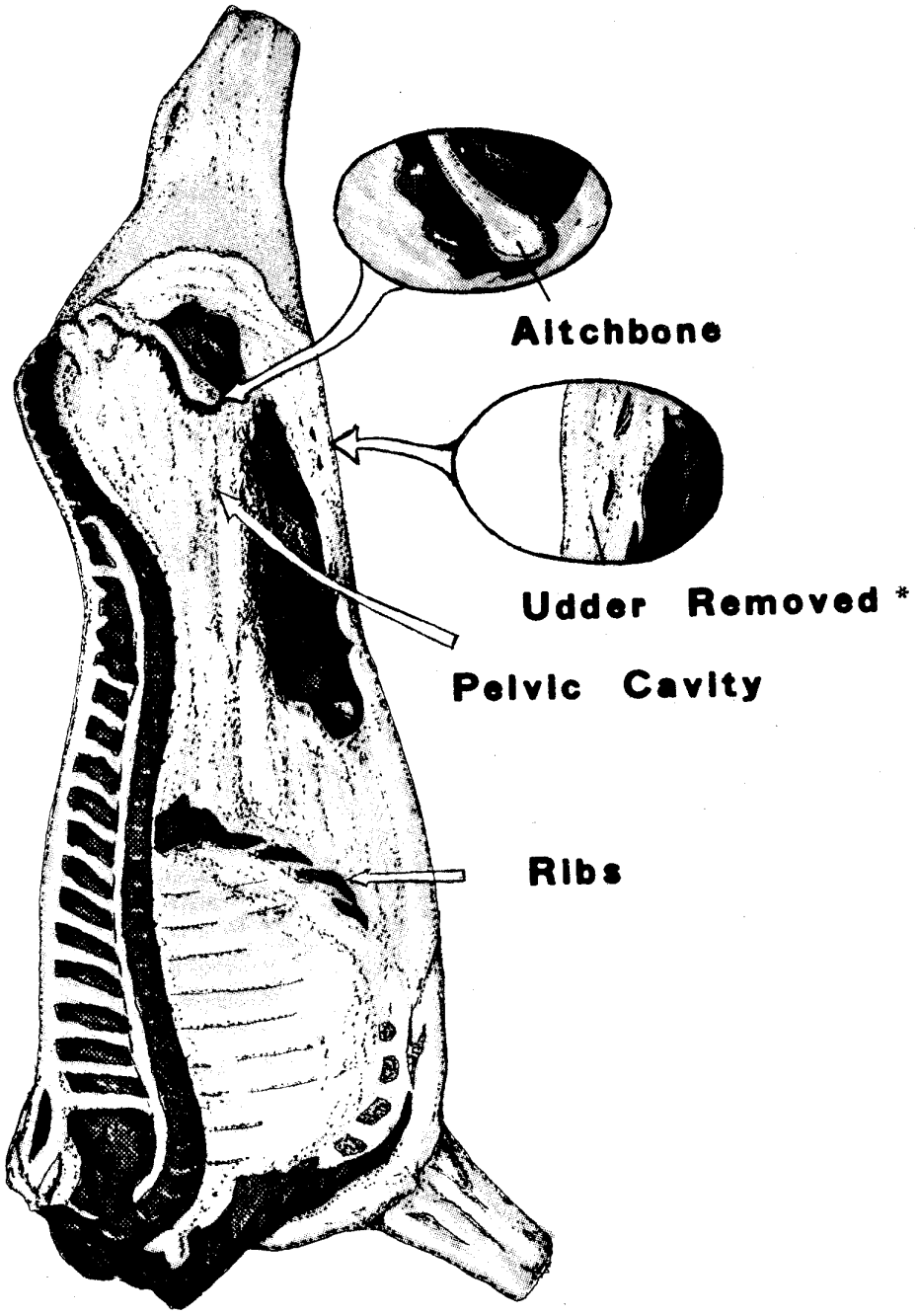
Yield Grade 4

Sex Indicators In a Steer Carcass



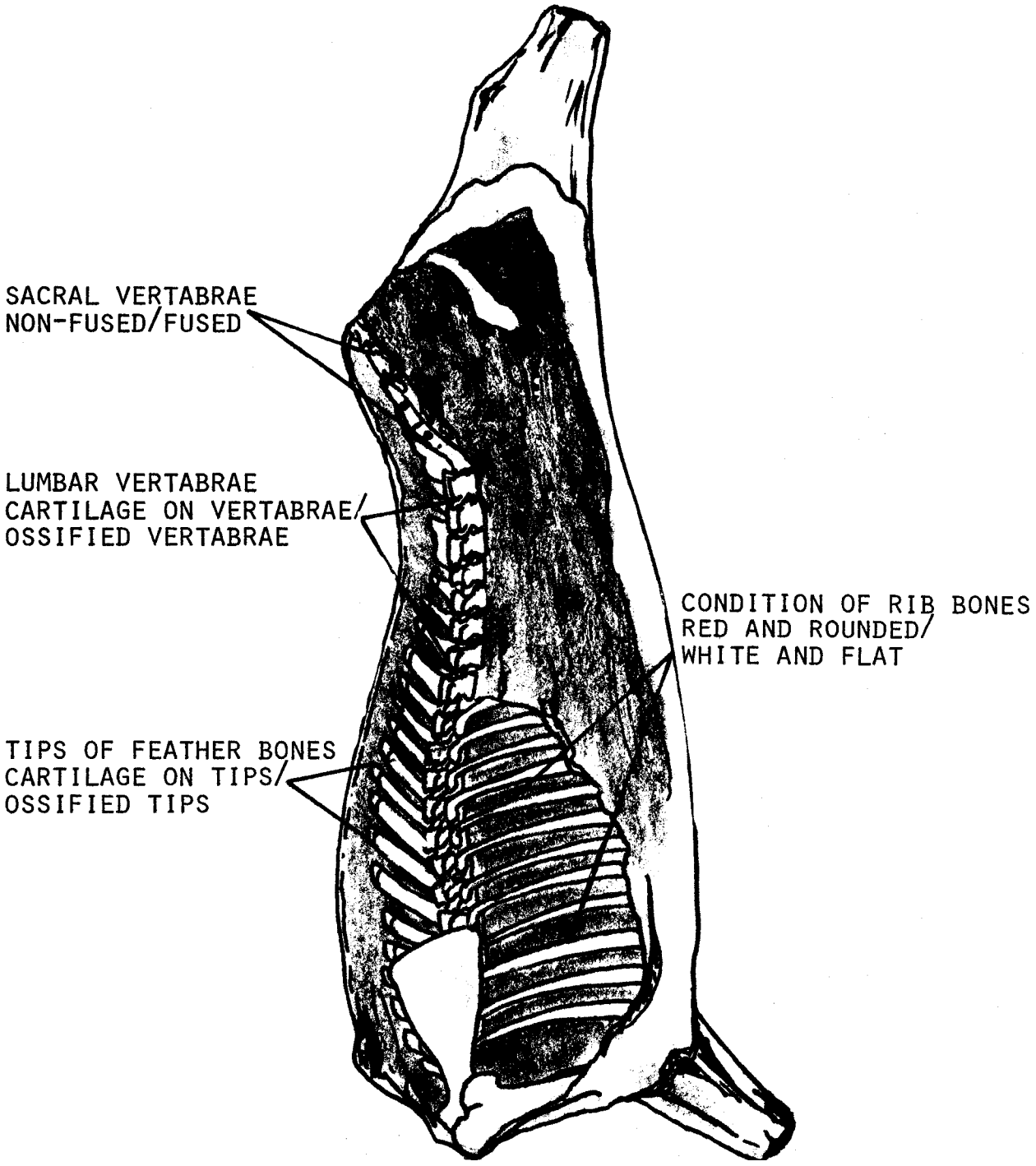
TM 5

Sex Indicators In a Heifer Carcass



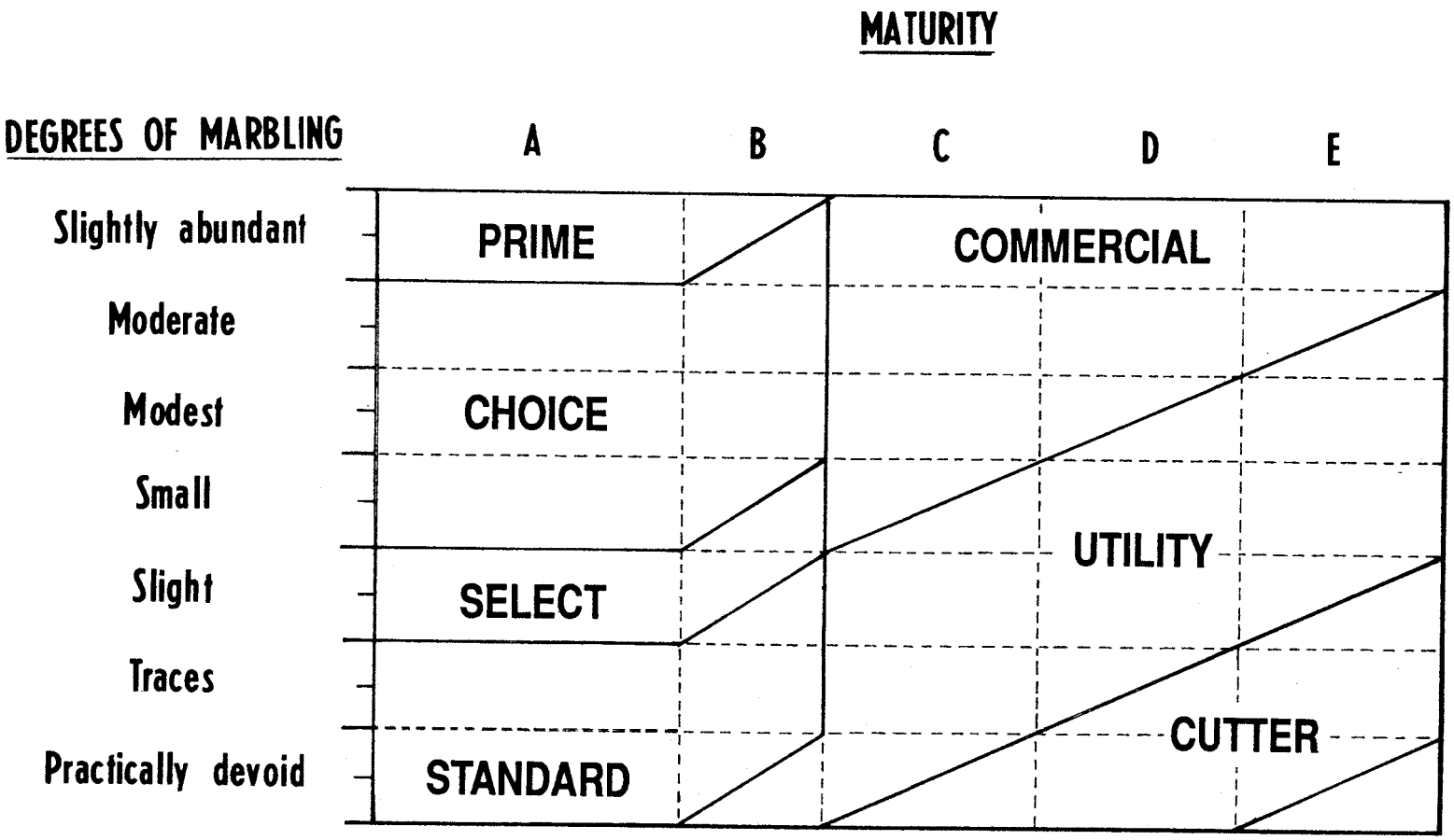
*UDDER IS USUALLY REMOVED IN A COW CARCASS AND LEFT ATTACHED IN A HEIFER CARCASS.

Skeletal Indicators Of Age



TM 7

Effect Of Marbling And Maturity On Quality Grades Of Beef

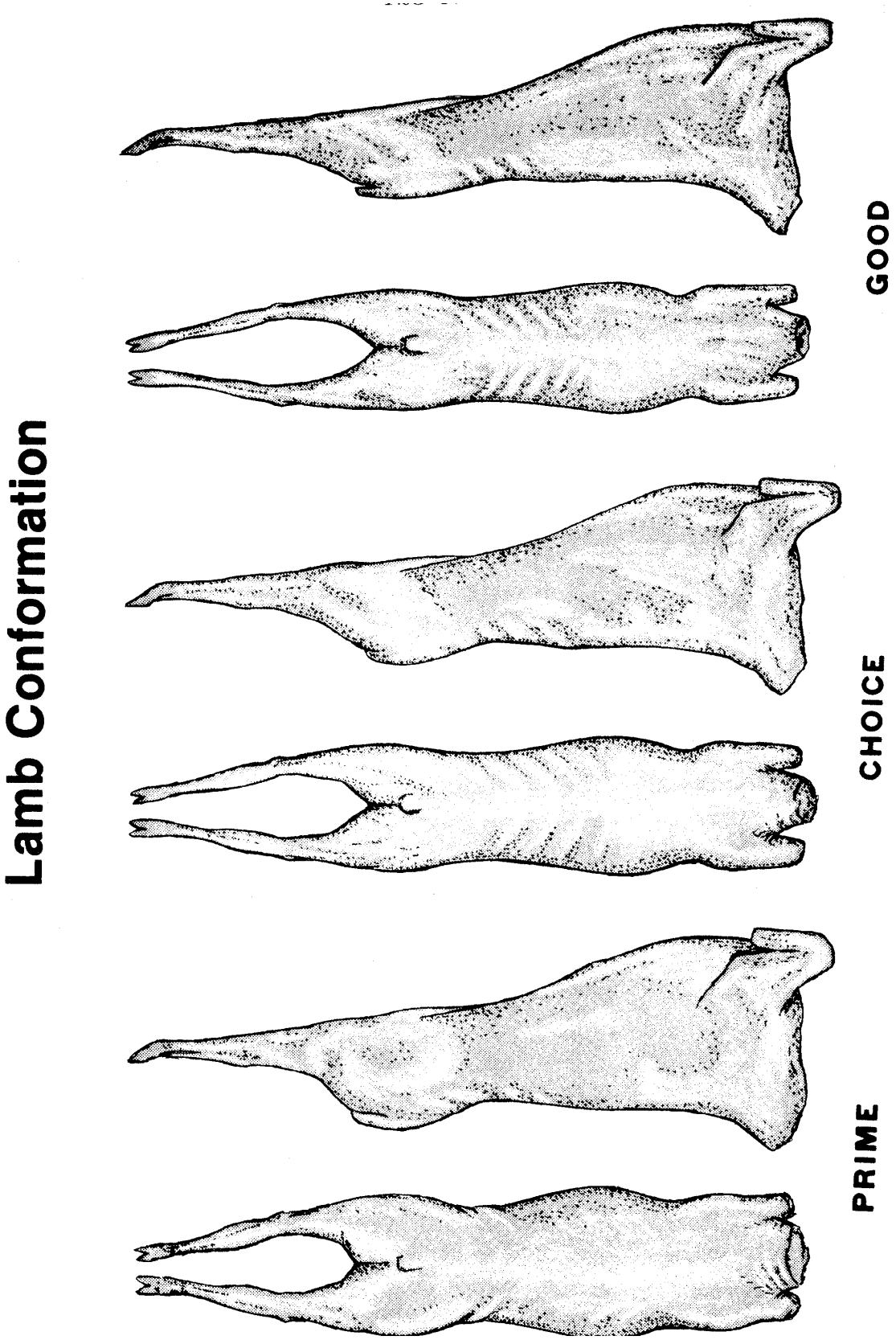


Determining Specific Quality Grades for Beef

Quality Grade[1]	Maturity				
	A	B	C	D	E
Prime +	Abundant	Very abundant			
Prime	Mod Abun	Abundant			
Prime –	Sli Abun	Mod Abun			
Choice +	Moderate	Sli Abun			
Choice	Modest	Moderate			
Choice –	Small	Modest			
Select +	Slight +	Small +			
Select –	Slight –	Small –			
Standard +	Traces	Slight			
Standard –	Pr Devoid	Traces			
Commercial +	—	—	Moderate	Sli Abun	Mod Abun
Commercial	—	—	Modest	Moderate	Sli Abun
Commercial –	—	—	Small	Modest	Moderate
Utility +	—	Pr Devoid[2]	Slight	Small	Modest
Utility	—	—	Traces	Slight	Small
Utility –	—	—	Pr Devoid	Traces	Slight

[1]These grades assume the lean is acceptable and there are no "dark cutters."

[2]A young steer or heifer grading utility is a very rare occurrence.



TM 10

Minimum Quality Requirements For Lamb Carcass Grades

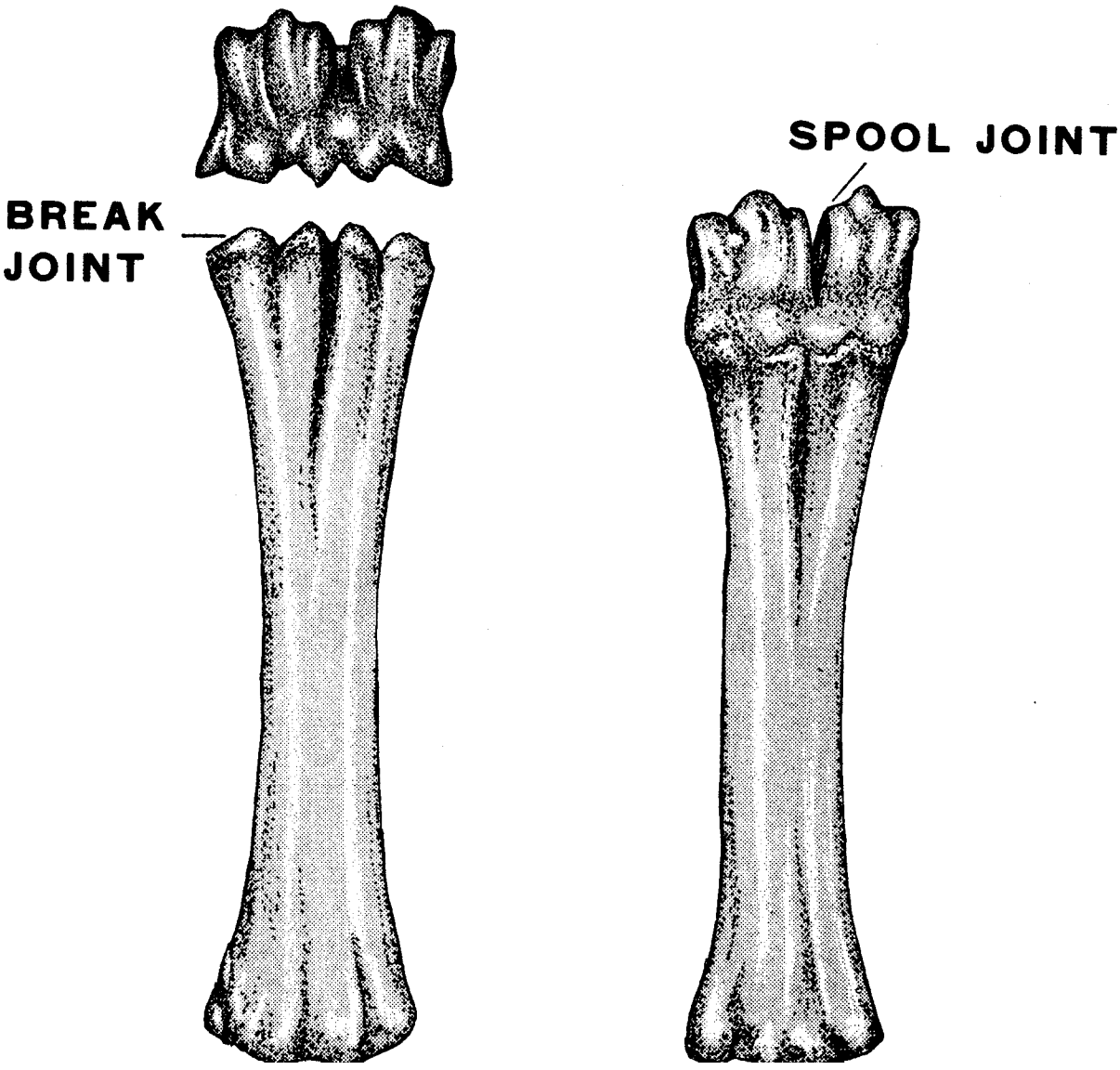
GRADE	*A Maturity Group		*B Maturity Group	
	FLANK STREAKING	FLANK FIRMNESS	FLANK STREAKING	FLANK FIRMNESS
PRIME	SMALL	Tends to be moderate full and firm	MODEST	Moderate full and firm
CHOICE	TRACES	Tends to slightly full and firm	SLIGHT	Slightly full and firm
GOOD	PRACTICALLY DEVOID	Slightly thin and soft	TRACES	Tends to be slightly full and firm
UTILITY	DEVOID	Soft and slightly watery	PRACTICALLY DEVOID	Slightly thin and soft

*MATURITY GROUPS:

A. Moderately narrow, slightly flat rib bones; moderately red, moist, and porous break joints; and a bright pink color in the flank.

B. Slightly wide, moderately flat rib bones; slightly red but dry "break joints;" and a dull red color in the flanks.

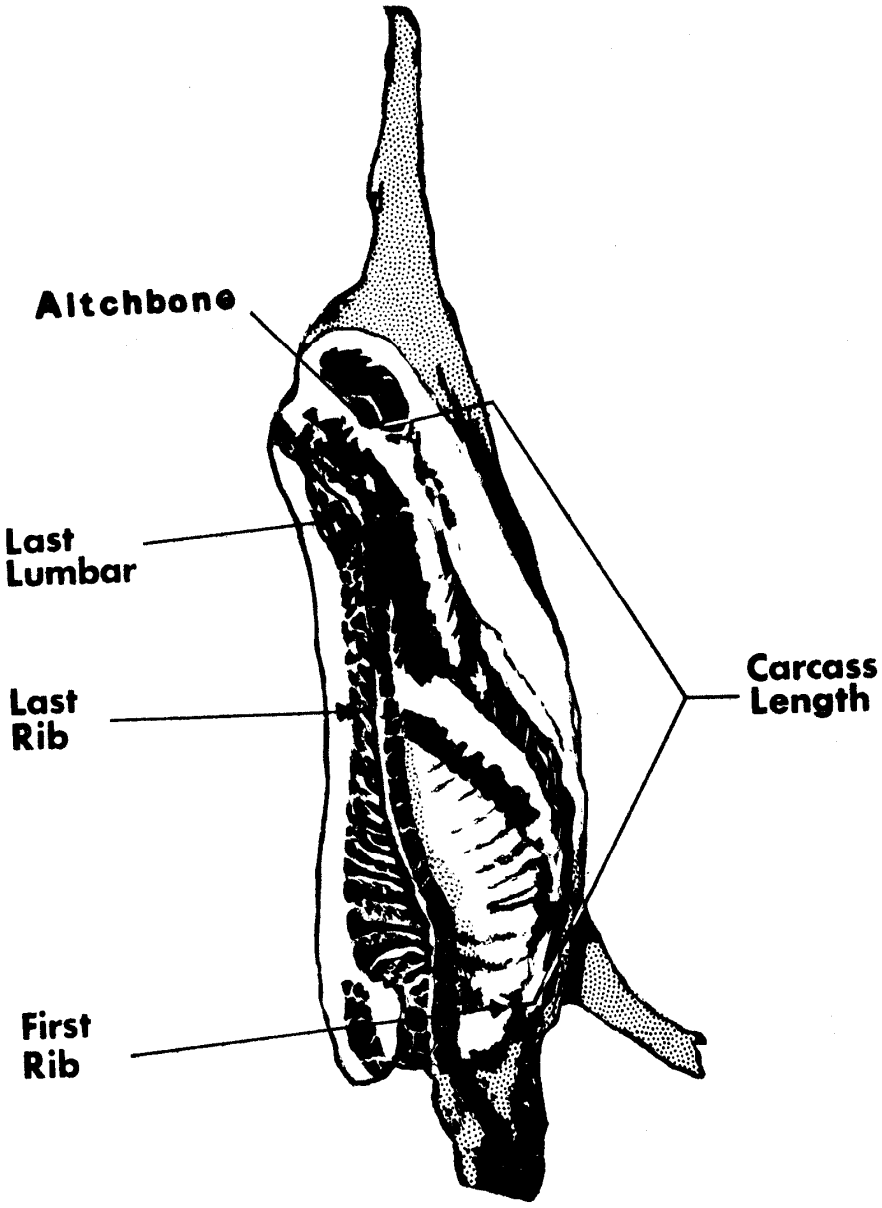
Break and Spool Joints



SWINE CARCASS GRADES AND YIELD PERCENTAGE

Grade	Yield of the Four Lean Cuts
U.S. No. 1	60.4 percent and over
U.S. No. 2	57.4 to 60.3 percent
U.S. No. 3	54.5 to 57.3 percent
U.S. No. 4	Less than 54.4 percent

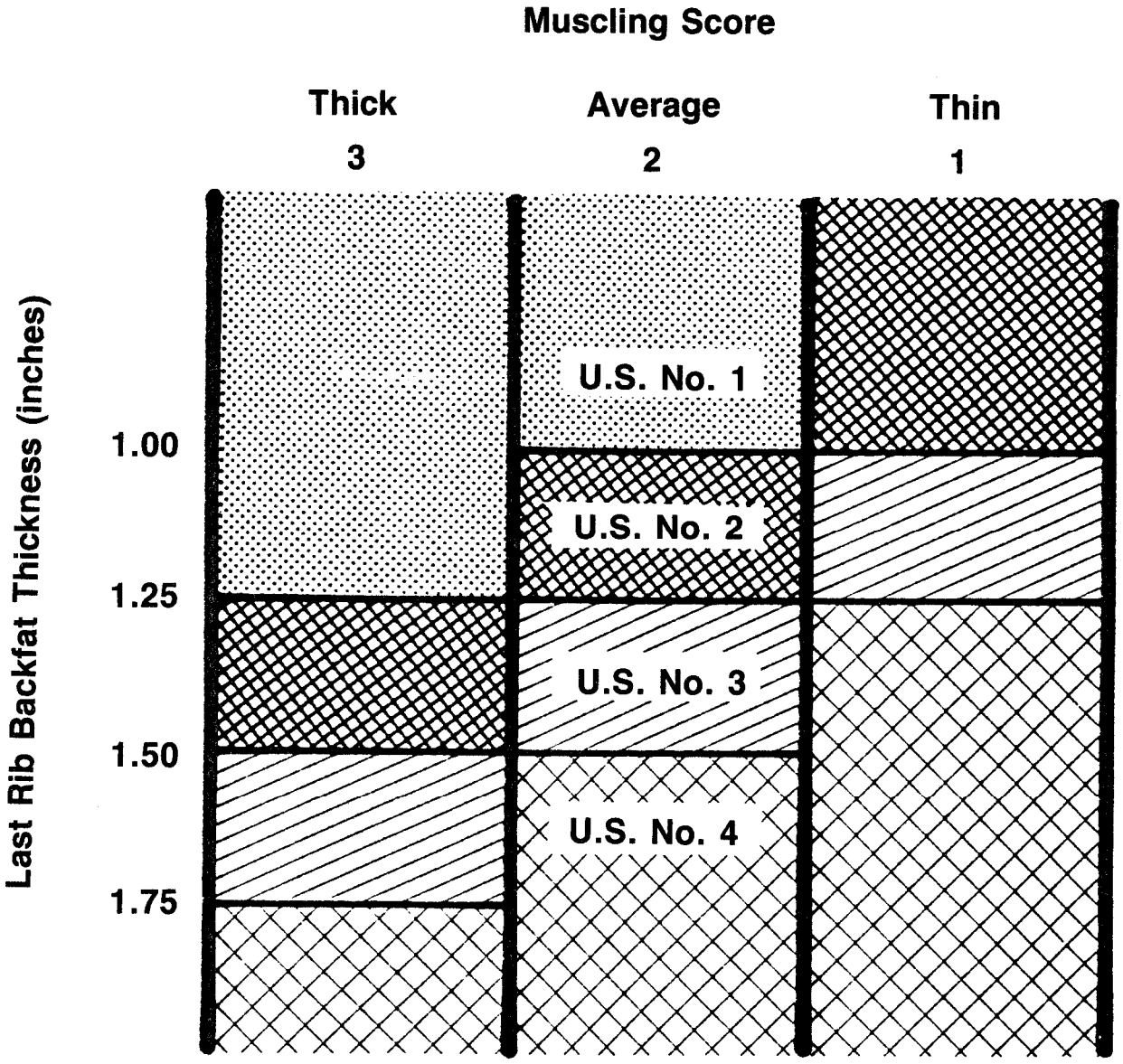
Measuring Swine Backfat And Carcass Length



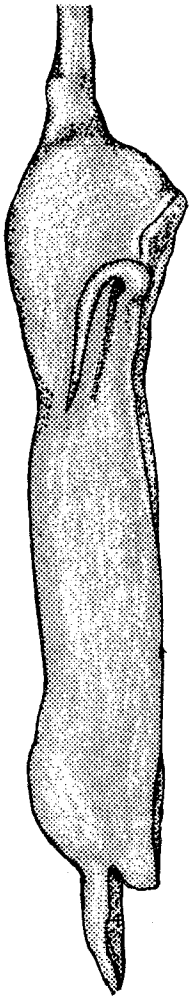
LENGTH IS MEASURED FROM THE FRONT PART OF THE FIRST RIB TO THE FRONT PART OF THE AITCHBONE.

BACKFAT IS MEASURED OVER THE FIRST RIB, LAST RIB AND LAST LUMBAR VERTEBRAE.

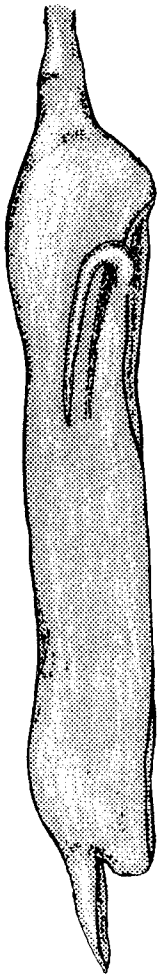
Relationship of Backfat Thickness and Degree of Muscling Score



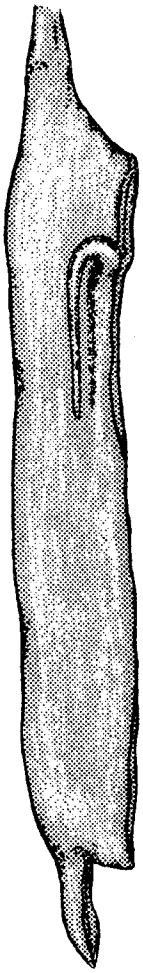
Degrees of Muscling in Swine Carcassas



THICK

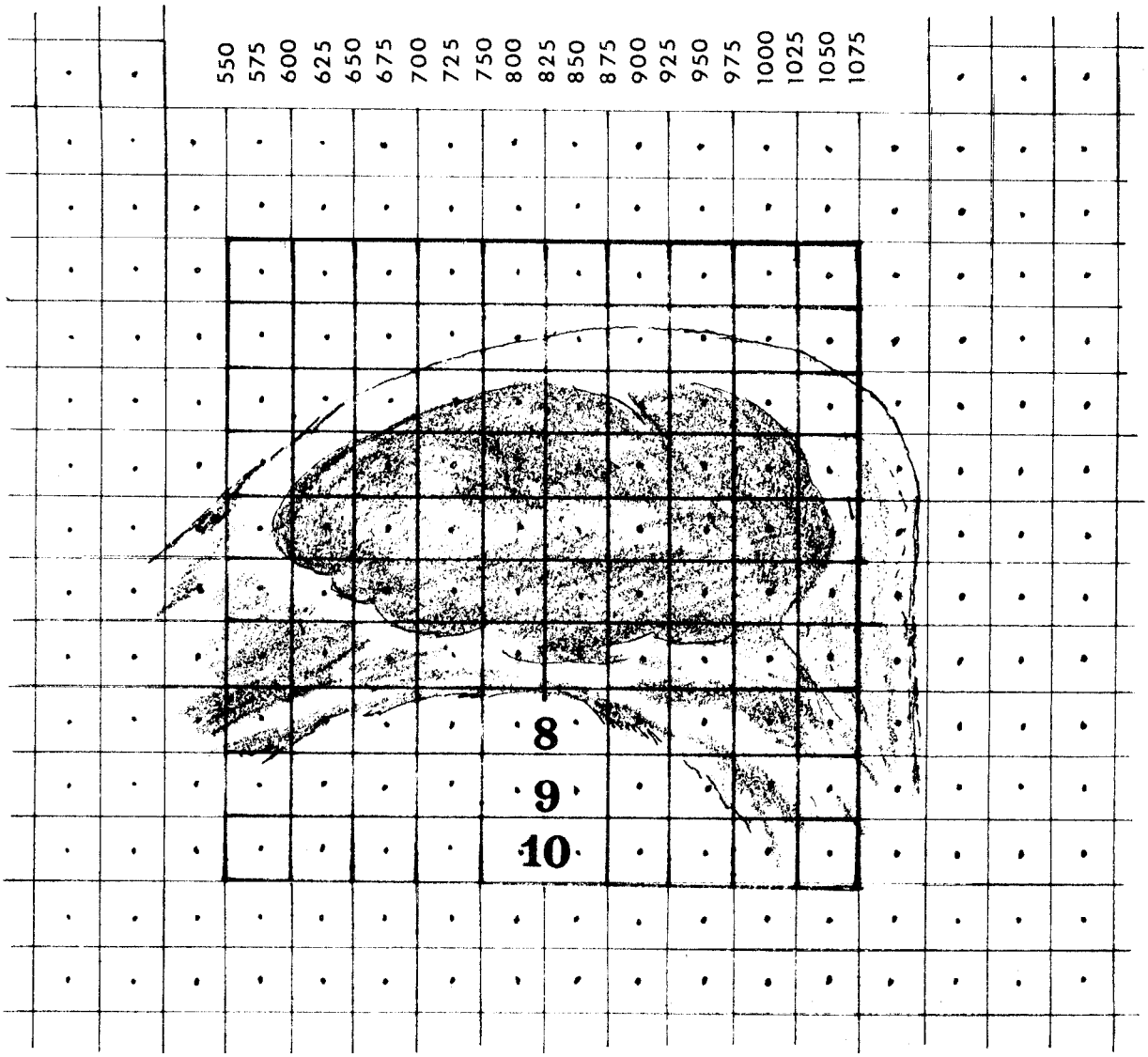


AVERAGE

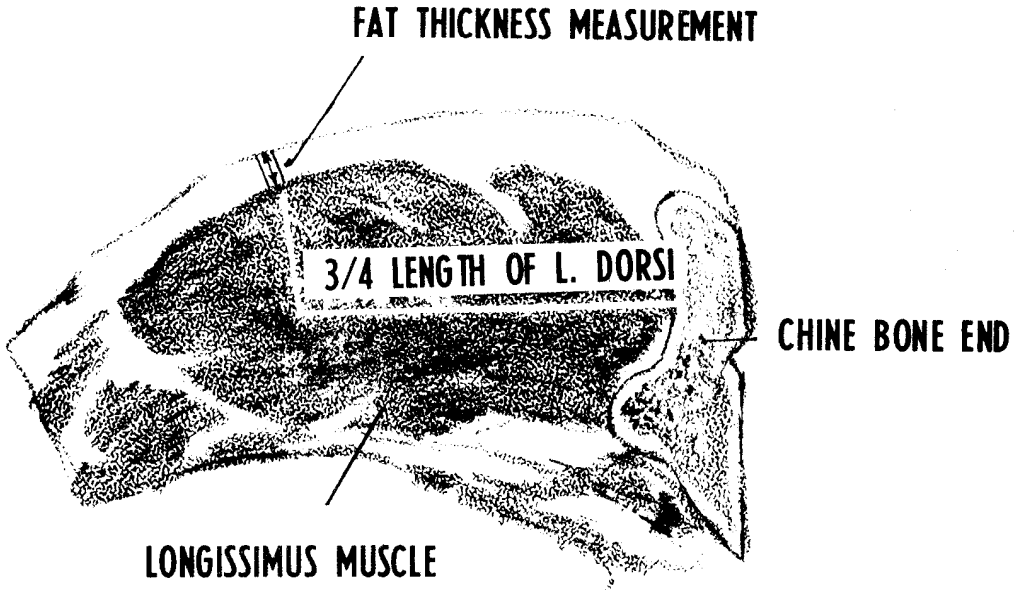


THIN

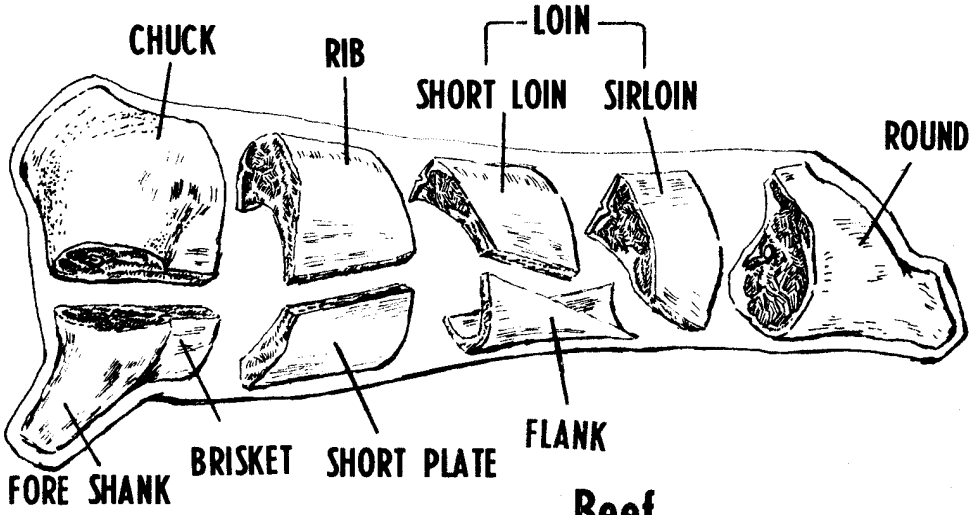
Grid For Measuring Rib Eye Area



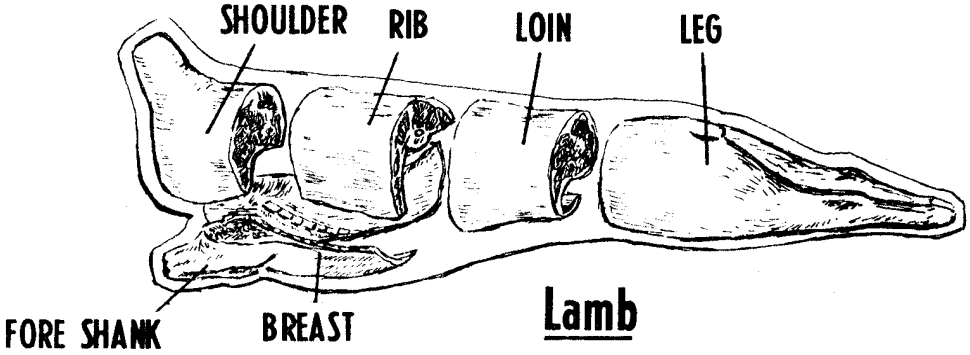
Location Of Fat Measurement Over Rib Eye Muscle



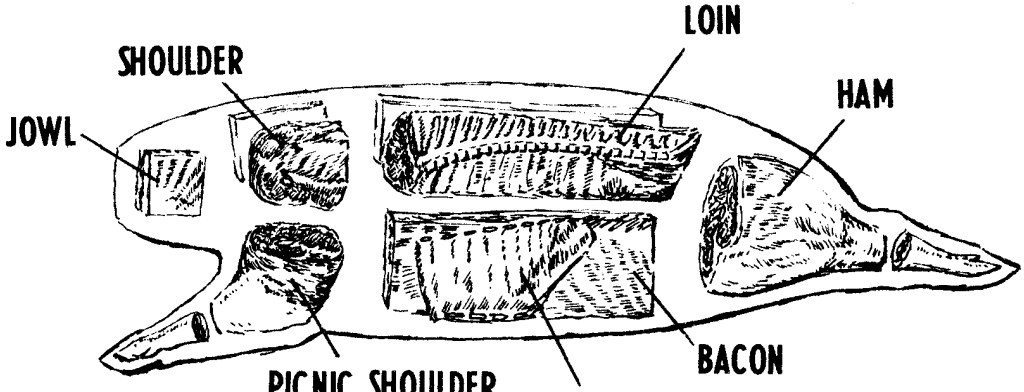
Wholesale Meat Cuts



Beef



Lamb

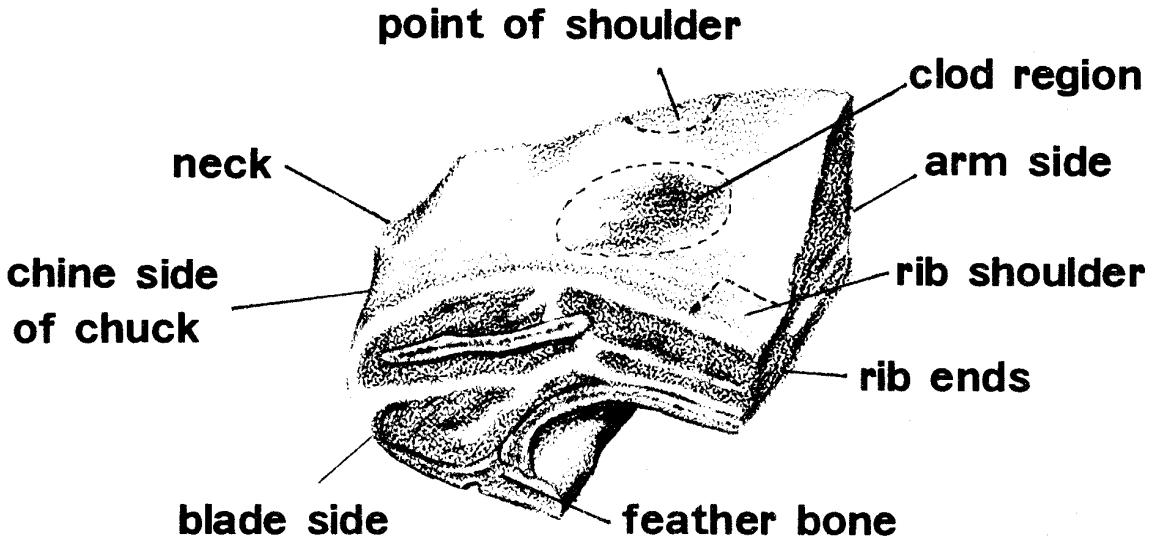


Pork

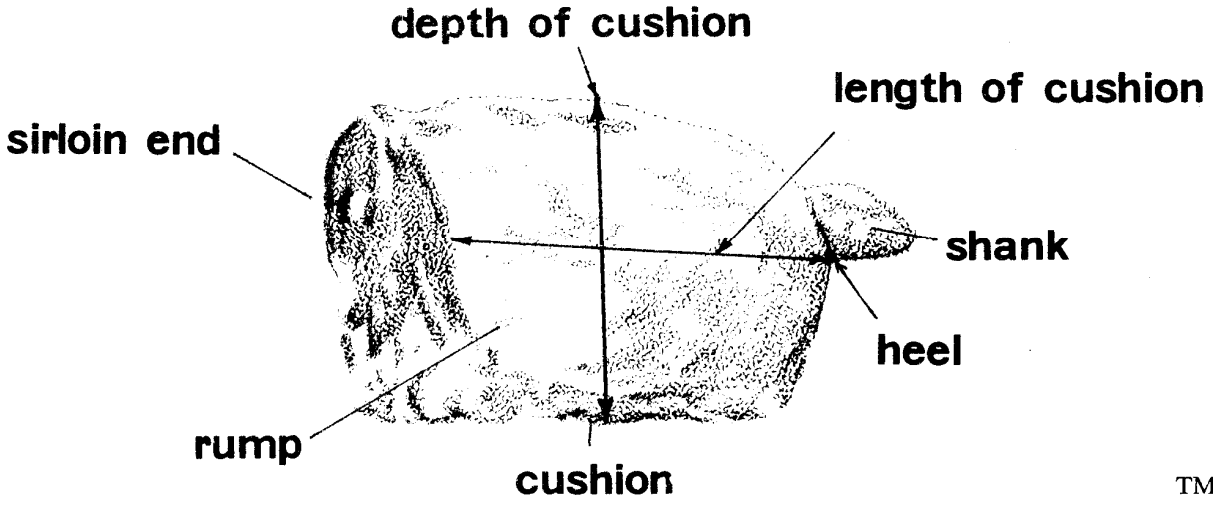
TM 19

Wholesale Cuts of Beef

PARTS OF THE CHUCK



PARTS OF THE ROUND

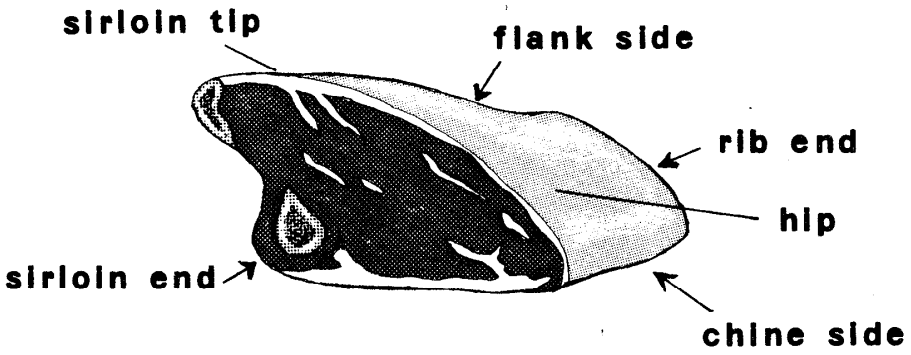


TM

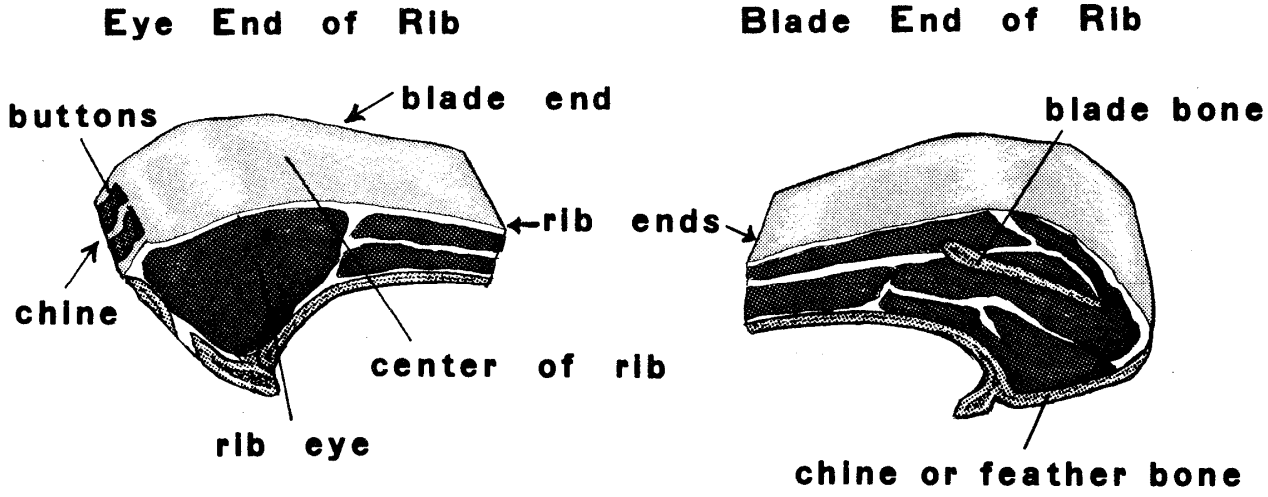
TM 29

Wholesale Cuts of Beef
(Continued)

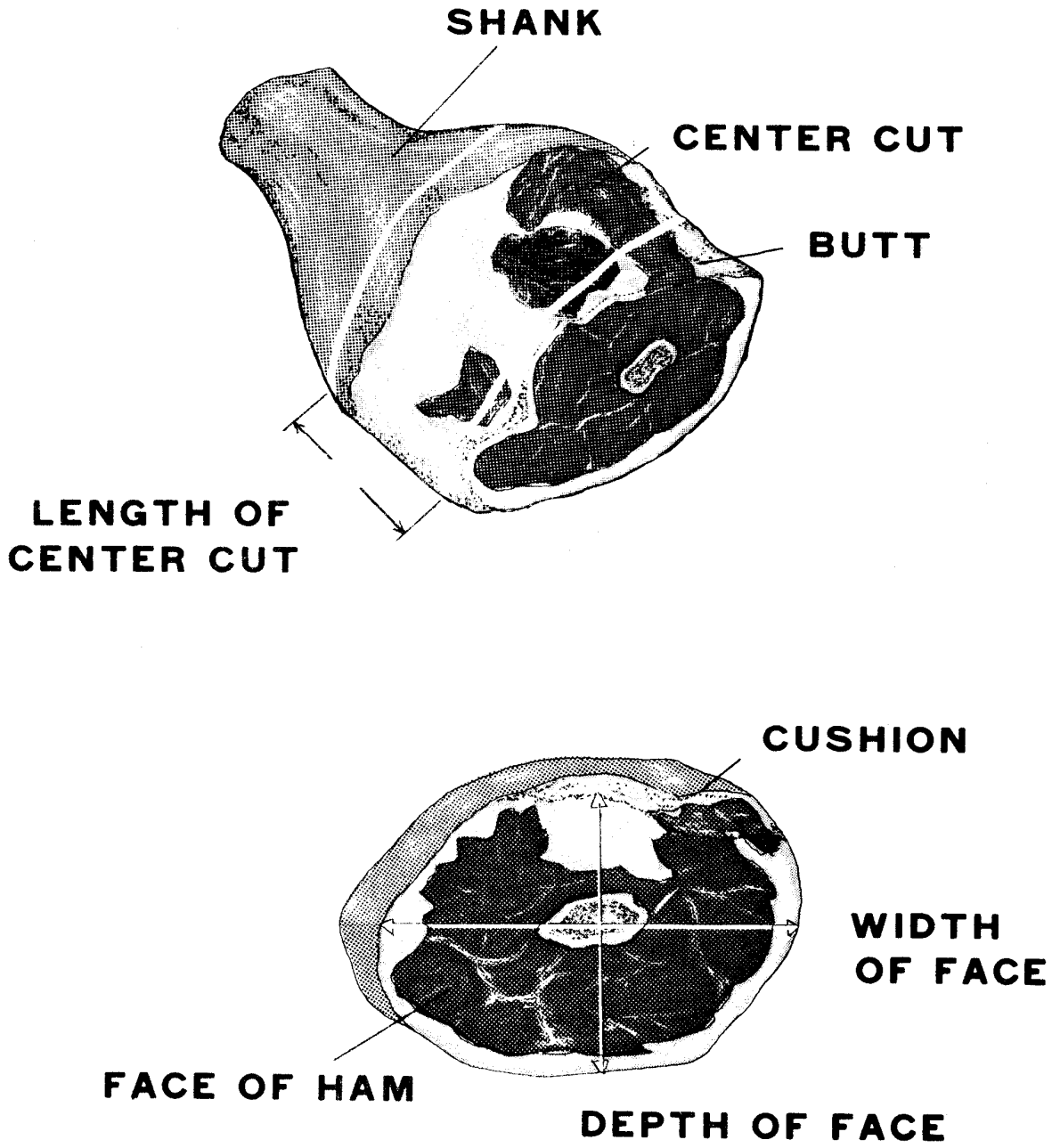
PARTS OF THE LOIN (SIRLOIN END VIEW)



PARTS OF THE RIB

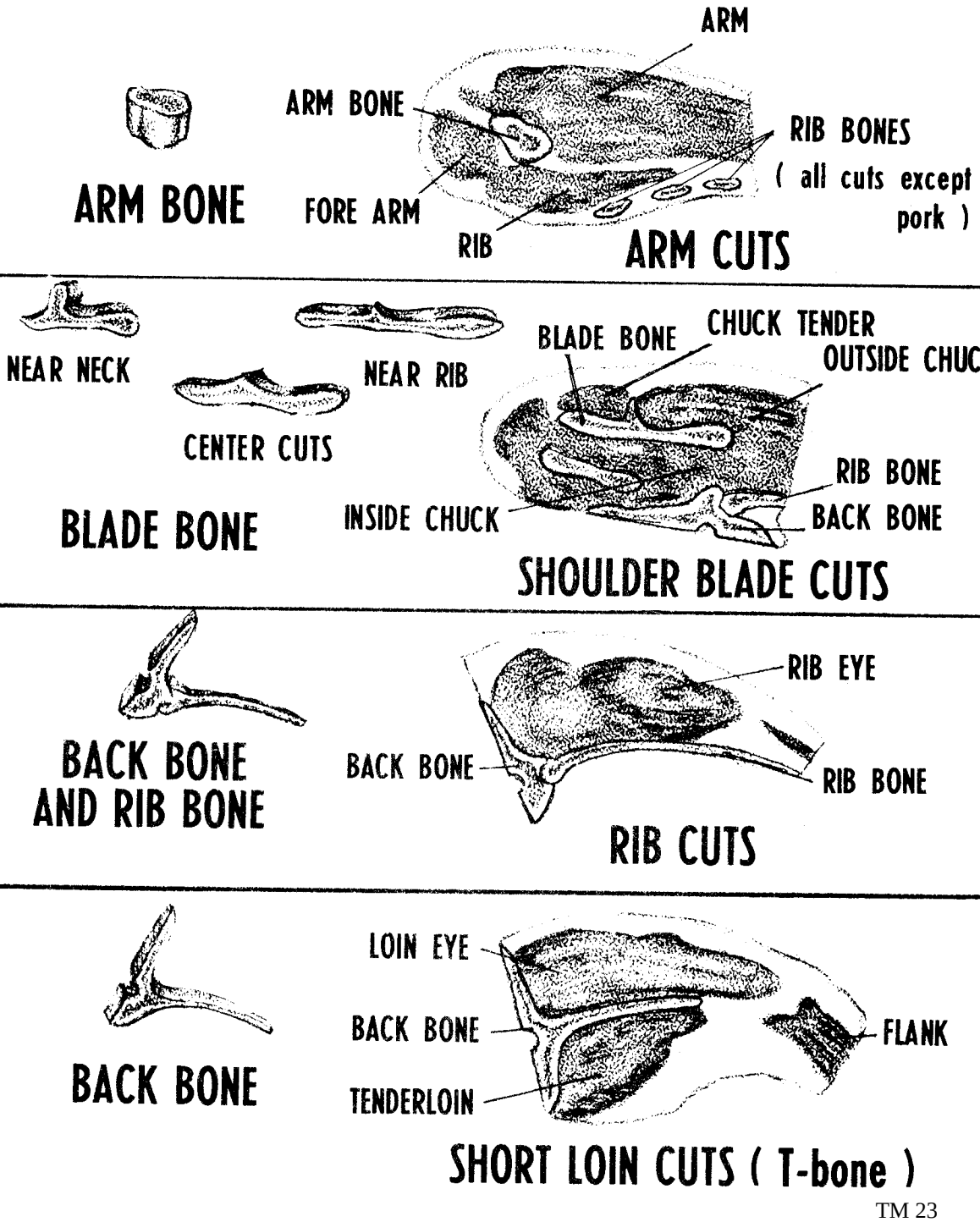


Parts Of A Ham



TM 22

Basic Retail Meat Cuts



TM 23

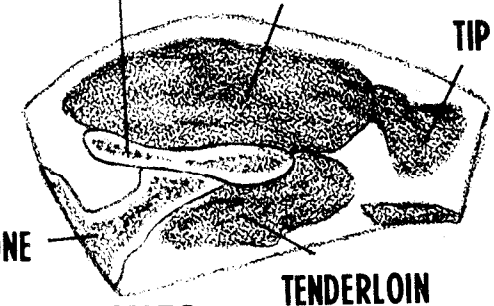
Basic Retail Meat Cuts
(Continued)

PIN BONE

FLAT BONE

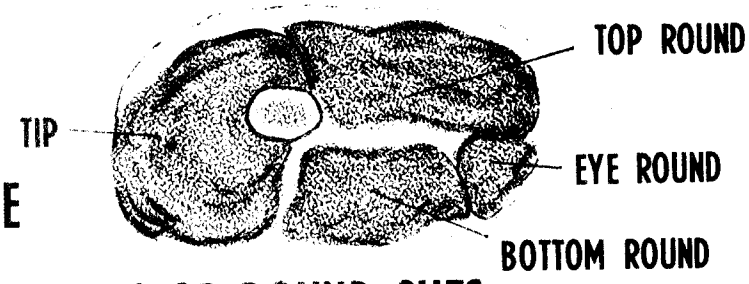
HIP BONE

WEDGE BONE



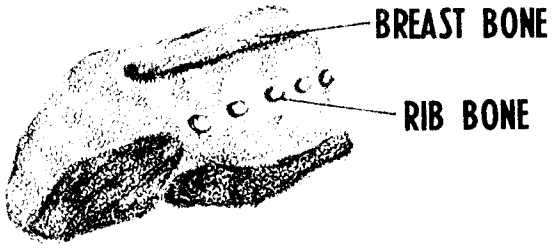
SIRLOIN CUTS

LEG OR ROUND BONE



LEG OR ROUND CUTS

BREAST AND RIB BONES



BRISKET CUTS

TM 24


Beef
• RETAIL CUTS •
WHERE THEY COME FROM
HOW TO COOK THEM
ROUND
SIRLOIN
SHORT LOIN
RIB
CHUCK
FLANK
SHORT PLATE
BRISKET
FORE SHANK
Round Steak
Braise, Panfry
Top Round Roast
Roast
Top Round Steak
Broil, Panbroil, Panfry
Boneless Rump Roast
Roast, Braise
Bottom Round Roast
Braise, Roast
Tip Roast, Cap Off
Roast, Braise
Eye Round Roast
Braise, Roast
Tip Steak
Broil, Panbroil, Panfry
ROUND
Sirloin Steak, Flat Bone
Broil, Panbroil, Panfry
Sirloin Steak, Round Bone
Broil, Panbroil, Panfry
Top Sirloin Steak
Broil, Panbroil Panfry
SIRLOIN
Shank Cross Cut
Braise, Cook in Liquid
Brisket, Whole
Braise, Cook in Liquid
Corned Brisket, Point Half
Braise, Cook in Liquid
Brisket, Flat Half
Braise
FORE SHANK & BRISKET
Chuck Eye Roast
Braise, Roast
Boneless Top Blade Steak
Braise, Panfry
Arm Pot Roast
Braise
Boneless Shoulder Pot Roast
Braise
Cross Rib Pot Roast
Braise
Mock Tender
Braise
Blade Roast
Braise
Under Blade Pot Roast
Braise, Roast
7-Bone Pot Roast
Braise
Short Ribs
Braise, Cook in Liquid
Flanken-Style Ribs
Braise, Cook in Liquid
CHUCK
THIS CHART APPROVED BY
NATIONAL LIVE STOCK & MEAT BOARD
T-Bone Steak
Broil, Panbroil, Panfry
Boneless Top Loin Steak
Broil, Panbroil, Panfry
Tenderloin Roast
Roast, Broil
Porterhouse Steak
Broil, Panbroil, Panfry
Tenderloin Steak
Broil, Panbroil, Panfry
SHORT LOIN
Rib Roast, Large End
Roast
Rib Roast, Small End
Roast
Rib Steak, Small End
Broil, Panbroil, Panfry
Rib Eye Steak
Broil, Panbroil, Panfry
Rib Eye Roast
Roast
Back Ribs
Braise, Cook in Liquid, Roast
RIB
Flank Steak
Broil, Braise, Panfry
Flank Steak Rolls
Braise, Broil, Panbroil, Panfry
Skirt Steak
Braise, Broil, Panbroil, Panfry
FLANK & SHORT PLATE
Ground Beef
Broil, Panfry, Panbroil, Roast (Bake)
Cubed Steak
Panfry, Braise
Beef for Stew
Braise, Cook in Liquid
Cubes for Kabobs
Broil, Braise
OTHER CUTS
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888500 06-406


Lamb
• RETAIL CUTS •
WHERE THEY COME FROM
HOW TO COOK THEM
LEG
LOIN
RIB
FORESHANK & BREAST
SHOULDER
Whole Leg
Roast
Short Cut Leg, Sirloin Off
Roast
Shank Portion Roast
Roast
Center Leg Roast
Roast
Center Slice
Broil, Panbroil, Panfry
American-Style Roast
Roast
Frenched-Style Roast
Roast
Boneless Leg Roast
Roast, Broil if butterflied
Hind Shank
Braise, Cook in Liquid
Sirloin Chop
Broil, Panbroil, Panfry, Braise
Boneless Sirloin Roast
Roast
LEG
Loin Roast
Roast
Loin Chop
Broil, Panbroil, Panfry
Double Loin Chop
Broil, Panbroil, Panfry
LOIN
Shank
Braise, Cook in Liquid
Spareribs
Braise, Broil, Roast
Boneless Rolled Breast
Roast, Braise
Riblets
Braise, Cook in Liquid, Broil
FORESHANK & BREAST
THIS CHART APPROVED BY
NATIONAL LIVE STOCK & MEAT BOARD
Rib Roast
Roast
Rib Chop
Broil, Panbroil, Panfry, Roast
Frenched Rib Chop
Broil, Panbroil, Panfry
Crown Roast
Roast
RIB
Square-Cut Shoulder, Whole
Roast, Braise
Pre-Sliced Shoulder
Roast, Braise
Boneless Shoulder Roast
Roast, Braise
Neck Slice
Braise, Cook in Liquid
Blade Chop
Braise, Broil, Panbroil, Panfry
Arm Chop
Braise, Broil, Panbroil, Panfry
SHOULDER
Lamb for Stew
Braise, Cook in Liquid
Cubes for Kabobs
Broil, Braise
Ground Lamb
Broil, Panbroil, Roast (Bake)
OTHER CUTS
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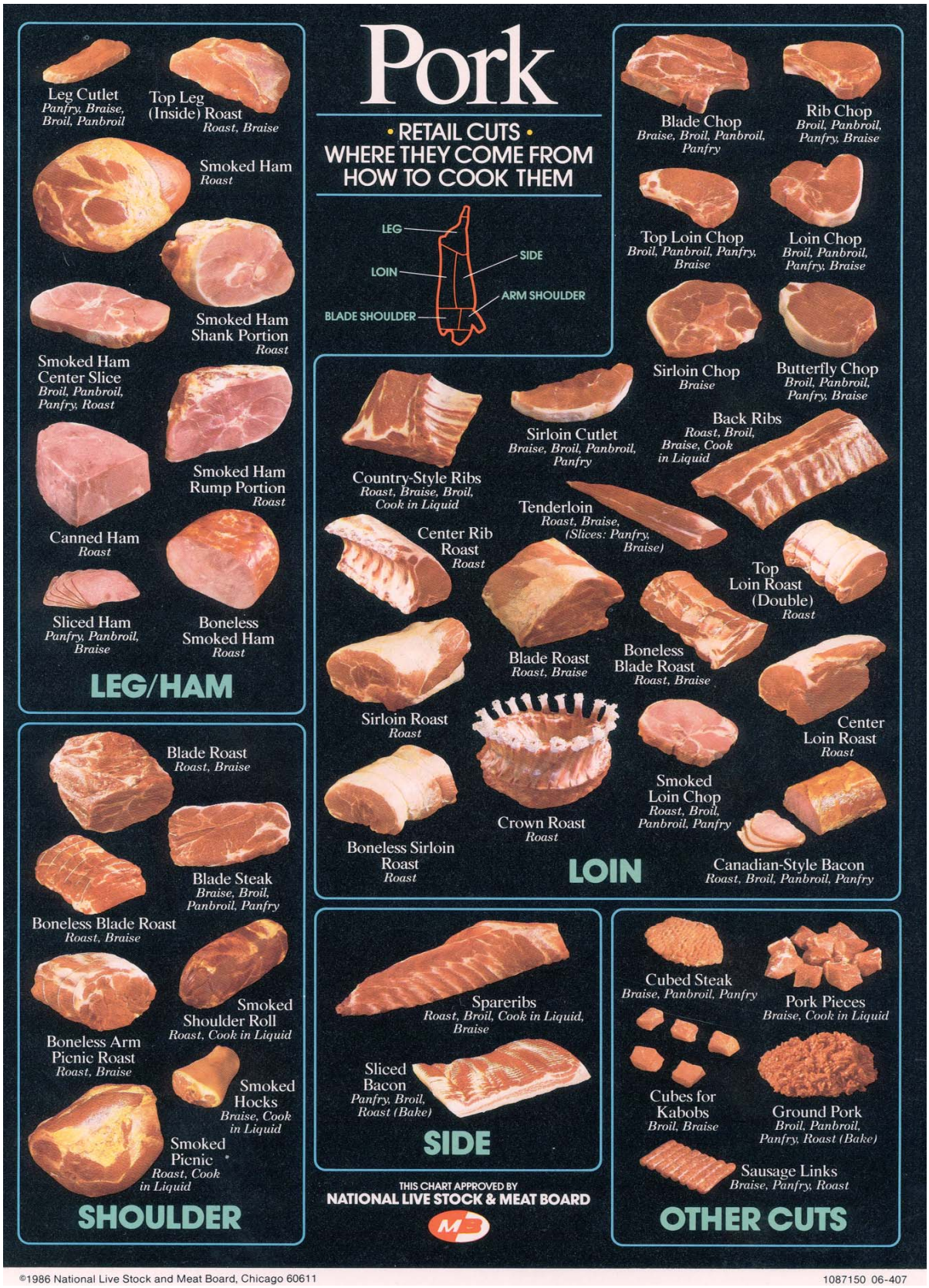
888100 06-408



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MEAT TECHNOLOGY

AG 140 - G

ASSIGNMENT SHEET #1--CALCULATE YIELD GRADES
FOR BEEF AND LAMB

Name_____ Score_____

Using one of the methods for calculating yield grades, determine the yield grades for the following carcasses.

Beef

	Fat Thickness (inches)	Carcass Weight (lbs)	Rib Eye Area (sq. inches)	Kidney, Pelvic and Heart Fat (%)		Calculated Yield Grade	Yield Grade
1.	0.1	625	13	3.5	=	_____	_____
2.	0.6	550	11	4.5	=	_____	_____
3.	0.3	600	12	3.5	=	_____	_____
4.	0.2	500	10	3.0	=	_____	_____
5.	0.8	750	14	3.0	=	_____	_____
6.	0.2	600	14	3.5	=	_____	_____

Lamb

	Adjusted Fat Thickness (inches)	Conformation Grade	Kidney and Pelvic Fat (%)		Calculated Yield Grade	Yield Grade
7.	.40	High Prime	4.5	=	_____	_____
8.	.05	High Utility	1.5	=	_____	_____
9.	.20	Average Choice	3.5	=	_____	_____
10.	.30	Low Prime	4.5	=	_____	_____
11.	.10	Low Good	2.5	=	_____	_____
12.	.10	Average Prime	2.5	=	_____	_____

MEAT TECHNOLOGY

AG 140 - G

ASSIGNMENT SHEET #2--IDENTIFY WHOLESALE AND RETAIL CUTS OF MEAT

Name_____ Score_____

Using slides or actual meat cuts, identify them using the meat identification card on the next page.

Identify meat cuts from the slides or actual meat cuts by matching the number on the right hand of the card to the blanks on the left.

Example: If the meat cut labeled No. 1 is a lamb roast the number to be placed in the blank beside number 1 is 39.

MEAT IDENTIFICATION CARD

Directions:
Identify meat cuts by matching the correct numbers at the right to the sample spaces below.

1._____
2._____
3._____
4._____
5._____
6._____
7._____
8._____
9._____
10._____
11._____
12._____
13._____
14._____
15._____
16._____
17._____
18._____
19._____
20._____
21._____
22._____
23._____
24._____
25._____
26._____
27._____
28._____
29._____
30._____

TOTAL SCORE

CLASS NO._____

CONTESTANT NO. _____

BEEF

Retail	Wholesale
1. Round Steak	
2. Top Round Steak	
3. Bottom Round Steak	
4. Eye Round Steak	
5. Tip Cap On (steak)	Round
6. Tip Cap On (roast)	
7. Tip Cap Off (steak)	
8. Tip Cap Off (roast)	
9. Heel of Round	
10. Rump Roast	
11. Rump Roast BNLS	
12. Sirloin Steak	
13. Top Sirloin Steak BNLS	
14. Sirloin Steak BNLS	Loin
15. Porterhouse Steak	
16. T-Bone Steak	
17. Top Loin Steak BNLS	
18. Tenderloin Steak	
19. Flank Steak	Flank
20. Roast-Large End	
21. Steak-Small End	Rib
22. Eye Steak	
23. Arm Pot-Roast	
24. Arm Steak	
25. Blade Roast	Chuck
26. Blade Steak	
27. Cross Rib Pot Roast	
28. Mock Tender	
29. Short Ribs	Plate
30. Whole BNLS	
31. Corned BNLS	Brisket
32. Foreshank	
33. Cross Cuts	Shank

LAMB

Retail	Wholesale
34. Frenched Style Roast	
35. American Style Roast	
36. Center Slice	Leg
37. Sirloin Half	
38. Sirloin Chops	
39. Roast	
40. Chop	Loin
41. Roast	
42. Chop	Rib
43. Square Cut (Whole)	
44. Arm Chop	Shoulder
45. Blade Chop	
46. Breast	Foreshank
47. Riblets	and
48. Foreshanks	Breast

PORK (FRESH)

Retail	Wholesale
49. Rump Portion	
50. Shank Portion	Leg (Ham)
51. Roast BNLS*	
52. Center Slice	
53. Center Rib Roast	
54. Sirloin Roast	
55. Blade Roast	Loin
56. Rib Chop	
57. Loin Chop	
58. Tenderloin (whole)	
59. Country Style Spareribs	
60. Fresh Side	Side(Belly)
61. Spareribs	
62. Arm Picnic	
63. Arm Roast	
64. Arm Steak	Shoulder
65. Blade Boston Roast	
66. Blade Steak	

PORK (Cured and Smoked)

Retail	Wholesale
67. Rump Half	
68. Shank Half	Ham
69. Center Slice	
70. Loin Chop	
71. Canadian Bacon	Loin
72. Picnic (Whole)	Shoulder
73. Slab Bacon	
74. Sliced Bacon	Side
75. Jowl	Miscellaneous

VARIETY MEATS

76. Beef	
77. Lamb	Liver
78. Pork	
79. Beef	
80. Lamb	Kidney
81. Pork	
82. Beef	
83. Pork	Heart
84. Beef	
85. Pork	Tongue
86. Sweetbreads	
87. Brains	
88. Pork Sausage	
89. Beef Stew	
90. Ground Beef	
91. Lamb Patties	

MEAT TECHNOLOGY

AG 140 - G

ASSIGNMENT SHEET #3--DETERMINE QUALITY GRADES OF BEEF, PORK AND LAMB FROM A DESCRIPTION OF THE CARCASSES

Name_____ Score_____

Using what you know about quality grading, determine the probable quality grades for the carcasses described below.

Beef

1. The rib bones of this carcass are slightly rounded and red and the lumbar vertebrae show slight ossification. It has no pizzle muscle. It has a slightly abundant amount of marbling and the lean is firm and light red.

   Quality grade_____

2. The rib bones of this carcass are white and flat and the sacral vertebrae are fused. The tips of the feather bones still have soft cartilage. The carcass has no pizzle muscle. The rib eye muscle has a maximum small amount of marbling.

   Quality grade_____

3. The tips of the feather bones of this carcass have only a thin ring of cartilage and the cartilage of the lumbar vertebrae is ossified. The pizzle eye is large. The lean is dark with a slight amount of marbling.

   Quality grade_____

4. This carcass has sacral vertebrae that are still separated and some slight ossification of the lumbar vertebrae. The rib bones are slightly rounded and red. The lean is firm and light red and contains a modest amount of marbling. The pizzle eye is small.

   Quality grade_____

5. This carcass is the same as above except it has a very dark colored lean and a moderate amount of marbling.

   Quality grade_____

Lamb

6. This carcass has moist, porous break joints and a bright pink color in the flanks. It has traces of flank streaking and has a choice conformation.

   Quality grade_____

7. This carcass has slightly red but dry break joints. It has a small amount of flank streaking. It has a low choice conformation.

Quality grade_____

Swine

8. This carcass has light colored, firm lean with a modest amount of marbling. It has thick muscling and 1.4 inches of backfat. It is 34 inches long.

Quality grade_____

9. This carcass has light colored lean with a slight amount of marbling. It has thick muscling with 1.8 inches of backfat. It is 34 inches long.

Quality grade_____

10. This carcass has light colored lean with a modest amount of marbling. It has very thick muscling nd
1.3 inches of backfat. This fat is soft and oily. The carcass is 33 inches long.

Quality grade_____

11. This carcass has light colored lean with a modest amount of marbling. It has very thick muscling and 1.6 inches of backfat. It is 34 inches long.

Quality grade_____

12. This carcass has light colored lean with a moderate amount of marbling. It has slightly thin muscling and 2.2 inches of backfat. It is 32 inches long.

Quality grade_____

13. This carcass has light colored lean with a moderate amount of marbling. It has moderately thick muscling and 2.2 inches of backfat. It is 34 inches long.

Quality grade_____

MEAT TECHNOLOGY

AG 140 - G

ASSIGNMENT SHEET #4--GRADE BEEF CARCASSES
FOR QUALITY AND YIELD

Name_____ Score_____

Visit a packing plant where you can get permission to grade some beef carcasses. Then answer the following questions about each of the carcasses and decide on a quality and yield grade for them. Record your information on the chart provided.

1. Is the carcass a bull, bullock or otherwise?

   (Hint: Check for the pizzle muscle and pizzle eye. The pizzle muscle is large and dark red in a bull or bullock and the pizzle eye is large. The bull or bullock also often has a noticeable crest. Remember that a bull is yield graded only and a bullock is designated bullock. A cow cannot grade prime. Check the vertebrae and chine bone to distinguish between the bull and the bullock. The pelvic cavity and the aitchbone should be checked to distinguish between a cow and a heifer.)

2. What maturity classification does this carcass fall into?

   (Hint: The categories are A, B, C, D and E with A being the youngest. Remember that the youngest animals have the most cartilage and the least fusion of vertebrae. They also have rounder and redder rib bones.)

3. What is the degree of marbling?

4. What is the quality grade?

   (Hint: Use the chart included with this assignment sheet.)

5. How many inches of fat are there over the rib eye muscle?

   (Hint: Take the measurement three-fourths of the length of the rib eye from the chine bone end.)

6. How many square inches in the rib eye muscle?

   (Hint: It may be helpful to use a plastic grid until you gain some experience.)

7. Is there an average amount of kidney, pelvic and heart fat?

   (Hint: The average amount is 3.5% of the carcass weight for yield grade 2. It is 2.5% for yield grade 1, 4% to 4.5% for yield grade 3 and 4.5% to 5% for yield grade 4. Good luck on this one! It will take a little experience to make this judgement.)

8. What is the carcass weight?

9. What is the yield grade of this carcass?

(Hint: Use the formula provided with this information sheet or the Preliminary Yield Grade method which is also outlined for you.)

Yield Grade Formula for Beef

Yield grade = 2.5 +(2.5 x adjusted fat thickness, inches) +(.2 x % kidney, pelvic and heart fat) + (.0038 x hot carcass weight) – (.32 x rib eye area, square inches)

Preliminary Yield Grade Method for Beef

Fat Thickness Over Rib Eye (inches)		PYG	Fat Thickness Over Rib Eye (inches)		PYG
0.0	=	2.0	0.6	=	3.5
0.1	=	2.25	0.7	=	3.75
0.2	=	2.5	0.8	=	4.0
0.3	=	3.0	0.9	=	4.25
0.4	=	3.25	1.0	=	4.5

Carcass weight – Subtract .1 for each 25 pounds under 600 pounds and add .1 for each 25 pounds over 600 pounds.

Rib eye area – Subtract .3 for each square inch over 11 square inches and add .3 for each square inch under 11 square inches.

Kidney fat – Subtract .1 for each .5% under 3.5% and add .1 for each 5% over 3.5%.

Relationship Between Marbling, Maturity and Carcass Quality Grade

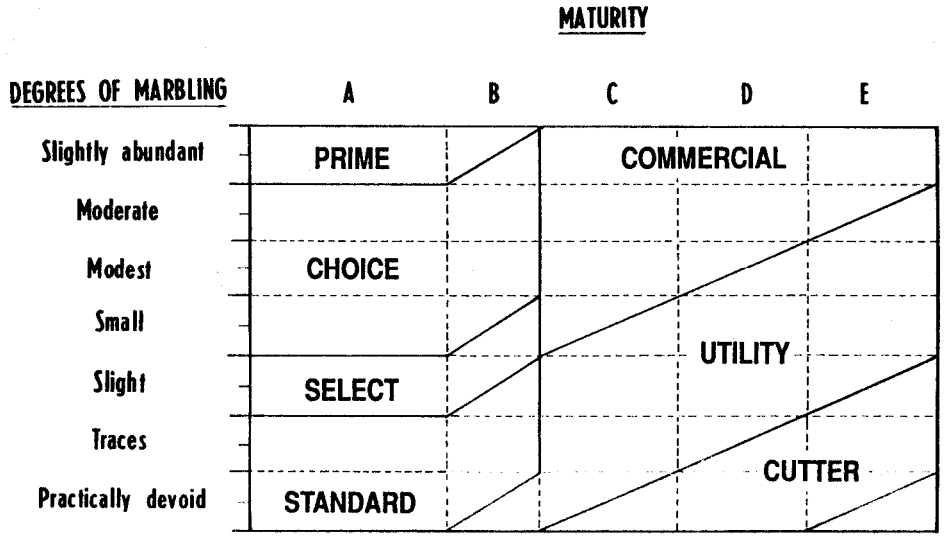


Chart For Recording Quality and Yield Grade Information

Carcass No.	Sex	Maturity	Degree of Marbling	Quality Grade	Fat Over Rib Eye	Rib Eye Size (sq. inches)	Amount of Internal Fat (%)	Carcass Weight	Yield Grade

Name _____ Score _____

MEAT TECHNOLOGY

AG 140 - G

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

	Calculated yield grade			
Beef	Using PYG	Using Formula	Yield Grade	
1.	1.75	1.67	1	low
2.	3.5	3.47	3	average
3.	2.45	2.39	2	average
4.	2.3	2.3	2	high
5.	3.6	3.47	3	average
6.	1.6	1.5	1	average
Lamb				
7.	4.72	4.70	4	low
8.	2.08	2.07	2	high
9.	3.33	3.32	3	high
10.	4.15	4.13	4	high
11.	2.62	2.60	2	average
12.	2.27	2.25	2	high

(Note: Discrepancies between the two calculated figures are due to rounding errors in the development of the PYG.)

Assignment Sheet #2

Answered to the satisfaction of the instructor.

Assignment Sheet #3

1.	Low Prime	7.	Choice
2.	High Select	8.	U.S. No. 1
3.	None since animal is a bull	9.	U.S. No. 2
4.	Average Choice	10.	Utility
5.	High Select	11.	U.S. No. 1
6.	Choice	12.	U.S. No. 4
		13.	U.S. No. 3

Assignment Sheet #4

Answered to the satisfaction of the instructor.

MEAT TECHNOLOGY

AG 140 - G

UNIT TEST

Name_____ Score_____

1. Match the terms on the right to their definitions.

_____a. Firm, resilient tissue forming parts of the skeleton; more abundant in young animals

_____b. Cartilage changing into bone

_____c. Weight of carcass before cooling

_____d. Body of animal with skin or hide, entrails and outer extremities removed

_____e. A type of protein which causes changes in other substances without being changed itself

_____f. Young bull

_____g. Thin cut of meat usually less than 1 1/2 inches

_____h. Attachment of the retractor penis muscle

_____i. Amount of meat in comparison to bone and fat (not to be confused with dress yield or dressing percentage)

_____j. Preliminary yield grade

_____k. Large muscle laying outside the rib; used as an indicator of quality and yield

_____l. Thymus glands or pancreas

_____m. Hump over the back of a bull above the shoulders

_____n. Allowing time for enzymes naturally in the meat to break down meat fibers

_____o. Visual appearance of the carcass

_____p. Age of animal as indicated by carcass characteristics

_____q. Part of the flesh consisting of muscle without the fat

1. Maturity
2. Pizzle eye
3. Bullock
4. Enzyme
5. PYG
6. Yield
7. Rib eye
8. Aging
9. Marbling
10. Cartilage
11. Steak
12. Hot carcass weight
13. Conformation
14. Cod
15. Carcass
16. Quality
17. Crest
18. Lean
19. Sweetbreads
20. Roast
21. Ossification

_____r. Thick cut of meat usually 2 inches thick or more

_____s. Edibility of the meat

_____t. Part of the scrotum left after castration

_____u. Flecks of fat within the meat

2. Describe basic regulations affecting meat distribution in the United States by completing the following:

Meat packing plants must operate according to a._____ or _____ standards. State standards are b._____ federal standards. Meat inspection is carried out by c._____ or _____ inspectors. Federally approved carcasses carry an d._____. Meat must be from e._____ animals that are slaughtered and processed under f._____ conditions. Quality and yield grading are (voluntary or required) g._____. All beef graded for quality must also h._____.

3. List in order the steps meat goes through from slaughter to market.

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

4. Describe how aging occurs and the three types of aging.

a. How aging occurs_____

_____

b. Natural aging _____

_____

c. Dry-aging method_____

_____

d. Fast-aging method _____

_____

5. Distinguish between quality grades (QG) and yield grades (YG) by placing a QG or YG in front of the appropriate statements.

_____a. Reflect the ratio of lean to fat

_____b. Reflect the edibility of the meat

_____c. Primarily determined from carcass maturity and amount of fat within the meat

_____d. Primarily determined from amount of external and internal fat and size of rib eye muscle

6. List in order from highest to lowest the quality grades of beef, lamb and pork.

Beef

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

g. _____

h. _____

Lamb

i. _____

j. _____

k. _____

l. _____

m. _____

Pork

n. _____

o. _____

p. _____

q. _____

r. _____

7. Match the sex conditions listed on the right to the carcass characteristics that indicate that condition. (Note: The sex conditions may be used more than once.)

_____a.	Noticeable crest	1.	Steer
_____b.	Relatively small pizzle eye	2.	Heifer
_____c.	Large pelvic cavity; no pizzle eye	3.	Cow
_____d.	Rough, irregular fat in cod region; light colored pizzle muscle	4.	Bull, bullock
_____e.	No pizzle muscle or pizzle eye; slightly curved aitchbone		
_____f.	Nearly straight aitchbone; no irregular fat in cod region		
_____g.	Small, round muscle next to hip bone		
_____h.	Relatively large area of lean exposed under the aitchbone; small pelvic cavity		

8. Match the carcass maturity categories for beef on the right to the correct description of their carcass characteristics.

_____a.	Tips of feather bones beginning to ossify in center	1.	15-30 months of age
_____b.	Sacral vertebrae fused; Cartilage on lumbar vertebrae ossified; Rib bones white and flat; Feather bones still have soft cartilage on tips	2.	30-42 months of age
		3.	42-72 months of age
_____c.	Tips of feather bones completely ossified	4.	72-96 months of age
_____d.	Slightly red and slightly soft chine bones; Cartilage on ends of thoracic vertebrae is starting to ossify; Sacral vertebrae are fused; Cartilage on lumbar vertebrae is almost completely ossified	5.	96+ months of age
		6.	Maximum maturity for a bullock carcass
_____e.	Only a thin ring of cartilage left on tips of feather bones		
_____f.	Sacral vertebrae still separated; Slight ossification of lumbar vertebrae; Rib bones slightly rounded and red		

9. Describe the standards for grading beef, pork and lamb by completing the following information.

Beef

Carcasses under a._____ months may grade b._____ through c._____. Carcasses over d._____ months grade e._____ through f._____. Carcasses in the "B" maturity category need more g._____ to remain in the same grade as carcasses in the "A" maturity. Marbling is determined in the h._____ muscle. Carcass grade increases as marbling i._____. Beef that is j._____ in color can lower the quality grades of Prime, Choice and Select one full grade and Standard or Commercial k._____ grade.

Lamb

Lamb grades are determined by combining l._____, m._____, and n._____. Carcasses must have o._____ on both front shanks to be graded as lambs. Quality is based on the p._____ of the flanks, q._____ on the inside of the flanks.

Pork

A pork carcass will grade r._____ unless lean is slightly firm, contains a slight amount of s._____ and is grayish pink to moderately dark red. t._____ fat will cause a carcass to grade utility. The yield of the four lean cuts is based primarily on the relationship between u._____ and v._____. Muscling for grades are, w._____(3); x._____ (2); and, y._____(1). z._____ and aa._____ determines grade for the carcass.

10. Calculate yield grades for the carcasses described.

Beef

	Adjusted Fat Thickness (inches)	Carcass Weight (lbs)	Rib Eye Area (sq. inches)	Kidney, Pelvic and Heart Fat (%)		Calculated Yield Grade	Yield Grade
a.	.4	550	13	2.5	=	_____	_____
b.	.8	650	14	3.5	=	_____	_____

Lamb

	Adjusted Fat Thickness (inches)	Conformation Grade	Kidney and Pelvic Fat		Calculated Yield Grade	Yield Grade
c.	.4	High Prime	4.5	=	_____	_____
d.	.2	Low Choice	3.5	=	_____	_____

11. Calculate yield grades for the carcasses described using the preliminary yield grade method.

Beef

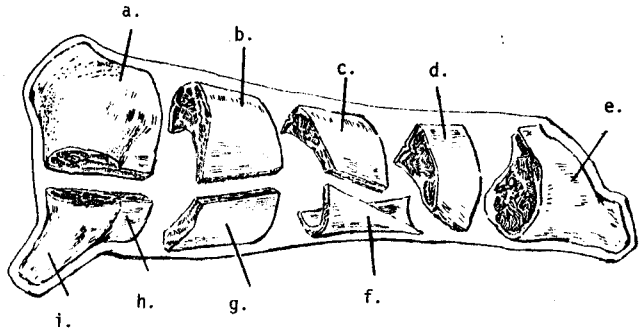
	Preliminary Yield Grade	Carcass Weight (lbs)	Rib Eye Area (in)	Kidney, Pelvic and Heart Fat (%)		Calculated Yield Grade	Yield Grade
a.	3	650	15	3.5	=	_____	_____
b.	2.5	550	12	2.5	=	_____	_____

Lamb

	Preliminary Yield Grade	Leg Conformation	Kidney and Pelvic Fat		Calculated Yield Grade	Yield Grade
c.	3	Low Choice	2.5	=	_____	_____
d.	4	High Prime	4.5	=	_____	_____

12. Label the wholesale cuts of beef, lamb and pork.

Beef



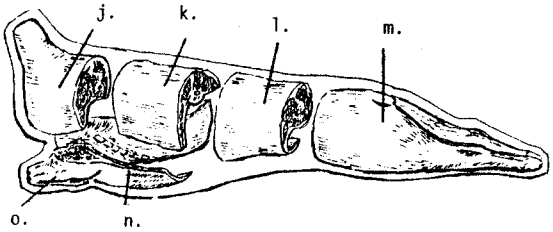
a. _____ f. _____

b. _____ g. _____

c. _____ h. _____

d. _____ i. _____

Lamb

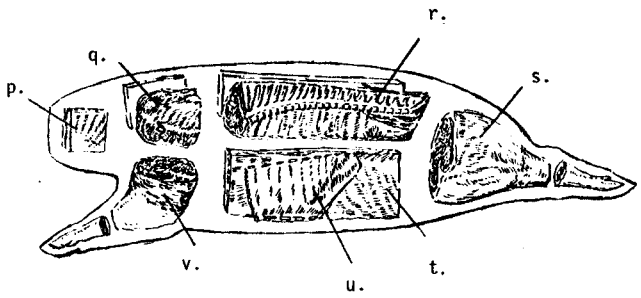


j. _____ m. _____

k. _____ n. _____

l. _____ o. _____

Pork



p. _____ t. _____

q. _____ u. _____

r. _____ v. _____

s. _____

13. Distinguish between undesirable (UD) and desirable (D) characteristics of wholesale cuts of beef and pork by putting UD or D in front of the appropriate statements.

_____ a. Soft, coarse fat

_____ b. Yellow fat

_____ c. White fat

_____ d. Dark colored lean

_____ e. Firm, fine texture

_____ f. Well muscled with a minimum of external fat

_____ g. Moisture “weeping” from the lean

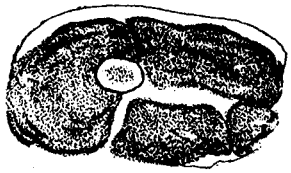
_____ h. Well marbled

_____ i. Soft, oily fat

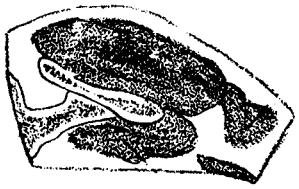
_____ j. Small muscles

_____ k. Skeletal characteristics indicating acceptable maturity

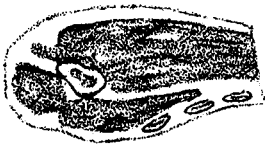
14. Identify the seven basic retail cuts of meat. Choose from arm cuts, shoulder blade cuts, rib cuts, short loin cuts, sir loin cuts, leg or round cuts, and brisket cuts.



a. _____



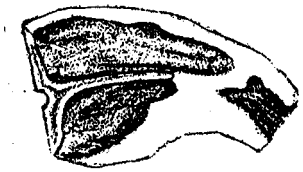
b. _____



c. _____

d. _____

e. _____



f. _____

g. _____

15. List the retail cuts of beef under the appropriate wholesale cut. You need only list the number indicated although there are probably more retail cuts than the number calls for.

Chuck

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

Rib

g. _____

h. _____

i. _____

Loin

j. _____

k. _____

l. _____

m. _____

Round

n. _____

o. _____

p. _____

q. _____

r. _____

Flank

s. _____

Short plate

t. _____

Brisket

u. _____

Fore shank

v. _____

16. List the retail cuts of lamb under the appropriate wholesale cut. You need only list the number indicated.

Shoulder

a. _____

b. _____

c. _____

Rib

d. _____

e. _____

Loin

f. _____

Leg

g. _____

h. _____

i. _____

Breast

j. _____

Fore shank

k. _____

17. List the retail cuts of pork under the appropriate wholesale cut. You need only list the number indicated. Include at least one smoked cut under each wholesale cut.

Picnic Shoulder

a. _____

b. _____

c. _____

Boston Shoulder

d. _____

e. _____

f. _____

Loin

g. _____

h. _____

i. _____

j. _____

k. _____

l. _____

m. _____

Leg or Ham if smoked

n. _____

o. _____

p. _____

q. _____

Side Pork or Bacon if smoked

r. _____

s. _____

Spareribs

t. _____

18. List the variety meats.

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

MEAT TECHNOLOGY

AG 140 - G

ANSWERS TO TEST

1.

a.	10	g.	11	m.	17	s.	16
b.	21	h.	2	n.	8	t.	14
c.	12	i.	6	o.	13	u	.9
d.	15	j.	5	p.	1		
e.	4	k.	7	q.	18		
f.	3	l.	19	r.	20		

2.

a.	federal or state	e.	healthy
b.	equal to	f.	sanitary
c.	federal or state	g.	voluntary
d.	inspection stamp	h.	be yield graded

3.

a.	slaughter	d.	carcass inspection and grading
b.	dressing out	e.	shipment to retailers
c.	aging	f.	packaging and labeling

4.

a. Enzymes naturally found in the meat break down the fibers making the meat taste better
b. Occurs as meat moves through the normal channels of distribution
c. Meat is held 2 to 3 weeks at 34oF to 38oF
d. Meat is held for 2 days or less at 70oF and high humidity under ultraviolet lights

5.

a.	YG	c.	QG
b.	QG	d.	YG

6. Beef: Prime; Choice; Select; Standard; Commercial; Utility; Cutter; Canner
Lamb: Prime; Choice; Good; Utility; Cull
Pork: U.S. No. 1; U.S. No. 2; U.S. No. 3; U.S. No. 4; U.S. Utility

7.

a.	4	d.	1	g.	4
b.	1	e.	2	h.	2
c.	3	f.	3		

8.

a.	3	d.	6
b.	2	e.	4
c.	5	f.	1

9.

Beef		Lamb		Pork	
a.	42	l.	Maturity *	r.	Utility
b.	Prime *	m.	Conformation *	s.	Marbling
c.	Standard *	n.	Quality *	t.	Soft and oily
d.	42	o.	Break joints	u.	Length *
e.	Commercial *	p.	Fullness and firmness	v.	Backfat thickness *
f.	Canner *	q.	Fat streaks	w.	Thick
g.	Marbling			x.	Average
h.	Rib eye			y.	Thin
i.	Increases			z.	Fat thickness *
j.	Unusually dark			aa.	Muscling *
k.	1/2				

(Note: Adjacent answers with an * can be switched and still be correct.)

10.

a.	1.93	or	1 low
b.	3.19	or	3 high
c.	4.75	or	4 low
d.	3.37	or	3 high (or 3 average)

11.

a.	2	or	2 high	
b.	1.8	or	1 low	
c.	2.8	or	2 low	
d.	4.05	or	4 high	

12.

Beef		Lamb		Pork	
a.	Chuck	j.	Shoulder	p.	Jowl
b.	Rib	k.	Rib	q.	Shoulder (Boston)
c.	Short loin	l.	Loin	r.	Loin
d.	Sirloin	m.	Leg	s.	Ham
e.	Round	n.	Breast	t.	Bacon
f.	Flank	o.	Fore shank	u.	Spareribs
g.	Short plate			v.	Picnic shoulder
h.	Brisket				
i.	Fore shank				

13.

a.	UD	d.	UD	g.	UD	j.	UD
b.	UD	e.	D	h.	D	k.	D
c.	D	f.	D	i.	UD		

14.

a.	Leg or round cut	e.	Rib cut
b.	Sirloin cut	f.	Short loin cut (T-bone)
c.	Arm cut	g.	Shoulder blade cut
d.	Brisket cut		

15. Answers should include the number indicated of the retail cuts listed under each wholesale cut.

Chuck (6)
Beef Chuck Arm Pot-Roast; Beef Chuck Arm Pot-Roast Boneless; Beef Chuck Arm Steak; Beef Chuck Arm Steak Boneless; Beef Chuck Shoulder Pot-Roast Boneless; Beef Chuck Shoulder Steak Boneless; Beef Chuck Cross Rib Pot-Roast; Beef Chuck Cross Rib Pot-Roast Boneless; Beef Chuck Short Ribs; Beef Chuck Flanken Style Ribs; Beef Chuck Blade Roast; Beef Chuck Blade Steak; Beef Chuck 7-Bone Pot-Roast; Beef Chuck Steak; Beef Chuck Top Blade Pot-Roast; Beef Chuck Top Blade Steak; Beef Chuck Under Blade Pot-Roast; Beef Chuck Under Blade

Steak; Beef Chuck Under Blade Pot-Roast Boneless; Beef Chuck Under Blade Steak Boneless; Beef Chuck Mock Tender; Beef Chuck Top Blade Roast Boneless; Beef Chuck Top Blade Steak Boneless; Beef Chuck Eye Roast Boneless; Beef Chuck Eye Steak Boneless

Rib (3)
Beef Rib Roast Large End; Beef Rib Roast Small End; Beef Rib Steak Small End; Beef Rib Steak Small End Boneless; Beef Rib Eye Roast; Beef Rib Eye Steak

Loin (4)
Beef Loin Top Loin Steak; Beef Loin Top Loin Steak Boneless; Beef Loin T-bone Steak; Beef Loin Porterhouse Steak; Beef Loin Wedge Bone Sirloin Steak; Beef Loin Round Bone Sirloin Steak; Beef Loin Flat Bone Sirloin Steak; Beef Loin Pin Bone Sirloin Steak; Beef Loin Shell Sirloin Steak; Beef Loin Sirloin Steak Boneless; Beef Loin Top Sirloin Steak Boneless; Beef Loin Tenderloin Roast; Beef Loin Tenderloin Steak

Round (5)
Beef Round Steak; Beef Round Steak Boneless; Beef Round Rump Roast; Beef Round Rump Roast Boneless; Beef Round Heel of Round; Beef Round Bottom Round Roast; Beef Round Eye Round Roast; Beef Round Eye Round Steak; Beef Round Tip Roast; Beef Round Tip Roast Cap Off; Beef Round Tip Steak Cap Off; Beef Round cubes for kabobs; Beef Round Top Round Roast; Beef Round Top Round Steak

Flank (1): Beef Flank Steak; Beef Flank Steak Rolls

Short plate (1): Beef Plate Skirt Steak Boneless; Beef Plate Skirt Steak Rolls Boneless

Brisket (1): Beef Brisket Point Half Boneless; Beef Brisket Flat Half Boneless

Fore shank (1): Beef Shank Cross Cuts

16. Answers should include the number indicated of the retail cuts listed under each wholesale cut.

Shoulder (3)
Lamb Shoulder Square Cut Whole; Lamb Shoulder Roast Boneless; Lamb Shoulder Blade Chops; Lamb Shoulder Arm Chops; Lamb Shoulder Neck Slices

Rib (2)
Lamb Rib Roast; Lamb Rib Chops; Lamb Rib Crown Roast

Loin (1): Lamb Loin Chops; Lamb Loin Double Chops; Lamb Loin Double Chops Boneless

Leg (3)
Lamb Leg Sirloin Chops; Lamb Leg Whole; Lamb Leg Roast Boneless; Lamb Leg Short Cut Sirloin Off; Lamb Leg Shank Half; Lamb Leg Frenched Style Roast; Lamb Leg American Style Roast

Breast (1): Lamb Breast; Lamb Breast Riblets

Fore shank (1): Lamb Shank

17. Answers should include the number indicated of the retail cuts listed under each wholesale cut. Answers should also include at least one smoked cut under each wholesale cut except for spareribs.

Picnic Shoulder (3)
Pork Shoulder Arm Picnic; Pork Shoulder Arm Roast; Pork Shoulder Arm Steak; Pork Hocks; Smoked Pork Shoulder Picnic Whole; Smoked Pork Hocks

Boston Shoulder (3)
Pork Shoulder Blade (Boston) Roast; Pork Shoulder Blade (Boston) Roast Boneless; Pork Shoulder Blade Steak; Smoked Pork Shoulder Roll

Loin (7)
Pork Loin Blade Roast; Pork Loin Blade Chops; Pork Loin Country Style Ribs; Pork Loin Back Ribs; Pork Loin Center Rib Roast; Pork Loin Rib Chops; Pork Loin Rib Chops for Stuffing; Pork Loin Center Loin Roast; Pork Loin Top Loin Chops; Pork Loin Butterfly Chops; Pork Loin Top Loin Roast Boneless (Double); Pork Loin Chops; Pork Loin Sirloin Roast; Pork Loin Sirloin Chops; Pork Loin Sirloin Cutlets; Pork Loin Tenderloin Whole; Pork Loin Tenderloin Pieces; Smoked Pork Loin Canadian Style Bacon; Smoked Pork Loin Rib Chops; Smoked Pork Loin Chops

Leg or Ham if smoked (4)
Pork Leg (Fresh Ham) Whole; Pork Leg (Fresh Ham) Roast Boneless; Pork Leg (Fresh Ham) Shank Portion; Smoked Ham Whole; Smoked Ham Shank Portion; Smoked Ham Rump Portion; Smoked Ham Center Slices; Smoked Ham Boneless Center Slices

Side Pork or Bacon if smoked (2): Fresh Side Pork; Slab Bacon; Sliced Bacon

Spareribs (1): Pork Spareribs

18. Livers; Kidneys; Hearts; Tongues; Brains; Sweetbreads

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 140 - H

UNIT OBJECTIVE

After completing this unit, students should be able to choose and plan a Supervised Agricultural Experience Program. Students should be able to list sources and steps involved in securing a loan. Students should also be able to complete the SOEP Planning and Accounting Book. This knowledge will be demonstrated by completing the assignment sheets and unit test with a minimum score of 85 percent accuracy.

SPECIFIC OBJECTIVES AND COMPETENCIES

After completion of this unit, the student should be able to:

1. Match terms associated with SAE to their correct definitions.
2. Describe the three types of SAE programs.
3. List six reasons for participating in a Supervised Agricultural Experience Program.
4. Select from a list factors to consider when choosing an SAE program.
5. List four factors to consider in developing a plan for a long-term SAE program.
6. List five characteristics of a good SAE program.
7. List six student responsibilities in conducting SAE programs.
8. Select an occupational objective.
9. Prepare a plan for a long-term SAE program.
10. List four sources for financing productive enterprises.
11. Arrange in order the steps involved in obtaining a loan from a credit source.
12. List the types of SAE program records.
13. List five reasons for keeping records on your SAE program.
14. Select from a list standards for keeping records on your SAE program.
15. Record all transactions and activities pertinent to a sample SAE program.
16. Evaluate the overall quality and value of your current SAE program.

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 140 - H

SUGGESTED ACTIVITIES

I. Suggested activities for instructor

A. Order materials to supplement unit.

1. Literature

a. *SOEP Planning and Accounting Book.* Available from Interstate Printers and Publishers, Inc., Danville, Illinois (Sold in packages of 20).

2. Filmstrips, slide shows, etc.

a. *SOE: Bridging the Gap.* Color, 12 minute film. Available from National FFA Center, 5632 Mount Vernon Memorial Highway, P.O. Box 15160, Alexandria, Virginia 22309. (Also available on a free loan basis from Vernard Films, Box 1332, Peoria, Illinois 61654.)

b. *Keeping America on the Grow.* Available on 16 mm film, slide show or filmstrip from the National FFA Center, 5632 Mount Vernon Memorial Highway, P.O. Box 15160, Alexandria, Virginia 22309, (703) 360-3600.

c. *SOE Series*. A set of five filmstrips available from the National FFA Center, 5632 Mount Vernon Memorial Highway, P.O. Box 15160, Alexandria, Virginia 22309, (703) 360-3600.

B. Make transparencies.

C. Provide students with objective sheet.

D. Provide students with information and assignment sheets.

E. Discuss unit and specific objectives.

F. Invite a more experienced or former FFA member to discuss how the SAE program and record keeping are the starting points for students who wish to receive various proficiency awards and to earn advanced degrees.

G. Relate the detailed planning of successful SAE programs to business planning.

H. Discuss other students' successes related to SAE program activities and expansions.

I. Challenge students to make the most of their SAE program--explain how others are involved. (For example: parents, employees, etc.)

J. Invite two or three former FFA members to discuss how important record keeping is to them and to those they work with. Try to include a variety of occupations, such as farmer, banker, business owner, business manager, accountant, sales clerk, etc.

K. Discuss financial records required when applying for loans.

L. Discuss information and assignment sheets.

(Note: All assignment sheets will require extensive guidance from the instructor.)

M. Review and give test.

N. Reteach and retest if necessary.

II. Instructional materials

A. Objective sheet

B. Suggested activities

C. Information sheet

D. Transparency masters

1. TM 1--What is an SAE Program?

2. TM 2--SAE Program Structure

3. TM 3--Relationship Between Classroom - Laboratory Instruction, SAE and FFA

4. TM 4--Where Can I Get Agricultural Experiences?

5. TM 5--Occupational Areas in Agriculture

6. TM 6--Ownership SAE Programs Requires...

7. TM 7--Examples of Ownership Programs in SAE

8. TM 8--Indicators of Successful Ownership SAE Programs

9. TM 9--Examples of Placement Programs in SAE

10. TM 10--Characteristics of an Effective Placement SAE Program

11. TM 11--Indicators of Successful Placement SAE Programs

12. TM 12--Tips for Successful Employment

13. TM 13--Tips on Making a Job Interview

14. TM 14--Comparing Two Jobs

15. TM 15--Examples of Improvement Projects

16. TM 16--Examples of Occupational Skills

17. TM 17--How Do People Learn New Skills?

18. TM 18--Characteristics of a Good SAE Program

19. TM 19--Two Ways to Expand Ownership SAE Programs

20. TM 20--Ways to Expand a Placement Program

21. TM 21--Student Responsibilities in Conducting SAE Programs

22. TM 22--Types of SAE Program Records

23. TM 23--Why Keep Records on Your SAE Program?

24. TM 24--Crop Records Help Determine:

25. TM 25--Livestock Records Help Determine:

26. TM 26--Efficiency Factors

27. TM 27--Standards for Keeping Records on Your SAE Program

28. TM 28--Records Are Important

E. Assignment sheets

1. AS 1--Select an Occupational Objective

2. AS 2--Prepare a Plan for a Long-Term SAE Program

3. AS 3--Sample Record Book Problem

4. AS 4--Supplemental Record Book Problem: Supervised Occupational Skills Record

5. AS 5--Self-evaluation of My SAE Program

F. Answers to assignment sheets

G. Test

H. Answers to test

III. Unit references

A. *Agricultural Education Curriculum.* College of Agriculture, University of Illinois, Urbana, Illinois.

B. Carwin, Merle A. *Supervised Occupational Experience Manual for Students of Vocational Agriculture.* The Interstate Printers and Publishers, Inc., Danville, Illinois 61832.

C. Cooper, Elmer L. *Agriscience Fundamentals and Applications.* Delmar Publishers, Inc., Albany, New York, 1990.

D. *Model Agricultural Core Curriculum.* State Department of Education, University of California, Davis, August 1989.

E. *Supervised Occupational Experience Handbook.* National FFA Foundation.

F. *Vocational Agriculture I.* Oklahoma State Department of Vocational and Technical Education, Stillwater, Oklahoma.

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 140 - H

INFORMATION SHEET

I. Terms and definitions

A. Supervised Agricultural Experience (SAE) Program--Consists of practical agricultural activities performed by students outside of scheduled classroom and laboratory time

B. Occupational experience--Part of SAE program that involves production farming or agribusiness employment to gain knowledge, skill, on-the-job experience and income

C. Laboratory experience--Part of SAE program that involves ownership or placement experiences in school or community facilities under the direction of the vocational agriculture instructor. Students are not paid for this experience

D. Occupational skills--Part of the SAE program that involves jobs or practices performed to improve the student's occupational competence

E. Occupational objective--A person's career goal

F. Enterprise--Category of the total business for which individual records are kept as a part of the total record-keeping system
Example: Swine, beef, wheat, agribusiness, etc.

G. Scope--Extent, size or volume of the SAE program or an enterprise of the SAE program

H. Beginning inventory--Itemized list of assets and their values pertaining to the SAE program; listed according to enterprises at the start of the record-keeping period

I. Asset--Any item of value owned or claimed as part of the business

J. Unit--Any fixed quantity, amount, distance, or measure used as a standard for counting or measuring items or assets
Example: Livestock counted by the head, harvested crops can be measured by bushels, etc.

K. Unit price--Monetary value assigned to individual units; used to figure overall value
Example: Price/bushel

L. Ending inventory--Itemized list of assets and their values pertaining to the SAE program; listed according to enterprises at the close of the record-keeping period

M. Net worth--Difference between total assets and total liabilities

N. Liabilities--Financial claims against a business
Example: Unpaid bills, notes or mortgages owed to individuals or lending institutions

O. Lien--Claim against property for an amount of money owed to someone or a business

P. Financial statement--A statement that lists the assets and liabilities of the business at a particular time, usually at the end of the accounting year (also called a balance sheet)

II. Types of SAE programs (Transparencies 1, 2, 3, 4, 5)

A. Occupational experience (OE)--Part of SAE program that involves production farming or agribusiness employment to gain knowledge, skill, on-the-job experien1ce and income

(Note: Sometimes referred to as Supervised Occupational Experience or SOE.)

1. Ownership experience (production program) (Transparencies 6, 7, 8)--A type of OE in which students have personal ownership of the materials and other inputs required and have managerial responsibilities

Example: Beef cattle, wheat, apples, etc.

(Note: Ownership programs are not limited to production agriculture. A student operating a lawn/garden service with an investment in tools and equipment has ownership and managerial involvement.)

2. Placement experience (agribusiness employment) (Transparencies 9, 10, 11, 12, 13, 14)--A type of OE in which students work for other people (on farms or agribusinesses) or are self-employed in agriculture (building projects, custom baling or stacking, etc.)

3. Improvement program (Transparency 15)

a. Improve appearance and/or real estate value of home or farm

b. Increase efficiency and/or profits

c. Increase family comfort and/or convenience

d. May or may not provide financial return

e. Carried out in addition to other SAE components

f. Programs include new construction; the repair or renovation of existing facilities; painting; the improvement, repair and construction of farm equipment and machinery; property beautification; recreational facilities; and the improvement of and, irrigation and utilities

B. Laboratory experience (LE)--Part of SAE program that involves ownership or placement experiences in school or community facilities under the direction of the vocational agriculture instructor. Students are not paid for this experience. Possibilities include: raising bedding plants in the vo-ag greenhouse, working as a veterinarian assistant, etc.

C. Occupational skills (OS) (Transparency 16)--Part of the SAE program that involves jobs or practices performed to improve the student's occupational competence. The student is not generally paid to master these skills. Usually, these skills are not directly related to the student's occupational choice or improvement projects, but should serve to enrich the student's background. Some examples of these skills are castrating, controlling lice, servicing and adjusting machinery, etc.

III. Reasons for participating in an SAE program (Transparency 17)

A. Learning responsibility

B. Gaining experience

C. Earning money

D. Developing management abilities

E. Preparing for a career

F. Learning record keeping

G. Learning skills or improving skills in agriculture

H. Becoming established in farming or an agribusiness occupation

I. Developing self-discipline

J. Developing human relations skills

K. Gaining experience in money management

IV. Factors to consider when choosing an SAE program

A. Personal interest

B. Background and knowledge

C. Finances available

D. Facilities available (adequate facilities are necessary for a production agriculture program)

E. Transportation needs and availability

F. Local agriculture department requirements

V. Factors to consider in developing a plan for a long-term SAE program

- A. Occupational objective area
- B. Facilities and finances available, as needed for expansion
- C. Net income expected
- D. Degree of independence expected
- E. Anticipated scope of program in four years
- F. Areas of interest
- G. Support of parents or other parties

VI. Characteristics of a good SAE program (Transparencies 18, 19, 20)

- A. Based upon the student's interests
- B. Has an agricultural focus
- C. Provides for the development of a large number of abilities
- D. Sufficient in scope to be challenging
- E. Contains diversity
- F. Provides an opportunity to make management decisions
- G. Has the potential for profit
- H. Requires student's involvement most of the year
- I. Provides opportunities for expansion
- J. Can lead to future business ownership or employment in agriculture

VII. Student responsibilities in conducting SAE programs (Transparency 21)

- A. Consider the responsibilities
- B. Keep teacher, parents and employers informed
- C. Set goals for yourself
- D. Keep records of financial concerns and experiences gained
- E. Seek advice/assistance from your ag instructor
- F. Meet financial obligations
- G. Carry out your SAE program plan

H. Self-evaluate your progress

I. Develop an SAE program that will be valuable to you

VIII. Sources for financing productive enterprises

A. Local bank or other credit institution

B. FFA chapter loan program

C. Parents or other individuals

D. Self-financing

1. With job

2. Savings account

IX. Steps involved in obtaining a loan

A. Develop a budget and financial statement

B. Prepare presentation

1. Need for a loan

2. Plans for enterprise

3. Be prepared to answer questions pertaining to your budget and financial statement

C. Identify possible credit sources

D. Call to make appointments with credit sources

E. Meeting with credit sources

1. Your appearance--clean, professional

2. Make planned presentation

3. Question lender's policies

a. Finance charge

b. Interest rate

c. Due date

d. Requirements

F. Compare advantages and disadvantages of each credit source contacted

G. Select credit source preferred

H. Complete application papers

I. Draw up and sign contract (both parties must sign)

X. Types of SAE program records (Transparency 22)

A. Inventories

1. Beginning

2. Ending

B. Skills and experience records

1. Diary

2. Self-employment or production program agreement

3. Work experience agreement

4. Improvement program

5. Supervised occupational skills record

C. Financial records and planning guides

1. Planning ahead

2. Financial statement

3. Budget guides

4. Breeding and loss records

5. Income

6. Expenses

7. Annual program summary

D. FFA and other leadership activities

XI. Reasons for keeping records on your SAE program (Transparencies 23, 24, 25, 26)

A. Cash flow analyzation

B. Money management

C. Profit/loss determination

D. Financial progress observation over several years

E. Basis for sound management decisions

F. Investment and purchasing guidance

G. FFA awards

H. Information for income tax returns

I. Information for obtaining a loan

XII. Standards for keeping records on SAE program (Transparencies 27, 28)

A. Use appropriate record book section for each phase of program

B. Use a pencil for entries

C. Keep records on a calendar year basis (January 1-December 31)

(Note: Your first record book should begin in September, instead of January.)

D. Make entries neat, complete, easy to read

E. Enter income and expenses as they occur

F. Review and update record book each week

G. Keep record book accessible and protected

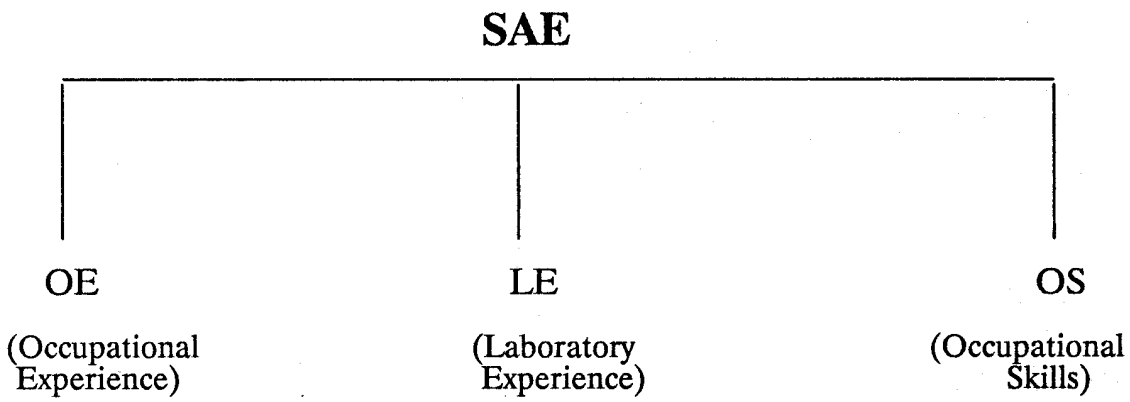
H. Complete all relevant pages in record book

I. Ask instructor for help as needed

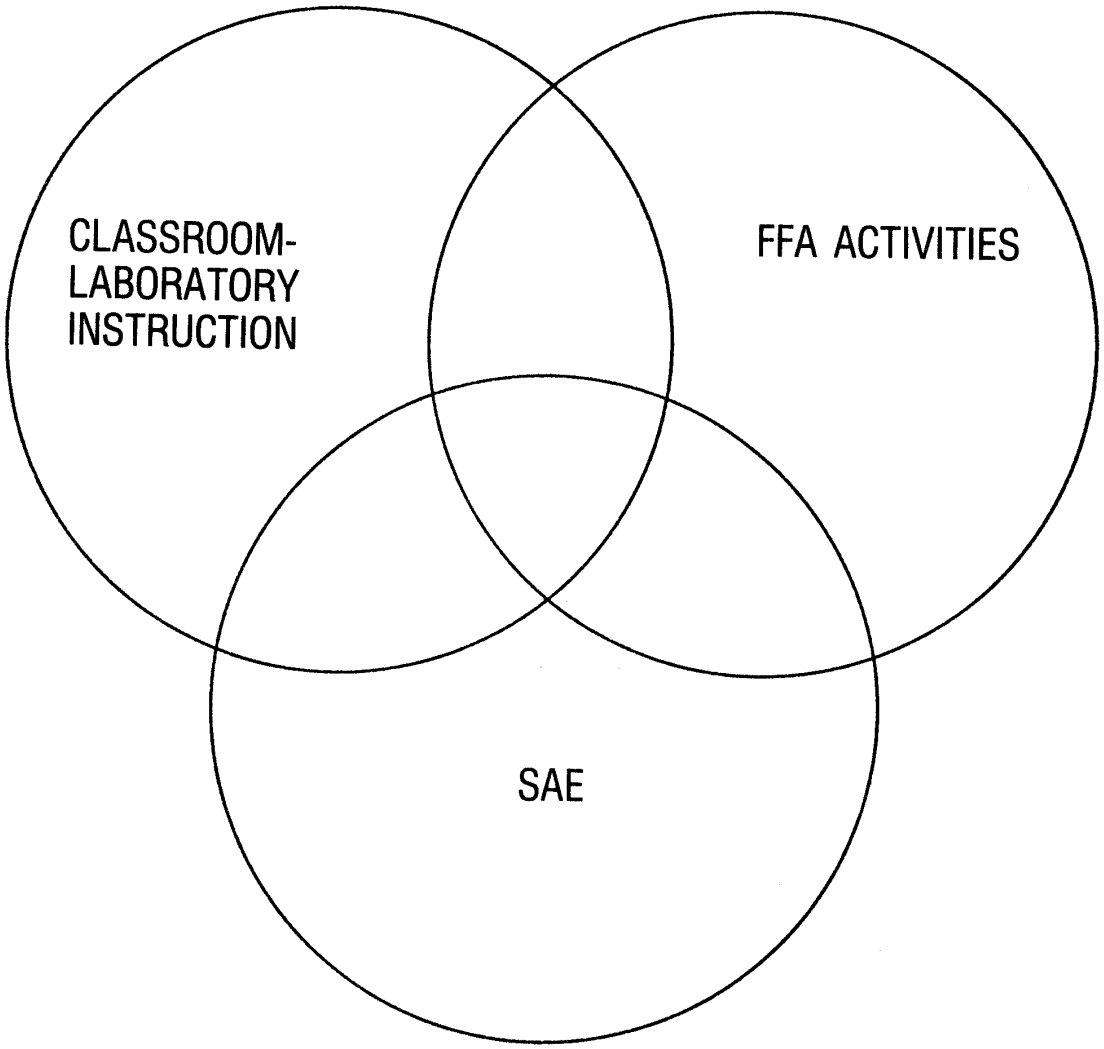
WHAT IS AN SAE PROGRAM?

Supervised agricultural experience (SAE) programs consist of practical agricultural activities performed by students outside of scheduled classroom and laboratory time. During class and lab periods, students are taught related principles and practices in agriculture. The agricultural teacher, parents, and employer work together to help students gain valuable agricultural experience in their SAE programs.

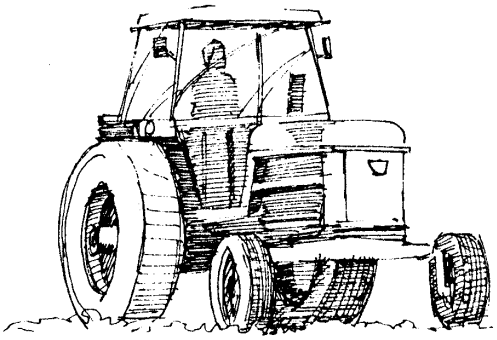
SAE PROGRAM STRUCTURE



RELATIONSHIP BETWEEN CLASSROOM-LABORATORY INSTRUCTION, SAE AND FFA



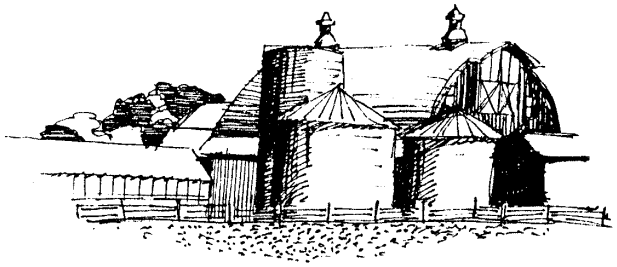
WHERE CAN I GET AGRICULTURAL EXPERIENCES?



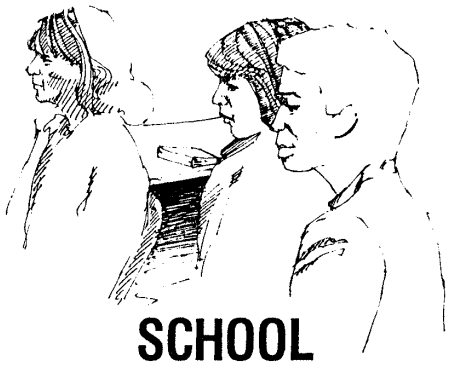
BUSINESS

HOME

COMMUNITY CENTER



FARM



SCHOOL

OCCUPATIONAL AREAS IN AGRICULTURE

AGRICULTURAL PRODUCTION

AGRICULTURAL SUPPLIES AND SERVICES

AGRICULTURAL MECHANICS

AGRICULTURAL PRODUCTS

HORTICULTURE

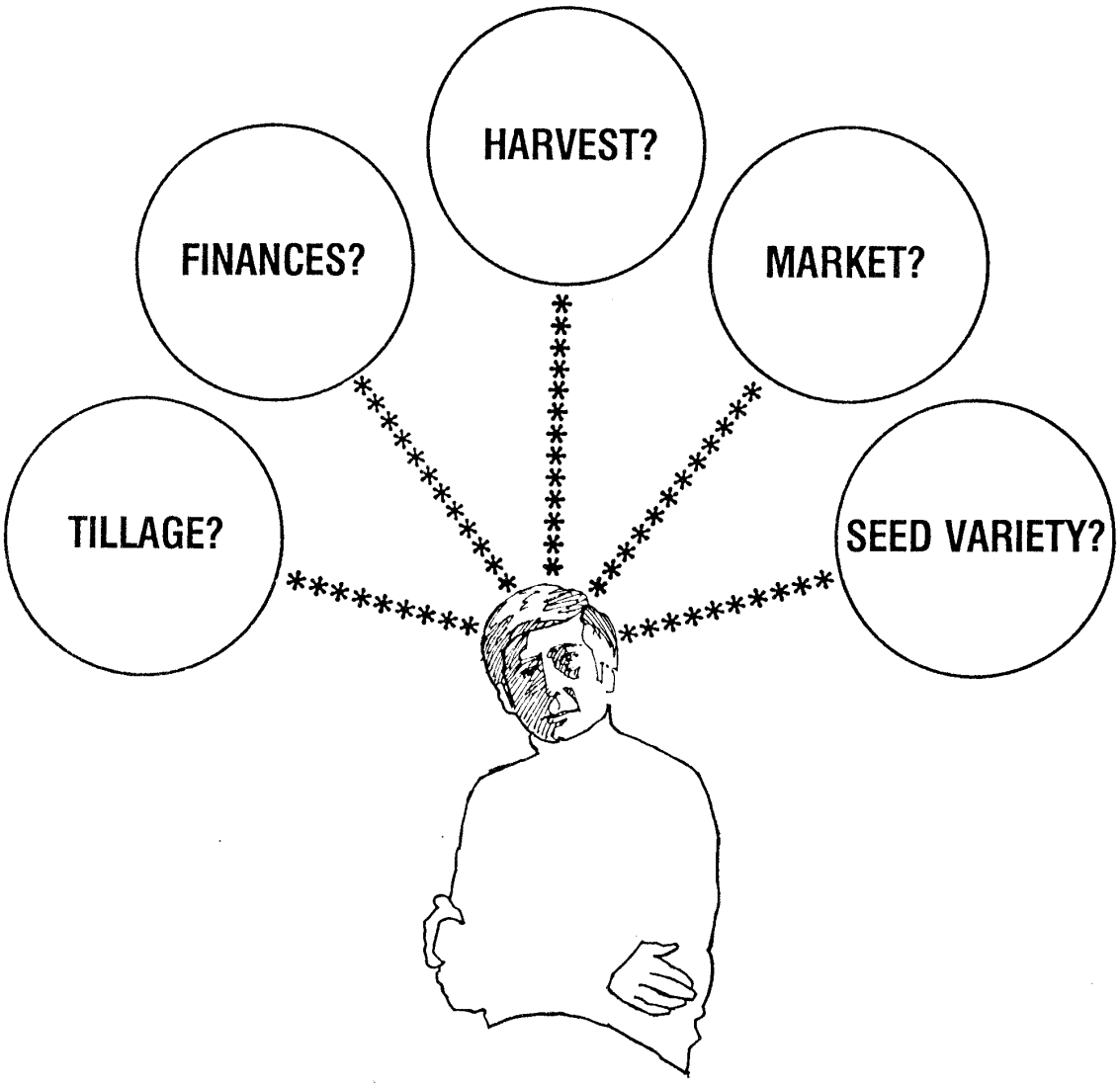
FORESTRY

RENEWABLE NATURAL RESOURCES

OTHER (PROFESSIONAL)

OWNERSHIP SAE PROGRAMS REQUIRES . . .

DECISIONS—DECISIONS—DECISIONS
PLANS—PLANS—PLANS



EXAMPLES OF OWNERSHIP PROGRAMS IN SAE

Landscaping business
Cow-calf ownership
Pest control business
Raising fish bait
Crop production
Vegetable production
Fruit production
Ornamental horticulture plant production
Mink raising
Rabbit raising
Bee raising
Wildlife raising
Broiler production
Roadside market
Re-potting plants for sales
Custom harvesting
Meat cutting
Crop spraying
Fish egg collecting

INDICATORS OF SUCCESSFUL OWNERSHIP SAE PROGRAMS

1. ADEQUATE SIZE
2. ADEQUATE PROFIT
3. ADAPTED TO HOME, FARM OR OTHER SETTING
4. NOT HARDSHIP ON FAMILY
5. ENTERPRISES IMPORTANT IN COMMUNITY
6. LEADS TO OCCUPATIONAL GOAL
7. EXPANDS EACH YEAR
8. INCLUDES APPROVED PRACTICES
9. EFFICIENCY INCREASES EACH YEAR
10. DEVELOPS KNOWLEDGE AND SKILLS IN AGRICULTURE
11. EARNING OF FFA DEGREES AND AWARDS
12. COMPLETED RECORDS

EXAMPLES OF PLACEMENT PROGRAMS IN SAE

Meat processing plant employee
Livestock farm employee
Farm equipment operator
Feed mill operator
Agricultural mechanic assistant
Landscape employee
Golf course employee
Livestock auction employee
Agricultural bank consultant assistant
Crop farm employee
Veterinarian assistant
Implement parts department employee
Stable hand at race track
Welder
Electrician helper
Nursery employee
Timber cruiser
Fire warden
SCS intern
Park service employee

CHARACTERISTICS OF AN EFFECTIVE PLACEMENT SAE PROGRAM

1. RELATES TO AGRICULTURAL CAREER OBJECTIVES
2. PROVIDES JOB SATISFACTION
3. DEVELOPS JOB SKILLS
4. DEVELOPS HUMAN RELATION SKILLS
5. HELPS SET EDUCATIONAL AND CAREER GOALS
6. PROVIDES EXPERIENCE IN KEEPING RECORDS
7. UTILIZES COOPERATIVE ARRANGEMENTS
8. RELATES TO CLASSROOM-LABORATORY INSTRUCTION
9. ENCOURAGES APPLICATION FOR FFA DEGREES AND AWARDS
10. LEADS TO A JOB AFTER GRADUATION

INDICATORS OF SUCCESSFUL PLACEMENT SAE PROGRAMS

1. HOURS OF EXPERIENCE
2. VARIETY OF EXPERIENCES
3. DOLLARS EARNED
4. KNOWLEDGE AND SKILLS DEVELOPED
5. DESIRABLE WORK HABITS
6. COOPERATIVE ATTITUDE
7. INCREASED RESPONSIBILITY
8. INCREASED WAGES
9. COMPLETED RECORDS
10. EARNING OF FFA DEGREES AND AWARDS
11. LEADS TO OCCUPATIONAL GOAL

TIPS FOR SUCCESSFUL EMPLOYMENT

ASSUME RESPONSIBILITY
LEARN ABOUT YOUR EMPLOYER
BE TACTFUL
BE COURTEOUS
BE DEPENDABLE
BE ENTHUSIASTIC
BE PRODUCTIVE
DRESS AND GROOM APPROPRIATELY
GET ALONG WITH CO-WORKERS AND
GET ALONG WITH CO-WORKERS AND SUPERVISORS
AVOID ANNOYING AND INAPPROPRIATE
BEHAVIOR
KEEP HEALTHY
THINK AND ACT WITH A POSITIVE ATTITUDE
BE LOYAL TO EMPLOYER
DO YOUR BEST

TIPS ON MAKING A JOB INTERVIEW

* OBTAIN BACKGROUND INFORMATION ON COMPANY BEFORE INTERVIEW
* ARRIVE ON TIME
* DRESS AND GROOM APPROPRIATELY
* LISTEN CAREFULLY
* MAKE EYE CONTACT
* BE ENTHUSIASTIC, YET REALISTIC
* BE HONEST
* SPEAK CORRECTLY AND POLITELY
* HAVE POSITIVE ATTITUDE ABOUT WORK
* ASK QUESTIONS ABOUT THE COMPANY
* ASK QUESTIONS SPECIFICALLY AND COMPLETELY
* END INTERVIEW ON TIME

COMPARING TWO JOBS

JOB TITLE		
NATURE OF WORK		
EDUCATION REQUIRED		
NUMBER OF JOBS AVAILABLE EACH YEAR		
ADVANCEMENT OPPORTUNITIES		
WORKING CONDITIONS		
AVERAGE SALARY		
FRINGE BENEFITS		

EXAMPLES OF IMPROVEMENT PROJECTS

Home Beautification

Construct yard fence
Paint house
Plant flowers
Plant lawn

Farm Shop

Remodel shop
Build tool hangers
Wire shop
Pour concrete floor
Install overhead lights

Conservation

Make fire breaks
Thin trees
Plant trees
Cultivate trees

Home Recreation

Build stereo cabinet
Build barbecue
Make record collection
Build book shelves
Panel recreation room

Safety

Take hazard survey
Install fire extinguishers
Install smoke alarms
Store chemicals safely

Materials Handling

Build corral panels
Install overhead augers
Build hay storage shed
Build hay manger or feeder

EXAMPLES OF OCCUPATIONAL SKILLS

Pruning trees

Spraying weeds

Potting plants

Making flower arrangements

Testing soil

Cleaning seed

Timing an engine

Cutting pipe

Calibrating equipment

Operating a chainsaw

Cruising timber

Grading fruit

Changing oil

Shoeing a horse

Balancing a ration

Grading meat

Sharpening a chisel

Mixing concrete

Shearing sheep

Castrating, branding, dehorning, and vaccinating calves

Treating seed

Wiring a switch

Selecting electrodes

Adjusting a combine

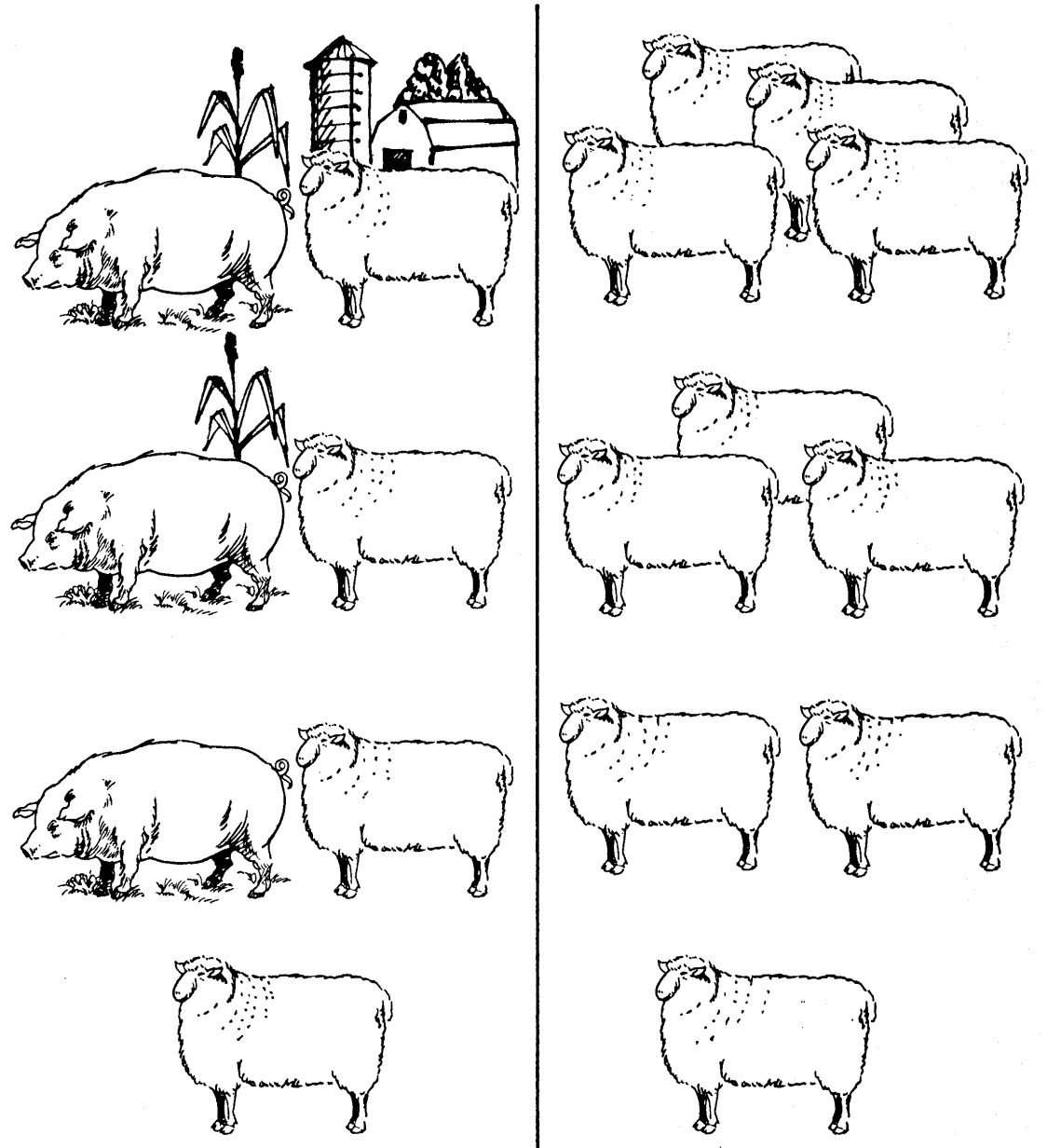
Calibrating a sprayer

HOW DO PEOPLE LEARN NEW SKILLS?

BY DOING AND WORKING WITH SOMEONE WHO KNOWS!

CHARACTERISTICS OF A GOOD SAE PROGRAM

1. **Based upon the student's interests**
2. **Has an agricultural focus**
3. **Provides for the development of a large number of abilities**
4. **Sufficient in scope to be challenging**
5. **Contains diversity**
6. **Provides an opportunity to make management decisions**
7. **Has the potential for profit**
8. **Requires student's involvement most of the year**
9. **Provides opportunities for expansion**
10. **Can lead to future business ownership or employment in agriculture**



TWO WAYS TO EXPAND
OWNERSHIP SAE PROGRAMS

TM 19

WAYS TO EXPAND A PLACEMENT PROGRAM

1. **INCREASE IN RESPONSIBILITY OR DUTIES**
2. **EARN MORE MONEY**
3. **INCREASE SIZE OR SCOPE OF PRESENT PLACEMENT PROGRAM**
4. **WORK MORE HOURS**
5. **INCREASE IN EFFICIENCY OF WORK**
6. **INCREASE DIFFICULTY OF SKILLS TO BE LEARNED**

STUDENT RESPONSIBILITIES IN CONDUCTING SAE PROGRAMS

1. **Consider the possibilities**
2. **Keep teacher, parents, and employers informed**
3. **Set goals for yourself**
4. **Keep records of financial concerns and experiences gained**
5. **Seek advice/assistance from your teacher**
6. **Meet financial obligations**
7. **Carry out your SAE program plan**
8. **Self-evaluate your progress**
9. **Develop an SAE program that will be valuable to you**
10. **Give it your best shot!**

TYPES OF SAE PROGRAM RECORDS

Inventories

Skills and Experience Records

Financial Records and Planning Guides

FFA and Other Leadership Activities

WHY KEEP RECORDS ON YOUR SAE PROGRAM?

1. **To analyze cash flow**
2. **To stimulate better money management**
3. **To determine profit or loss of enterprise**
4. **To observe financial progress over several years**
5. **To provide a basis for sound management decisions**
6. **To guide investment and purchasing activity**
7. **To provide evidence needed for FFA awards and degree programs**
8. **To furnish information for income tax returns**
9. **To furnish needed information for obtaining a loan**

CROP RECORDS HELP DETERMINE:

YIELD PER ACRE

ENTERPRISE PROFIT

COST PER UNIT OF PRODUCTION

INCOME PER ACRE

RETURN PER UNIT OF INPUT

WHICH ENTERPRISE TO EXPAND, REDUCE OR ELIMINATE

LIVESTOCK RECORDS HELP DETERMINE:

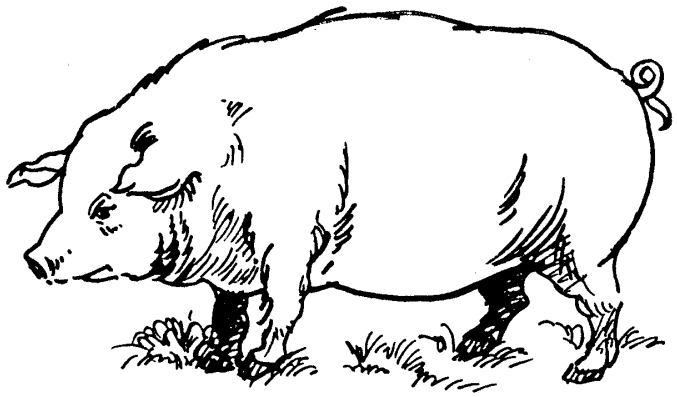
ENTERPRISE PROFIT

RETURN TO CAPITAL INVESTED

RETURN TO LABOR

RETURN PER UNIT OF INPUT

WHICH ENTERPRISE TO EXPAND, REDUCE OR ELIMINATE



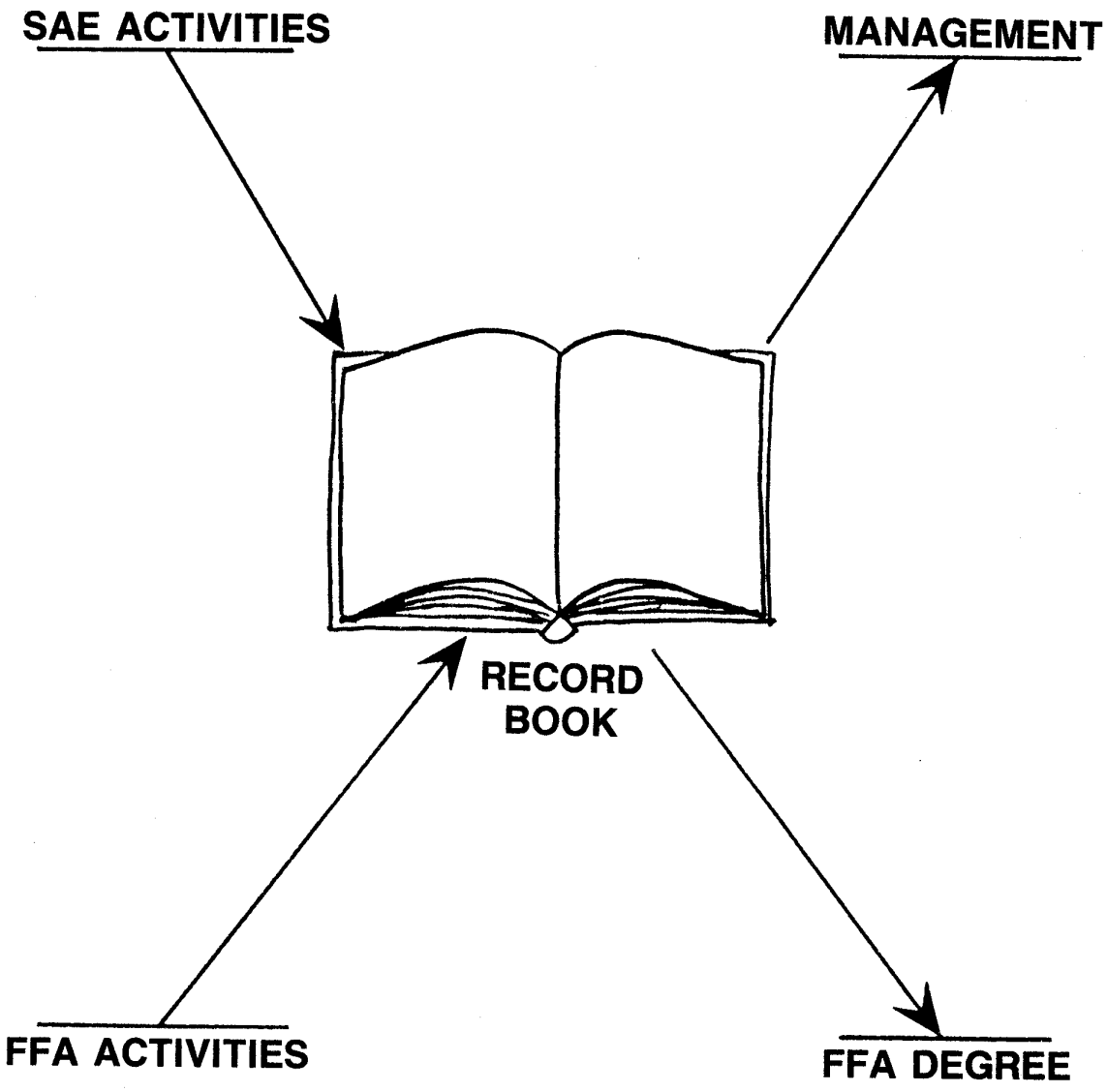
EFFICIENCY FACTORS

EFFICIENCY FACTORS	GOAL
PIGS/LITTER	_____ PIGS/LITTER
% DEATH LOSS	_____ %
#FEED/#GAIN	_____ LBS.
AVERAGE MARKET WEIGHT	_____ LBS.
_____	_____
_____	_____
_____	_____

STANDARDS FOR KEEPING RECORDS ON YOUR SAE PROGRAM

1. USE THE APPROPRIATE RECORD BOOK SECTION FOR EACH PHASE OF YOUR SAE PROGRAM
2. USE A PENCIL FOR ENTRIES
3. KEEP RECORDS ON A CALENDAR YEAR BASIS (JANUARY 1 - DECEMBER 31)
4. MAKE SURE ENTRIES ARE NEAT, COMPLETE, AND EASY TO READ
5. ENTER EXPENSES AND INCOME AS THEY OCCUR
6. REVIEW YOUR RECORD BOOK EVERY WEEK TO MAKE SURE ALL ENTRIES ARE UP TO DATE (INCLUDING IMPROVEMENT PROJECTS, SUPPLEMENTARY SKILLS, AWARDS, CREDITS, DEBITS, ETC.)
7. KEEP YOUR RECORD BOOK IN AN ACCESSIBLE, PROTECTED PLACE
8. COMPLETE ALL RELEVANT PAGES IN YOUR RECORD BOOK
9. ASK YOUR TEACHER FOR HELP AS YOU NEED IT

RECORDS ARE IMPORTANT



SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 140 - H

ASSIGNMENT SHEET #1--SELECT AN OCCUPATIONAL OBJECTIVE

Name_____ Score_____

As you begin your agriculture career, you should have in mind an appropriate area of interest or occupational objective.

Study the following list of occupational objectives and their descriptions. Then choose the objective that most closely matches your area of interest, and record it at the end of the assignment sheet. If you are uncertain about your particular interest, please choose Agricultural Production. You will have an opportunity to change your occupational objective later in the secondary agriculture program if you desire. If you cannot decide between two areas of interest, list them both.

OCCUPATIONAL OBJECTIVE	DESCRIPTION
Agricultural Production	Planning and economically using facilities, land, water, machinery, chemicals, finance, and labor in the production of plant and animal products
Agricultural Electrification, Power and Controls	Safe use of electricity, electrical power, equipment, and automatic controls
Agricultural Mechanics, Construction and Maintenance Skills	Selecting, safely using, and maintaining hand and power tools, arc and acetylene welding equipment, and construction materials
Agricultural Power Machinery	Selecting, operating, servicing, maintaining and repairing a variety of agricultural power units and agricultural machinery and equipment to include gas, diesel, and electric units; welding, refrigeration, hydraulics and other power systems

OCCUPATIONAL OBJECTIVE	DESCRIPTION
Agricultural Structures, Equipment and Facilities	Planning, selecting materials for, constructing, utilizing, and maintaining agricultural structures, equipment, and environmental facilities such as barns, sheds, milking parlors, manure and other waste handling structures and equipment, forage and grain storage structures, and greenhouses
Soil and Water Mechanical Practices	Implementing soil and water management by surveying, planning, laying out, constructing, using, and maintaining irrigation, drainage, and run-off systems
Animal Production	Selection, breeding, physiology, nutrition, health, housing, feeding, and marketing of animals such as dairy cattle, beef cattle, horses, swine, sheep, poultry, bees, rabbits, cats, dogs, and earthworms
Crop Production	Production of all types of marketable agricultural crops; soils work and all types of plant work and identification, including use of chemicals in plant, pest and disease control
Food Products	Processing food products such as meat, fish, poultry, eggs, dairy products, fruits and vegetables, and cereal grains for sale and consumption

OCCUPATIONAL OBJECTIVE	DESCRIPTION
Nonfood Products	Processing nonfood products such as cotton, tobacco and wool
Agricultural Services	Providing agricultural services such as custom work, equipment operation and maintenance, management and finance; includes small animal services such as breeding, horseshoeing, pet services and animal hospital services
Agricultural Supplies Marketing	Purchasing, storing, grading, transporting and marketing agricultural supplies such as feeds, seeds, fertilizers, chemicals, machinery and parts, and products such as livestock and grains
Animal Grooming	Grooming animals by clipping, bathing, cutting and conditioning hair, and caring for hooves and nails
Animal Training	Teaching animals to obey commands, competing in shows, and performing all types of activities necessary for animal competition and performances
Horseshoeing	Selecting and fitting shoes; shaping and nailing shoes to animals' hooves

OCCUPATIONAL OBJECTIVE	DESCRIPTION
Arboriculture	Cultivating and maintaining woody plants and trees used for decoration and shade purposes
Floriculture	Producing flowers, foliage, and related plant materials in fields and greenhouses for ornamental purposes; arranging, packaging and marketing these materials
Greenhouse Operation and Management	Producing plants under glass and in other artificial environments
Landscaping	Locating, planting, and maintaining turf, plants, shrubs, or devices for the beautification of home grounds or other areas of human habitation and recreation
Nursery Operation and Management	Producing turf, plants, shrubs, and trees for the purpose of transplanting or propagating them
Turf Management	Establishing, managing, and maintaining grass areas for ornamental or recreational purposes
Forest Products Utilization	Selecting, grading, and marketing forest raw materials for conversion to consumer goods; maintenance, safe operation, and repair of related equipment

OCCUPATIONAL OBJECTIVE	DESCRIPTION
Logging	Harvesting and transporting trees as a crop; maintaining, safely operating, and repairing logging equipment and machinery
Other_____	_____

Your occupational objective title

_____

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 140 - H

ASSIGNMENT SHEET #2--PREPARE A PLAN FOR A LONG-TERM SAE PROGRAM

Name_____ Score_____

In order to gain experience, it is necessary to set some goals and expectations. These goals should include expansion and broadening into other areas when possible.

Study the sample plan on the next page. On the form that follows, write your own plan for the long-term Supervised Agricultural Experience Program. Organize your plan by school year and by individual enterprise.

Your chosen or planned enterprise(s) is/are

_____ _____

_____ _____

_____ _____

_____ _____

ASSIGNMENT SHEET #2

STUDENT'S PLAN FOR A LONG-TERM SAE PROGRAM
(sample)

1991-92

SWINE: I plan to purchase a bred gilt in the fall of my freshman year, and to keep one or two gilt pigs from the first litter to expand my swine breeding program.

1992-93

SWINE: I plan to purchase my own boar in the fall and possibly start doing outside breeding to provide income for my swine enterprise. I plan to expand to breeding six of my own sows by the spring of 1993. I also plan to purchase adequate equipment as my swine enterprise grows.
WHEAT: I plan to start a crop-share wheat enterprise with my parents in the fall of 1992.

1993-94

SWINE: Continue with swine enterprise at the same level, with a farrowing to finishing operation.
WHEAT: Continue crop-share enterprise with parents and try to locate land to cash rent for additional wheat acreage.
BEEF: Purchase stocker calves for wheat pasture; sell the calves in the spring.

1994-95

SWINE: Continue and expand as profits allow.
WHEAT: Continue previous year's level and possibly cash rent additional acres.
BEEF: Increase number of stockers as wheat pasture is available.

ASSIGNMENT SHEET #2

STUDENTS PLAN FOR A LONG-TERM SAE PROGRAM

20_____

20_____

20_____

ASSIGNMENT SHEET #2 (cont.)

20_____

20_____

20_____

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 140 - H

ASSIGNMENT SHEET #3--SAMPLE RECORD BOOK PROBLEM

The following is a sample record book problem. This sample problem has been developed to help you understand how to use your record book. Use a pen to fill out the front and inside cover information; use a #2 pencil for the rest of the information. As you complete the information in each section of your sample record book, you should also complete the information in your personal record book for your own Supervised Agricultural Experience Program (as is possible). Your Ag Instructor will tell you the correct year dates for the blanks.

1. COUNSELING INFORMATION

You will be completing a record book for Mark Dawson, who is a freshman, first-year, vo-ag student and FFA member at Glenview High School. Mark is the son of Zach and Tara Dawson, Route 2, Box 56, Englewood, Idaho 83999. His telephone number is 397-5225. Mark was born on May 18, 19__; he is 14 years old. He has two brothers, Jake, 17, who is a high school senior this year and Mike, 8, who is in grade school. He also has two sisters. Marie, 19, is a freshman at the University of Idaho, and Sara, 13, is in junior high school. Mark will be keeping records on his dairy cows and corn projects. This summer he is going to be on a corn topping crew. Put your name on the outside cover of the record book and fill in the inside cover with the information for Mark.

2. ACTIVITIES

Mark has the following activities to record on page 3 of his record book. He was initiated as a Greenhand in November. He received first place in the Chapter Creed Speaking contest and went on to receive first place in the district as well. Mark is an active athlete, competing in basketball and cross-country. He is also a member of the Spanish Club, Key Club, and Rodeo Club. He is president of his church youth group and actively takes part in all activities. List Mark's other activities on this page as they are reported later.

3. PLANNING AHEAD

Mark is working hard to win the State FFA Creed Speaking contest at the State FFA Convention. He also hopes to make the chapter Livestock, Dairy, Food Products, and Parliamentary Procedure teams in order to attend the district contests and also the State FFA Judging contests. He wants to run for the office of chapter Sentinel next year.

Mark is going to raise two springer heifers and cultivate 10 acres of corn this year. This summer he is going to work on a corn topping crew. He wants to rebuild the fences around his home farm as an improvement project. After graduation, Mark thinks he will attend the University of Idaho to major in Agricultural Education. Mark wants to be a Secondary Agriculture Instructor/FFA Advisor in Idaho.

4. FINANCIAL STATEMENT

As of January 1, Mark has the following items to report on his financial statement: $74.69 in his checking account; his heifers valued at $1,050.00 and $1,100.00 respectively. He got a loan of $350.00 from his father to pay for livestock expenses on December 31, 20__ at 8 percent interest due at the end of the following year; the grain he has is worth about $17.00. Jake borrowed $25.00 on September 20. He has $1476.39 in his savings account. Calculate Mark's net worth with this information **(Assets - Liabilities = Net Worth)**.

5. LIVESTOCK BUDGET

Mark's springer heifers should produce 2,400# of milk a month for 11 months at $12.00 cwt (hundred weight). At the end of the year, Mark hopes to have 2 cows worth $1,010.00 each and 2 calves worth $400.00 apiece. Mark figures that he will need about 15 hours of labor excluding himself. He would pay $4.00 an hour. Mark will rent his father's milking equipment at $5.00 a month for 11 months. He will also rent corral space from his father at $5.00 a month for 7 months. During the summer months, Mark will pasture his stock at a rate of $10.00 a head per month for the 2 yearlings and older, and $7.00 a head per month for the 2 calves under one year of age for 5 months. Mark's father will sell him approximately 3,600# of rolled barley at $6.00 cwt, approximately 27,500# of alfalfa hay at $80.00 a ton, and approximately 5,000# of corn silage at $20.00 a ton. Mark estimates $25.00 for veterinary expenses and $30.00 for breeding fees. The beginning inventory for Mark's dairy project was $2,167.00.

6. CROP BUDGET

Mark is going to raise 10 acres of silage corn and hopes to gross $400.00 an acre when he sells the crop. He figures that he will need to hire some extra help for about 5 hours at $4.00 an hour. Mark can rent his father's tractor for $10.00 an hour. He can rent the other equipment for $3.00 an hour. It should take about 7 hours to plow, 3 hours to groundhog, 4 hours to harrow, 3 hours to seed, 2 1/2 hours to corrugate, 5 hours to cultivate, and 5 hours to landplane. He will need 5,000# of fertilizer at $200.00 a ton. He will have *Lasso* chemical applied with the fertilizer at $15.00 an acre. He will rent the land from his father at $100.00 an acre. He will buy 3 bags of corn seed at $50.00 each. He will pay $21.00 an acre to insure the crop. (Harvesting expenses will be included in the selling price.) He has no beginning inventory.

7. PRODUCTION PROGRAM AGREEMENT

On January 1, 20__, Mark and his father agreed upon the following practices to be in effect for the current year in association with his 2 Holstein springer heifers and 10 acres of silage corn.

Land -- Mark will rent ground for his corn from his father at $100.00 an acre. In the summer months Mark will pasture his dairy herd at the rate of $10.00 a head per month for the yearlings and older and $7.00 a head per month for any stock under one year of age.

Facilities -- Mark will rent corral space for his cows for $5.00 a month.

Machinery -- Mark can rent his father's tractor at the rate of $10.00 an hour.

Equipment -- Mark will rent his father's milking equipment for $5.00 a month; he can also rent the plow, groundhog cultivator, land plane, harrow and corn planter for $3.00 an hour.

Livestock/Crops -- Mark bought 2 Holstein springer heifers and plans to have both of them bred; he will be raising 10 acres of silage corn.

Production Costs -- Estimate the total production costs for Mark's livestock and crop enterprises for one year. The dairy production costs should include hired labor, machinery costs, feed costs, breeding fees and veterinary expenses. The corn production costs should include hired labor, equipment and machinery costs, fertilizer, chemicals, insurance, land rent and seed. You will find this information in your completed budgets.

Management -- Mark will manage his projects on his own; if he decides he needs help, he can hire someone for $4.00 an hour.

Financing -- Mark's father will finance the program and Mark will pay him back at the end of the year when he has received his receipts on the silage, corn and milk.

Other -- Mark will pay for his feed every 2 months.

8. GENERAL BREEDING RECORD

Tina, #431, was bred to ABS bull #1859 on April 21, 20__, and is due to calve on January 29. Tonya, #645, was bred to ABS bull #1859 on April 26, 20__, and is due to calve on February 3.

9. OPENING INVENTORY

Mark owns two Holstein springer heifers. One is worth $1,050.00 and the other is worth $1,100.00. He also has $17.00 of feed on hand in the beginning inventory. There is no opening inventory for Mark's corn project.

10. JOURNAL

The following is a chronological listing of the events Mark reported in his first record book. List each item in the appropriate place. Some items may be listed somewhere other than just the journal. Leave one blank line between each month's entries. Be neat and careful when making your entries. Use a #2 pencil to make your entries.

January	1	bought a ton of alfalfa hay for $80.00 a ton, 900# of rolled barley at $6.00 cwt, and a ton of corn silage at $20.00 a ton
	25	spent 3 hours preparing the calving pens; paid friend, John, to help for 3 hours
	31	feed and care for month - 5 hours labor; corral rent - $5.00
February	1	both heifers calved Tina - twin heifers Tonya - bull spent 3 1/2 hours caring for calves after they were born; paid friend, John, to help for 3 hours

	2	bought 500 board feet of lumber to build a small calf shed and pen for $56.50 and 20# of nails for $.25 a pound, 10 1/2 hours labor, paid Dad for 4 hours of help
	3	competed in the District Food Products Contest
	5	talked to Meadow Gold representative. They will pick up milk twice a week, but pay for it at the end of every month
	6	one of Tina's heifers came down with pneumonia; bought a plastic syringe for $.25, needle for $.25, and 250 cc's of Tylan-200 for $13.95; spent 2 hours doctoring heifer
	7	Tina's heifer died, worth $100.00
	9	decided to take the calves off their mother's milk and put them on milk replacer; purchased two 50# bags of milk replacer at $50.00 each
	22	sold 1,200# of milk for $12.00 cwt = $144.00; advertising fees = $.84 and hauling charges = $2.40
	28	milk equipment rent - $5.00
	28	feed, care and milking for month - 10 hours labor; corral rent - $5.00
March	2	competed in the District Parliamentary Procedure Contest
	18	competed in the District Livestock Contest
	31	bought 1,500# of alfalfa hay at $80.00 a ton, 1,500# of corn silage at $20.00 a ton, and 900# of rolled barley at $6.00 cwt
	31	milking equipment rent - $5.00
	31	feed, care and milking for month - 15 hours labor; corral rent - $5.00
	31	sold 2,600# of milk for $12.00 cwt: advertising fees = $1.64 and hauling charges = $6.00
April	3	placed second in State Creed Speaking Contest
	6	sold bull calf to neighbor for $150.00
	7	joined high school track team
	15	Tina isn't milking up to Mark's expectations so he decided to sell her at the local auction. She brought $1,200.00. He had to pay $8.25 for an auction commission, $.25 for brand inspection, and $8.50 for a trucking charge
	17	spent 5 hours repairing the corral
	18	competed in the District Dairy Cattle Contest
	23	spent 3 hours working on the fence line
	28	bought 3 bags of corn seed at $50.00 each
	30	used tractor for 25 hours this month at $10.00 an hour; (Note: Self labor for tractor work is included in total self labor for putting in the corn crop, which is listed below.)
	30	used the following for $3.00 an hour: plow - 7, groundhog - 3, landplane - 5, corn planter - 3, harrow - 4, corrugator - 3
	30	milking equipment and corral rent - $10.00
	30	feed, care and milking - 10 hours labor
	30	sold 2,400# of milk this month for $12.00 cwt; advertising fees = $1.44 and hauling charges = $5.80
	30	30 hours labor putting in corn crop
	30	paid for fertilizer at $50.00/acre, Lasso for $15/acre = $65.00/acre

May	1	called ABS representative to artificially inseminate Tonya to ABS bull #1888 for a fee of $15.00 (Note: Consult the gestation table on the inside back cover of the record book to determine the due date.)
	5	elected Chapter Sentinel
	10	spent 6 hours repairing fences
	25	bought a canvas dam for $15.00 and shovel for $8.95 to use when irrigating the corn
	31	pasture rent - 1 head at $10.00
	31	bought 1,000# of corn silage at $20.00 a ton, 700# of rolled barley at $6.00 cwt and 12 ton of alfalfa hay at $80.00 a ton
	31	milking equipment rent - $5.00
	31	feed, care and milking - 10 hours labor
	31	sold 1,600# of milk this month at $12.00 cwt; advertising fees = $1.04 and hauling charges = $2.80
June	15	irrigated corn for 4 hours (will irrigate corn on a rotation basis every 15 days from 6/15 to 8/31)
	16 - 20	attended State FFA Contests as a member of the Livestock, Dairy Cattle and Food Products Teams. Placed 9th high individual in the Livestock Contest
	20	paid brother, Jake, for doing 5 hours worth of chores while at State contests for $4.00 an hour
	25	got a call from the corn topping crew boss; will be topping corn for Eliot Farms from July 1 to August 31

11. WORK EXPERIENCE AGREEMENT

Mark was hired by Eliot Farms for the summer. The address is Rt. 2, Box 5, Englewood, Idaho 83999. The telephone number is 397-2121. Eliot Farms raises sweet corn that needs topped. Mark will generally work from 7 a.m. to 12 p.m. every day, but the hours are flexible. He will make $5.00 an hour since he has been topping for several years now. He will be paid every two weeks. If Mark is injured while on the job, the company insurance will pay for all costs up to $4,000.

12. AGRIBUSINESS EMPLOYMENT BUDGET

Mark already has gloves worth $1.75; a hat worth $2.50; and boots worth $12.00. His neighbor, Katelyn Mustoe, is also on the corn topping crew, and has agreed to give Mark a ride to and from work for $4.00 a week. (His clothing will have depreciated by the end of the year - gloves at $1.25, hat at $2.15 and boots at $10.50.)

13. OPENING INVENTORY

Gloves: $1.75; Hat: $2.50; Boots: $12.00

June	30	irrigated corn for 4 hours
	30	pasture rent - 1 head at $10.00
	30	milking equipment rent - $5.00
	30	feed, care and milking - 10 hours
	30	used tractor for 5 hours this month; used cultivator for 5 hours this month; 5 hours labor cultivating
	30	paid $21.00 an acre for crop insurance on corn

	30	sold 1,500# of milk this month at $12.00 cwt; advertising fees = $.99 and hauling charges = $2.70
July	10	won a blue ribbon with Tonya at the county fair and received a $5.00 premium
	15	irrigated corn for 4 hours
	15	worked for 70 hours in 2 weeks at $5.00 an hour
	27	went on Chapter Leadership Retreat
	30	irrigated corn for 5 hours
	31	sold 1,400# of milk at $12.00 cwt; advertising fees = $.94 and hauling charges = $2.60
	31	paid Jake for irrigating corn for 3 1/2 hours at $4.00 an hour
	31	feed, care and milking for month - 9 hours labor
	31	bought 550# of rolled barley at $6.00 cwt and 500# of corn silage at $20.00 a ton
	31	worked 75 hours in 2 weeks at $5.00 an hour
	31	paid Katelyn for carpool - 4 weeks = $16.00
	31	pasture rent - 1 cow at $10.00
August	15	irrigated corn for 5 hours
	15	sold Tonya for $800.00
	15	worked for 72 hours for 2 weeks at $5.00 an hour
	25	bought 3 registered Holstein heifers for $1,000.00 each, 2 hours labor, hauling charges of $8.50
	30	irrigated corn for 4 hours
	31	sold 1,350# of milk this month at $12.00 cwt; advertising fees = $.91 and hauling charges = $2.55
	31	paid Jake for irrigating corn for 4 hours at $4.00 an hour
	31	pasture rent - 1 cow for 1/2 month and 1 calf for entire month
	31	milking equipment rent for 1/2 month - $2.50
	31	feed, care and milking - 5 hours labor
	31	worked 78 hours in 2 weeks at $5.00 an hour
	31	paid Katelyn for carpool - 4 weeks = $16.00
September	22	harvested 10 ton of corn at $6.00 per ton (harvesting expense) and sold it to his dairy project for $20.00 a ton (Make two entries: one as income in the crops section, and the other as an expense for dairy; don't forget the harvesting expense.)
	23	sold the remaining 190 ton of corn standing in the field to Tony Yochum for $15.00 a ton (no harvesting expense)
	25	competed in District Meats Contest; first high individual
	30	sold 4,750# of milk at $12.00 cwt; advertising fees = $1.75 and hauling charges = $6.15
	30	paid father field rent of $100.00 an acre for 10 acres
	30	bought 600# of rolled barley at $6.00 cwt
	30	pasture rent - 3 head at $10.00 each and 1 head at $7.00
	30	feed, care and milking for month - 12 hours labor
	30	milking equipment rent - $5.00
October	1	paid in advance for the breeding fees of the 3 registered heifers at the rate of $15.00 each
	3	had Amanda (#822) bred to ABS bull #1899
	13	had Susi (#840) bred to ABS bull #1977
	18	had Katy (#905) bred to ABS bull #1878

	18	sold Tina's heifer to another FFA member for $350.00
	20	first frost of the season
	21	competed in District Crops Contest; fifth high individual
	31	feed, care and milking for the month - 15 hours; corral and milking equipment rent - $10.00
	31	sold 4,750# of milk at $12.00 cwt; advertising fees and hauling charges = $7.91 total
November	30	sold 4,700# of milk at $12.00 cwt; advertising fees and hauling charges = $7.85 total
	30	feed, care and milking - 13 hours; corral and milking equipment rent - $10.00
December	31	sold 4,700# of milk at $12.00 cwt; advertising fees and hauling charges = $7.85 total
	31	feed, care and milking - 15 hours; corral and milking equipment rent - $10.00
	31	paid off loan to father - $350.00, plus an additional $28.00 for interest (only the interest is recorded as an expense)

14. Total and balance the journal

15. CLOSING INVENTORY

As of December 31, Mark had the following items on hand: 3 registered Holstein heifers worth $700.00 each, 1 Springer heifer worth $960.00, 9 ton of alfalfa hay at $80.00 a ton, 9 ton of corn silage at $20.00 a ton, and calf shed worth $50.00. From work, as of August 31, 20__, he has his gloves worth $1.25, hat at $2.15 and boots at $10.50. From his crops project, he has a canvas dam worth $12.00 and a shovel worth $7.00.

16. Fill in the summary page to determine the profit or loss of the projects.

17. CLOSING FINANCIAL STATEMENT

On December 31, Mark has the following to report: $150.00 in his checking account; $1,243.87 in his savings account. The value of livestock, equipment and feed on hand will be taken from the closing inventory. Jake also paid back the $25.00 he owed Mark. With this information determine Mark's new net worth.

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

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ASSIGNMENT SHEET #4 -- SUPPLEMENTAL RECORD BOOK PROBLEM: SUPERVISED OCCUPATIONAL SKILLS RECORD

The following is a sample problem for the Supervised Occupational Skills Record in the Idaho SOEP Planning and Accounting Book. Use the following information to fill out the Supervised Occupational Skills Record and to complete the Annual Summary of S.O.E. Programs in your sample record book.

September	6	attended beef herd disease seminar at vet clinic - 3 hours
	20	helped neighbor pull calf - 2 hours
	23	assisted vet with c-section on heifer - 4 hours
October	2	helped neighbor castrate pigs - 3 hours
	16	attended Hereford Association field day - 6 hours
November	20	helped neighbor vaccinate cows - 5 1/2 hours
	22	assisted vet to castrate horse - 1 1/2 hours
January	20	watched hog butchering demonstration - 2 hours
	24	attended seminar on meat cutting - 6 1/2 hours
February	8	assisted vet treat wire cut on horse - 4 hours
March	4	helped neighbor brand/dehorn calves - 10 hours
	20	assisted vet with c-section on cow - 4 1/2 hours
	24	assisted vet with cow prolapsed uterus - 3 hours
April	15	assisted vet with cow herd vaccinations - 7 hours
May	4	assisted vet with bull semen tests - 6 hours
August	8	assisted vet with cow pregnancy testing - 8 hours
September	15	helped neighbor pull breech calf - 3 hours
October	3	assisted vet with heifer c-section - 3 1/2 hours
November	18	helped neighbor vaccinate cows - 7 1/2 hours

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

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ASSIGNMENT SHEET #5--SELF-EVALUATION OF MY SAE PROGRAM

Student Name_____ Date _____
SAE Program for 20_____

I. Use the checklist below to complete a year-end evaluation of your SAE program. As you rate each item, think about what is possible and desirable for you in your SAE program.

II. Write a one-page analysis of your SAE program, using the items list in the rating scale below. Focus on your strengths and weaknesses of your SAE program.

	Excellent	**Good**	**Fair**	**Poor**
1. Neatness of record book				
2. Completeness of record book				
3. Accuracy of records				
4. Quality of annual plan				
5. Degree to which available opportunities were used				
6. Progress/activity during the year				
7. Skills developed				
8. Knowledge gained				

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

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ASSIGNMENT SHEET #5--SELF-EVALUATION OF MY SAE PROGRAM (cont.)

	Excellent	Good	Fair	Poor
9. Level of challenge provided				
10. Degree of management responsibility				
11. Efficiency rating of ownership projects				
12. Achievement of personal career goals				
13. Degree of expansion				
14. Use of approved practices				
15. Overall value of SAE program				

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

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ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

Evaluated to satisfaction of the instructor.

Assignment Sheet #2

Evaluated to satisfaction of the instructor.

Assignment Sheet #3 and #4

Answers begin on the following page.

Assignment Sheet #5

Evaluated to satisfaction of the instructor.

IDAHO VOCATIONAL AGRICULTURAL PLANNING AND ACCOUNTING BOOK

Compiled by E. M. Howard, 1957
Revised 1983 by Wayne Ills and Fred Beckman
Revised 1988 by Alternate SOEP Committee

FOREWORD

How To Plan For Success

A major responsibility for the success of your agribusiness or farming/ranching operation rests on sound financial management.

You must know where you are before you can develop sound future operating plans and arrange for your credit needs.

The most useful coordinated financial statements to use for summarizing your agribusiness or farm's financial position and demonstrating your managerial ability are the balance sheet, income statement and cash flow projection. These financial statements force you to systematically analyze your financial progress, plan operations for the year ahead and demonstrate credit worthiness to your lender. To be most useful these statements should be compared over a period of time. If not available from previous years, there is no better time to start keeping these statements than now.

COUNSELING INFORMATION

Student Mark Dawson Birth Date May 18, 19— Age 14

School Year 19___ 19___ Phone # 397-5225 High School Glenview

Class in H.S. Freshman Year in Vo-Ag 1 Year in FFA 1

Parent's Name Zach and Tara Dawson Address Rt. 2 Box 56 Englewood, ID 83999

Names and Ages of Brothers and Sisters. (List oldest first, check those at home.)

1. Marie Age 19
2. Jake ✓ Age 17
3. Sara ✓ Age 13
4. Mike ✓ Age 8
5. _____ Age ___
6. _____ Age ___

SOE PROGRAMS RECORDED IN THIS BOOK

1. Dairy Cattle
2. Corn Production
3. _____
4. Agribusiness Employment - Corn topping
5. Alternative SOE _____

Order From . . .

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Danville, Illinois
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THE DIARY

(For STUDENT and INSTRUCTOR Diary Comments)

Enter here in chronological order events that are closely related to your program that do not enter into normal records. Such items as weather, insects, diseases, unusual yields and notes on show winnings may be listed. Your instructor will enter an occasional note or recommendation pertaining to your records and program.

Date	
2-5	Talked to Meadow Gold rep - will pick up milk twice a week/pay at end of month
2-6	One of Tina's heifers came down with pneumonia
2-7	Tina's heifer died of pneumonia
2-9	Weaned calves from mothers; started on milk replacer
6-15	Started irrigating corn - will irrigate every 15 days until 8-31
6-16	attended state FFA contests
6-25	Talked to corn topping crew boss - will work 7-1 to 8-31
7-10	Tonya won blue ribbon at county fair
10-20	First frost of season
12-31	Paid off loan to Dad

FFA and OTHER LEADERSHIP ACTIVITIES

Year	Position—(Team member, chairperson, comm. member)	Activity—List participation in leadership events, such as public speaking, banquets, committees, judging (specify)	Indicate the level of participation				Advisor's Initials
			Local	Dist.	State	Nat.	
19—	Member	Greenhand degree	✓				
19—	Participant	Creed Speaking Contest-1st place	✓	✓			
19—	Team Member	Food Products Contest		✓	✓		
19—	Team Member	Parliamentary Procedure Contest		✓			
19—	Team Member	Livestock Contest (4th in state)		✓	✓		
19—	Participant	Creed Speaking Contest - 2nd place			✓		
19—	Team Member	Dairy cattle Contest		✓	✓		
19—	Officer	Chapter Sentinal	✓				
19—	Participant	Leadership retreat	✓				
19—	Team Member	Meats Contest - 1st high ind.		✓			
19—	Team Member	Crops Contest - 5th high ind.		✓			

School—Other than FFA

19—	Member	Cross Country team	✓				
19—	Member	Basketball team	✓				
19—	Member	Spanish Club	✓				
19—	Member	Key Club	✓				
19—	Member	Rodeo Club	✓				
19—	Member	Track team	✓				

Out-of-School Leadership

19—	President	Church Youth Group	✓				

PLANNING AHEAD

As an extension to the planning for production and improvement program a student should plan short and long term skill and career goals.

Goals for the Current Year:

1. FFA —
   Win first place in State Creed Speaking Contest
   Member of chapter Livestock, Dairy, Food Products and Parliamentary Procedure teams - compete on district level
   Attend state FFA judging contests as team member
   Prepare to run for Chapter Sentinal
2. SOEP (Supervised Occupational Experience Program) —
   2 Springer heifers
   10 acres corn
   Corn topping crew
3. Improvement Program —
   Rebuild fences around home
4. Supervised Occupational Skills —
   (For non-paid experiences - see pages 30-33)
5. Educational Plans (After High School) —
   Major in Agricultural Education at the University of Idaho
6. Occupational or Career Goals (After High School) —
   Idaho Vocational Agriculture Instructor/FFA Advisor

FINANCIAL STATEMENT

(on following page)

In operating a farm, ranch or other business, you will find that a financial statement is necessary to show what a person owns and owes on a given date. It will be essential when dealing with banks and other loan agencies and it is an indicator of your progress from year to year.

Fill in the correct figures for each item as they pertain to you at the beginning of the year and then again at the end of the year. Also, at the end of the year, calculate your financial gain or loss by taking the difference between your entries. If you have any accounts receivable or payable, make sure you enter them in the section below the financial statement. As the year progresses, you may need to enter more of them in this section. However, do not change your financial statement after you open it. Any finance not related to student's SOE program will be listed under other. The total will reflect the student's whole financial picture. The combined totals are the sum of the S.O.E.P. and other financial listings.

FINANCIAL STATEMENT

STUDENT'S ASSETS	Date January 1, 19— Beginning of Year SOEP	Beginning of Year Other	Date December 31, 19— End of Year SOEP	End of Year Other
Cash on hand or in bank	$	$ 74.69	$	$ 150.00
Savings account		1,476.39		1,243.87
Accounts receivable (list below)		25.00		0
Value of machinery and equipment you own				
List: Corn			19.00	
Corn topping			13.90	
Livestock you own				
List: heifers	2,150.00		3,060.00	
Poultry you own				
Value of buildings and land you own				
List: Calf Shed			50.00	
Investment in products (on hand)				
Investment in feed	17.00		900.00	
Investment in seed				
Other assets (stocks, bonds, savings bonds, etc.) List:				
Total Assets	2,167.00	1,576.08	4,042.90	1,393.87
TOTAL COMBINED ASSETS	—	3,743.08	—	5,436.77
STUDENT'S LIABILITIES				
Accounts payable (on loans) (list below)	350.00			
Current unpaid bills				
Other liabilities				
Total Liabilities			0	0
TOTAL COMBINED LIABILITIES	350.00		0	0
Net Worth	1,817.00	1,576.08	4,010.00	1,393.87
COMBINED NET WORTH	—	3,393.08	—	5,436.77

ACCOUNTS RECEIVABLE

	Date of Transaction	Name of Person or Firm and Description of Item	Total Amount	For How Long (months)	Interest Rates	Balance Due Beginning	Balance Due Ending
1.	9/20/—	Jake Dawson	$ 25			$ 25	$ 25
2.							
3.							

ACCOUNTS PAYABLE

1.	12/31/—	Zach Dawson	350.	12 mo.	8%	350.	378.
2.							
3.							

BUDGET GUIDE (Livestock Program)

Budgets can be effective in estimating your income and expenses, thereby helping you make correct decisions. Use only budgets that apply to your programs.

Kind: Dairy
Size: 2 spr. heifers

ANTICIPATED INCOME

1. Value of Sales

Type of Animal(s)	No	Value	Total	No	Value	Total
animal products						
by-products						
other						
TOTAL						

2. Value of Products Used At Home

	No	Value	Total	No	Value	Total
no. of animals						
animal products MILK	264	12	3168			
animal waste						
TOTAL			3168			

3. Closing Inventory

Type of Animal(s)	No	Value	Total	No	Value	Total
COWS	2	1010	2020			
calves	2	400	800			
equipment						
TOTAL			2820			

A. TOTAL ANTICIPATED INCOME (1+2+3): 5988

ANTICIPATED EXPENSES

1. Labor (excluding self)

hired	60	
contract		
special (shearing, etc.)		
other		
TOTAL	60	

2. Machinery Costs

transportation		
handling equipment	55	
pens & corrals	35	
housing		
electricity		
other		
TOTAL	90	

Kind: Dairy
Size: 2 heifers

3. Feed Costs

	No	Value	Total	No	Value	Total
hay	12.75	80	1100			
grain	36	6	216			
supplement						
minerals						
silage	2.5	20	50			
pasture	5	34	170			
other						
TOTAL			1536			

4. Other Expenses

animal health	25
breeding	30
marketing	
interest	
insurance	
bedding	
fencing	
other	
TOTAL	55

5. Additional Livestock Investments

Type of Animal(s)	No	Value	Total	No	Value	Total

6. Opening Inventory

Type of Animal(s)	No	Value	Total	No	Value	Total
heifer	1	1050	1050			
heifer	1	1100	1100			
equipment						
other feed			17			
TOTAL			2167			

B. TOTAL ANTICIPATED EXPENSES (1+2+3+4+5+6): 3908

Anticipated Labor Income

A. Total Anticipated Income: 5988

B. Total Anticipated Expenses: 3908

NET ANTICIPATED LABOR INCOME (A - B): + 2080

BUDGET PAGE (Crop Program)

Budgets can be effective in estimating your income and expenses, thereby helping you make correct decisions. Use only budgets that apply to your programs.

Kind	field corn	
Size	10 acres	

ANTICIPATED INCOME

1. Value of Sales	No	Value	Total	No	Value	Total
crop	10	400	4000			
by-product						
other						
TOTAL SALES			4000			

2. Value of Products Used at Home	No	Value	Total	No	Value	Total
crops						
by-product						
other						
TOTAL USED AT HOME			0			

3. Closing Inventory	No	Value	Total	No	Value	Total
crop						
by-product						
equipment						
other						
TOTAL INVENTORY			0			

A. TOTAL ANTICIPATED INCOME (1+2+3): 4,000

ANTICIPATED EXPENSES

1. Labor (excluding self)		
hired	20	
contract		
special		
other		
TOTAL LABOR	20	

Kind	field corn	
Size	10 acres	

2. Machinery Costs	No	Value	Total	No	Value	Total
fuel & oil						
seed bed prep.	21.5	13	279.50			
seeding	3	13	39			
cultivating	5	13	65			
spraying						
harvesting						
transportation						
electricity						
repair						
other						
TOTAL MACHINERY COSTS			383.50			

3. Other Expenses	
storage	
fertilizer	500
chemicals	150
certification	
interest	
insurance	210
land rent	1000
seed	150
water	
other	
TOTAL OTHER PROJECT EXPENSES	2010

4. Beginning Inventory	
supplies on hand	
equipment	
preparation for crop year plowing, fertilizer, etc. (prior to opening date)	
other	
TOTAL BEGINNING INVENTORY	0

B. TOTAL ANTICIPATED EXPENSES (1+2+3+4): 2413.50

Anticipated Labor Income

A. Total Anticipated Income	4000.00	
B. Total Anticipated Expense	2413.50	
NET ANTICIPATED LABOR INCOME (A - B)	+ 1586.50	

BUDGET GUIDE (Agribusiness Employment)

Type of Employment	Corn Topping	
No. of Hours Per Week	35	
ANTICIPATED INCOME	No. Hours × Rate =	No. Hours × Rate =
1. Value of Sales - Labor	280 × 5 = $1400	× =
- Unpaid Labor	× =	× =
- Other	× =	× =
2. Value of Products Used at Home (work traded for products)	No × Value = Total	No × Value = Total
3. Closing Inventory - Tools		
- Safety Equipment		
- Clothing	13.90	
- Other		
A. TOTAL ANTICIPATED INCOME = VALUE OF SALES + CLOSING INVENTORY	$1413.90	
ANTICIPATED EXPENSES	No × Value = Total	No × Value = Total
1. Labor (excluding self)	× =	× =
2. Machinery Costs	× =	× =
3. Meal Costs	× =	× =
4. Other Expenses		
- Transportation	3.2	
- Tools & Equipment		
- Safety Equipment, etc.		
- Clothing		
- Insurance		
- Room		
- Other		
5. Beginning Inventory		
- Tools		
- Safety Equipment		
- Clothing	16.25	
- Other		
B. TOTAL ANTICIPATED EXPENSES (1+2+3+4+5)	48.25	
Anticipated Labor Income		
A. Total Anticipated Income	1413.90	
B. Total Anticipated Expenses	48.25	
A − B = NET ANTICIPATED LABOR INCOME	$1365.65	

SELF EMPLOYMENT OR PRODUCTION PROGRAM AGREEMENT

1. This agreement is entered into this 1st day of January, 19___ for a period from January 1, 19___ to December 31, 19___ by and between Mark Dawson (student) and Zach Dawson (parent or other party) and covers the student's program.

2. Description of Program

10 acres of silage corn
Two holstein springer heifers

3. Parties Agree To

a. Land: Mark will rent 10 acres ground from Zach Dawson at $100/acre.

Mark will rent pasture from Zach Dawson during the summer at a rate of $10/head for yearlings and older; $7/hd for stock under one year of age.

b. Facilities: Mark will rent corral space for $5/month from Zach Dawson.

c. Machinery: Mark will rent a tractor from Zach Dawson at $10/hour.

d. Equipment: Mark will rent milking equipment from Zach Dawson at $5/month.
Mark will rent the plow, groundhog, cultivator, land plane, harrow, and corn planter for $3/hour from Zach Dawson.

Self Employment or Production Program Agreement (continued)

e. Livestock or Crops: Mark bought two Holstein springer heifers and plans to have both of them bred.

Mark will raise 10 acres of silage corn.

f. Production Costs: Dairy - hired labor ($60), machinery ($90), Feed ($1536), veterinary ($25), breeding fees ($30) - total: $1741.00. Corn production - hired labor ($20), equipment and machinery ($383.50), fertilizer ($500), chemicals ($150), insurance ($210), land rent ($1,000), seed ($150) - total: $2413.50

g. Management: Mark will manage his own projects; he may decide to hire help at $4/hour.

h. Financing: Zach Dawson will finance the programs and Mark will repay him at the end of the year.

i. Other: Mark will pay for his feed every two months.

We, the undersigned, agree to the conditions of this agreement.

(Parent or Cooperating Party) (Student)

(Teacher) (Date)

WORK EXPERIENCE (WE) AGREEMENT OR COOPERATIVE OCCUPATIONAL EXPERIENCE (COE) AGREEMENT

The purpose of this agreement is to provide a basis of understanding and to promote sound business relationships. It may be terminated by any party after giving advance notice to the teacher in charge.

1. The agreement is between Mark Dawson and Eliot Farms and covers the period between July 1, 19— and August 31, 19—.

2. Business Description

NAME OF BUSINESS: Eliot Farms

BUSINESS ADDRESS Rt. 2, Box 5, Englewood, ID 83999 TEL. NO. 397-2121

MAIN PRODUCTS AND/OR SERVICES: Topping Corn

3. Job Description

Mark will top sweet corn every day from 7:00 a.m. to 12:00 p.m. (flexible).

4. Liability Insurance Coverage (Type and Amount)

If Mark is injured on the job, the company insurance will pay for all costs up to $4,000.00.

Work Experience (WE) Agreement or Cooperative Occupational Experience (COE) Agreement (continued)

5. The student agrees:
   a. To conform to the policies and rules of the agreement, to be punctual, to be regular in attendance at school and on the job and to notify the cooperator and the teacher in advance in case of absence from school or from the job.
   b. To keep accurate and complete records.
   c. To carefully perform all related study assignments.
   d. To carry out the training program, both on the job and in the school, in such a manner that will reflect credit upon both the student and the school.
   e. To work from 7:00 a.m. to 12:00 p.m. every day (the hours are flexible) from July 1 to August 31.

6. The cooperating employer agrees:
   a. To assist the student in fulfilling the training program plan and to provide the training experiences necessary.
   b. To provide employment and training in accordance with federal, state and local laws and regulations.
   c. To start the student at a wage of $5.00 (per hour, week, month) and later to adjust the wages to a higher rate when he develops competence in the performance of his work responsibilities.
   d. Hire Mark from 7:00 a.m. to 12:00 p.m. (although hours are flexible) from July 1 to August 31.
   e. To pay Mark every two weeks

We, the undersigned, agree to all conditions of this agreement.

(Student)	(Cooperating Employer)
(Teacher)	(Parent or Guardian)
	(Date)

BREEDING AND LOSS RECORDS

GENERAL BREEDING RECORD

Name and/or Number of Dam	Name and/or Number of Sire	Date of Service	Date Due	Offspring		
				Date Born	No. Born	No. Born Alive
Tina - # 431	ABS # 1859	4-21-__	1-29-__	2-1-__	2	2
Tonya - # 645	ABS # 1859	4-26-__	2-3-__	2-1-__	1	1
Tonya - # 645	ABS # 1888	5-1-__	2-8-__			
Amanda - # 822	ABS # 1899	10-3-__	7-13-__			
Susi - # 840	ABS # 1977	10-13-__	7-23-__			
Katy - # 905	ABS # 1878	10-18-__	7-28-__			

GENERAL LOSS RECORD

Date	No. or Amount	Estimated Value	Item	Cause
2-7	1	$100	Tina's heifer	pneumonia

INVENTORY OF STUDENT'S SUPERVISED OCCUPATIONAL EXPERIENCE PROGRAMS

Opening: List all items on hand that apply to the program such as livestock, equipment, feed and supplies. List only items that belong to you or the value of the share that is yours.

Closing: List all items on hand on the date program closes including (a) items left from opening inventory; (b) items left from new investments and (c) residues, products and stock on hand from the program.

General Notes: Inventory values on livestock and equipment change. Values on growing stock normally increase while aged stock and equipment normally decrease. For continuation programs, start next year's record with an opening inventory dated one day later and having exactly the same contents and values as you closed this one.

I. SOE Program Dairy

ITEMS	Date 1-1-— Opening Amt.	Unit Price	Value	Date 12-31-— Closing Amt.	Unit Price	Value
Holstein springer heifer	1	1050	$1050 —			$
Holstein springer heifer	1	1100	1100 —			
Feed			17 —			
Registered Holstein heifers				3	700	2100 —
Springer heifer				1	960	960 —
alfalfa hay				9	80	720 —
Corn silage				9	20	180 —
Calf shed				1	50	50 —
Totals Inventory	XXXX		2167 —	XXXX		4010 —

II. SOE Program Corn

ITEMS	Date 1-1-— Opening Amt.	Unit Price	Value	Date 12-31-— Closing Amt.	Unit Price	Value
Canvas dam			$	1	12	$12 —
Shovel				1	7	7 —
Totals Inventory	XXXX		0 —	XXXX		19 —

INVENTORY OF STUDENT'S SOEP (continued)

III. SOE Program _____

ITEMS	Date Opening Amt.	Unit Price	Value	Date Closing Amt.	Unit Price	Value
			$			$
Totals Inventory	XXXX			XXXX		

IV. SOE AGRIBUSINESS EMPLOYMENT PROGRAM Corn Topping

ITEMS	Date 7-1-__ Opening Amt.	Unit Price	Value	Date 8-31-__ Closing Amt.	Unit Price	Value
Gloves	1	1.75	$ 1 75	1	1.25	$ 1 25
Boots	1	12.	12 00	1	10.50	10 50
Hat	1	2.50	2 50	1	2.15	2 15
Totals Inventory	XXXX		16 25	XXXX		13 90

JOURNAL (An Account of Daily Transactions)

The journal section of this record book is based on the premise that you should learn the true cost of producing livestock and crops or engagement in job opportunities. Therefore, charge your program with all expense items whether cash or non-cash, whether given by Dad or worked out by you.

Your programs are to pay their own way and any gift of feed, labor or service is a gift to you, the student, not to your program. Be fair, but charge your program for all items.

Include expenses such as feed, seed, fertilizer, supplies, rent, use of buildings, pens and equipment, land rent, payroll deductions, transportation, meals, safety equipment, interest paid on money borrowed and labor (excluding self-labor).

Credit your program for all income received and items sold, consumed by family, used on farm or given away.

CASH FLOW FOR ALL SOE PROGRAMS

		A				B		C		
	Date	Hrs. Self Labor	ITEM	Amount	Unit Price	Income		Expenses		
1	1-1		Alfalfa hay	1	80			80	–	1
2	1-1		Rolled barley	9	6			54	–	2
3	1-1		Corn silage	1	20			20	–	3
4	1-25	3	Labor-prepare calving pens	3	4			12	–	4
5	1-31	5	Feed and care							5
6	1-31		Corral rent					5	–	6
7										7
8	2-1	3.5	Labor-newborn calves	3	4			12	–	8
9	2-2		Lumber for calf shed	500	.113			56	50	9
10	2-2		Nails for calf shed	20	.25			5	–	10
11	2-2	10.5	Labor-build calf shed	4	4			16	–	11
12	2-6		Plastic syringe	1	.25				25	12
13	2-6		Needle	1	.25				25	13
14	2-6		Bottle Tylan - 200	1	13.95			13	95	14
15	2-6	2	Doctoring heifer							15
16	2-9		Milk replacer	2	50			100	–	16
17	2-22		Sold milk	12	12	144	–			17
18	2-22		Advertising						84	18
19	2-22		Milk hauling					2	40	19
20	2-28		Milk equipment rent					5	–	20
21	2-28	10	Feed, care, milking							21
22	2-28		Corral rent					5	–	22
		34	Totals for Page			144	–	388	19	

JOURNAL

Every income or expense item should be listed in column B or C and then relisted again in one column or distributed among the remaining columns on the right hand page (EXAMPLE: B = Ib−IIb−IIIb+IVb; C = Ic+IIc+IIIc+IVc). Enter self labor in Column A then enter again distributing in appropriate SL or Hour columns on right hand page. (EXAMPLE: A = Ia+IIa+IIIa+IVa.)

Routine chores should be recorded either 1 or 2 times per month as your teacher instructs. Other entries should be recorded often and as soon as possible after transactions and events take place.

At harvest time credit crop and debit to livestock if crop is to be fed.

To have neat and accurate records, write clear small figures in straight columns and avoid the repeated use of hour and dollar signs.

Agribusiness Income—is all cash earned before deductions.

Agribusiness Expenses—are payroll deductions and expenses involved with employment.

INDIVIDUAL SOE PROGRAM CONTROL

(SOE Program Number and Kind)

	I Dairy					II Corn					III					IV Agribusiness Employment					
	a	b		c		a	b		c		a	b		c		a	b		c		
	SL	Income		Expenses		SL	Income		Expenses		SL	Income		Expenses		Hours	Income		Expenses		
1		$		$80	−		$		$			$		$			$		$		1
2				54	−																2
3				20	−																3
4	3			12	−																4
5	5																				5
6				5	−																6
7																					7
8	3.5			12	−																8
9				56	50																9
10				5	−																10
11	10.5			16	−																11
12					25																12
13					25																13
14				13	95																14
15	2																				15
16				100	−																16
17		144	−																		17
18					84																18
19				2	40																19
20				5	−																20
21	10																				21
22				5	−																22
Totals	34	144	−	388	19																

	Date	A Hrs. Self Labor	ITEM	Amount	Unit Price	B Income		C Expenses		
		34	Total Brought Forward			144	-	388	19	
1	3-31		Alfalfa hay	.75	80			60	-	1
2	3-31		Corn silage	.75	20			15	-	2
3	3-31		Rolled barley	9	6			54	-	3
4	3-31		Milking equipment rent					5	-	4
5	3-31	15	Feed, care and milking							5
6	3-31		Corral rent					5	-	6
7	3-31		Sold milk	26	12	312	-			7
8	3-31		Advertising					1	64	8
9	3-31		Milk hauling					6	-	9
10										10
11	4-6		Sold bull calf	1	150	150	-			11
12	4-15		Sold Tina - #431			1200	-			12
13	4-15		Auction Commission -Tina					8	25	13
14	4-15		Brand Inspection - Tina						25	14
15	4-15		Trucking charge -Tina					8	50	15
16	4-17	5	Corral repair							16
17	4-23	3	Fence repair							17
18	4-28		Corn seed	3	50			150	-	18
19	4-30		Tractor rent	25	10			250	-	19
20	4-30		Plow rent	7	3			21	-	20
21	4-30		Groundhog rent	3	3			9	-	21
22	4-30		Land plane rent	5	3			15	-	22
23	4-30		Corn planter rent	3	3			9	-	23
24	4-30		Harrow rent	4	3			12	-	24
25	4-30		Corrugator rent	3	3			9	-	25
26	4-30		Fertilizer and lasso	10	65			650	-	26
27	4-30	10	Feed, care and milking							27
28	4-30		Rent-Corral + milking equip.					10	-	28
29	4-30		Sold milk	24	12	288	-			29
30	4-30		Advertising					1	44	30
31	4-30		Milk hauling					5	80	31
Total Hours		67	Totals to-Date			2094	-	1694	07	

	I Dairy						II Corn						III						IV Agribusiness Employment						
	a		b		c		a		b		c		a		b		c		a		b		c		
	SL		Income		Expenses		SL		Income		Expenses		SL		Income		Expenses		Hours		Income		Expenses		
	34		$144	-	$388	19			$		$				$		$				$		$		
1					60	-																			1
2					15	-																			2
3					54	-																			3
4					5	-																			4
5	15																								5
6					5	-																			6
7			312	-																					7
8					1	64																			8
9					6	-																			9
10																									10
11			150	-																					11
12			1200	-																					12
13					8	25																			13
14						25																			14
15					8	50																			15
16	5																								16
17	3																								17
18											150	-													18
19											250	-													19
20											31	-													20
21											9	-													21
22											15	-													22
23											9	-													23
24											12	-													24
25											9	-													25
26											650	-													26
27	10																								27
28					10	-																			28
29			288	-																					29
30					1	44																			30
31					5	80																			31
Totals to Date	67		2094	-	569	07					1125	-													

	Date	A Hrs. Self Labor	ITEM	Amount	Unit Price	B Income		C Expenses		
		67	Total Brought Forward			2094	-	1694	07	
1	4-30	30	Labor putting in corn crop							1
2										2
3	5-1		Breeding fee	1	15			15	-	3
4	5-10	6	Fence repair							4
5	5-25		Canvas dam	1	15			15	-	5
6	5-25		Shovel	1	8.95			8	95	6
7	5-31		Pasture rent	1	10			10	-	7
8	5-31		Corn Silage	.5	20			10	-	8
9	5-31		Rolled barley	7	6			42	-	9
10	5-31		alfalfa hay	12	80			960	-	10
11	5-31		Milking equipment rent					5	-	11
12	5-31	10	Feed, care and milking							12
13	5-31		Sold milk	16	12	192	-			13
14	5-31		Advertising fee					1	04	14
15	5-31		Hauling charges					2	80	15
16										16
17	6-15	4	Irrigate corn							17
18	6-20		Labor - chores	5	4			20	-	18
19	6-30	4	Irrigate corn							19
20	6-30		Pasture rent	1	10			10	-	20
21	6-30		Milking equipment rent					5	-	21
22	6-30	10	Feed, care and milking							22
23	6-30		Tractor rent	5	10			50	-	23
24	6-30	5	Cultivator rent	5	3			15	-	24
25	6-30		Crop insurance					210	-	25
26	6-30		Sold milk	15	12	180	-			26
27	6-30		Advertising fee						99	27
28	6-30		Hauling charges					2	70	28
29										29
30	7-10		Fair premium			5	-			30
31	7-15	4	Irrigate corn							31
	Total Hours	140	Totals to Date			2471	-	3077	55	

	I Dairy						II Corn						III						IV Agribusiness Employment						
	a	b		c			a	b		c			a	b		c			a	b		c			
	SL	Income		Expenses			SL	Income		Expenses			SL	Income		Expenses			Hours	Income		Expenses			
	67	$2094	–	$569	07			$		$1125	–			$		$				$		$			
1							30																		1
2																									2
3				15	–																				3
4	6																								4
5										15	–														5
6										8	95														6
7				10	–																				7
8				10	–																				8
9				42	–																				9
10				960	–																				10
11				5	–																				11
12	10																								12
13		192	–																						13
14				1	04																				14
15				2	80																				15
16																									16
17							4																		17
18				20	–																				18
19							4																		19
20				10	–																				20
21				5	–																				21
22	10																								22
23										50	–														23
24							5			15	–														24
25										210	–														25
26		180	–																						26
27						99																			27
28				2	70																				28
29																									29
30		5	–																						30
31							4																		31
Totals to Date	93	2471	–	1653	60		47			1423	95														

	Date	A Hrs. Self Labor	ITEM	Amount	Unit Price	B Income		C Expenses		
		140	Total Brought Forward			2471	-	3077	55	
1	7-15		Corn topping	70	5	350	-			1
2	7-30	5	Irrigate corn							2
3	7-31		Sold milk	14	12	168	-			3
4	7-31		Advertising fee						94	4
5	7-31		Milk hauling					2	60	5
6	7-31		Hired labor - Irrigate corn	3.5	4			14	-	6
7	7-31	9	Feed, care and milking							7
8	7-31		Rolled barley	5.5	6			33	-	8
9	7-31		Corn silage	.25	20			5	-	9
10	7-31		Corn topping	75	5	375	-			10
11	7-31		Carpool	4	4			16	-	11
12	7-31		Pasture rent	1	10			10	-	12
13										13
14	8-15	5	Irrigate corn							14
15	8-15		Sold Tonya #645	1	800	800	-			15
16	8-15		Corn topping	72	5	360	-			16
17	8-25	2	Registered Holstein heifers	3	1,000			3,000	-	17
18	8-25		Hauling heifers					8	50	18
19	8-30	4	Irrigate corn							19
20	8-31		Sold milk	13.5	12	162	-			20
21	8-31		Advertising fee						91	21
22	8-31		Hauling charges					2	55	22
23	8-31		Labor - irrigate	4	4			16	-	23
24	8-31		Pasture rent - cow	.5	10			5	-	24
25	8-31		Pasture rent - calf	1	7			7	-	25
26	8-31		Milking equipment rent	.5	5			2	50	26
27	8-31	5	Feed, care + milking							27
28	8-31		Corn topping	78	5	390	-			28
29	8-31		Carpool	4	4			16	-	29
30										30
31	9-22		Harvest corn	10	6			60	-	31
	Total Hours	170	Totals to Date			5076	-	6277	55	

	I Dairy						II Corn						III						IV Agribusiness Employment						
	a		b		c		a		b		c		a		b		c		a		b		c		
	SL		Income		Expenses		SL		Income		Expenses		SL		Income		Expenses		Hours		Income		Expenses		
	93		$3471	-	$1653	60	47		$		$1423	95			$		$				$		$		
1																			70		350	-			1
2							5																		2
3			168	-																					3
4						94																			4
5					2	60																			5
6											14	-													6
7	9																								7
8					33	-																			8
9					5	-																			9
10																			75		375	-			10
11																							16	-	11
12					10	-																			12
13																									13
14							5																		14
15			800	-																					15
16																			72		360	-			16
17	2				3,000	-																			17
18					8	50																			18
19							4																		19
20			162	-																					20
21						91																			21
22					2	55																			22
23											16	-													23
24					5	-																			24
25					7	-																			25
26					2	50																			26
27	5																								27
28																			78		390	-			28
29																							16	-	29
30																									30
31											60	-													31
Totals to Date	109		3601	-	4731	60	61				1513	95							295		1475	-	32	-	

	Date	A Hrs. Self Labor	ITEM	Amount	Unit Price	B Income		C Expenses		
		170	Total Brought Forward			5076	-	6277	55	
1	9-22		Sold corn	10	20	200	-			1
2	9-22		Bought corn	10	20			200	-	2
3	9-23		Sold corn	190	15	2850	-			3
4	9-30		Sold milk	47.5	12	570	-			4
5	9-30		Advertising fee					1	75	5
6	9-30		Hauling charges					6	15	6
7	9-30		Land rent	10	100			1000	-	7
8	9-30		Rolled barley	6	6			36	-	8
9	9-30		Pasture rent	3	10			30	-	9
10	9-30		Pasture rent	1	7			7	-	10
11	9-30	12	Feed care and milking							11
12	9-30		Milking equipment rent					5	-	12
13										13
14	10-1		Breeding fee	3	15			45	-	14
15	10-18		Sold heifer	1	350	350	-			15
16	10-31	15	Feed care and milking							16
17	10-31		Rent-corral and milking equip.					10	-	17
18	10-31		Sold milk	47.5	12	570	-			18
19	10-31		Advertising and hauling					7	91	19
20										20
21	11-30		Sold milk	47	12	564	-			21
22	11-30		Advertising and hauling					7	85	22
23	11-30	13	Feed care and milking							23
24	11-30		Rent-corral and milking equip.					10	-	24
25										25
26	12-31		Sold milk	47	12	564	-			26
27	12-31		Advertising and hauling					7	85	27
28	12-31	15	Feed, care and milking							28
29	12-31		Rent-corral + milking equip.					10	-	29
30	12-31		Interest	350	.08			28	-	30
31										31
Total Hours		225	Totals to Date			10,744	-	7690	06	

	I Dairy						II Corn						III						IV Agribusiness Employment						
	a		b		c		a		b		c		a		b		c		a		b		c		
	SL		Income		Expenses		SL		Income		Expenses		SL		Income		Expenses		Hours		Income		Expenses		
	109	$	3601	-	$ 4731	60	61	$			$ 1513	95		$			$		295	$	1475	-	$ 32	-	
1									200	-															1
2					200	-																			2
3									2850	-															3
4			570	-																					4
5					1	75																			5
6					6	15																			6
7											1000	-													7
8					36	-																			8
9					30	-																			9
10					7	-																			10
11	12																								11
12					5	-																			12
13																									13
14					45	-																			14
15			350	-																					15
16	15																								16
17					10	-																			17
18			570	-																					18
19					7	91																			19
20																									20
21			564	-																					21
22					7	85																			22
23	13																								23
24					10	-																			24
25																									25
26			564	-																					26
27					7	85																			27
28	15																								28
29					10	-																			29
30					28	-																			30
31																									31
Totals to Date	164	6219	-	5144	11		61	3050	-	2513	95								295	1475	-	32	-		

Supervised Occupational Skills Record

All agricultural competencies you have completed in the alternate SOE program are recorded on these pages. Only those competencies you have completed and not received payment for are classified as alternate SOE activities. Activities and competencies performed for wage appear in the Journal (pages 20-29).

Every entry under the item column should have the total hours spent on that activitiy in the total hours column (a) on the left hand page. On the right-hand page, the total hours in (a) need to be assigned to class instruction hours (b) or specific instructional areas under Hours Outside Classroom (columns c-l). Columns i, j, k and l are available for you to write in another instructional area not listed in columns c-h. Total Hours Outside Classroom would be tallied in column m. Note: Hours in (a) = (b) + (m).

	Date	Item	a total hours	
1	9-6	Attended beef herd disease seminar at vet clinic	3	1
2	9-20	Helped neighbor pull calf	2	2
3	9-23	Assisted vet with C-section on heifer	4	3
4	10-2	Helped neighbor castrate pigs	3	4
5	10-16	Attended Hereford Association field day	6	5
6	11-20	Helped neighbor vaccinate cows	5 1/2	6
7	11-22	Assisted vet castrate horse	1 1/2	7
8	1-20	Watched hog butchering demonstration	2	8
9	1-24	Attended meat-cutting seminar	6 1/2	9
10	2-8	Assisted vet treat wire cut on horse	4	10
11	3-4	Helped neighbor brand/dehorn calves	10	11
12	3-20	Assisted vet with cow C-section	4 1/2	12
13	3-24	Assisted vet with cow prolapsed uterus	3	13
14	4-15	Assisted vet with cow herd vaccinations	7	14
15	5-4	Assisted vet with bull semen tests	6	15
16	8-8	Assisted vet with cow pregnancy testing	8	16
17	9-15	Helped neighbor pull breach calf	3	17
18	10-3	Assisted vet with heifer C-section	3 1/2	18
19	11-18	Helped neighbor vaccinate cows	7 1/2	19
20				20
21				21
22				22
23				23
24				24
25				25
26				26
27				27
28				28
29				29
30				30
		Totals to Date . . .	90	

		Hours Outside Classroom											
		Instructional Areas											
	b Class instructional Hours (optional)	c Animal Science	d Ag Mechanics	e Ag Management	f FFA Leadership	g Plant Science	h Soil Science	i	j	k	l	m Total Hours (Outside Classroom)	
1		3										3	1
2		2										2	2
3		4										4	3
4		3										3	4
5		6										6	5
6		5 1/2										5 1/2	6
7		1 1/2										1 1/2	7
8		2										2	8
9		6 1/2										6 1/2	9
10		4										4	10
11		10										10	11
12		4 1/2										4 1/2	12
13		3										3	13
14		7										7	14
15		6										6	15
16		8										8	16
17		3										3	17
18		3 1/2										3 1/2	18
19		7 1/2										7 1/2	19
20													20
21													21
22													22
23													23
24													24
25													25
26													26
27													27
28													28
29													29
30													30
Totals to Date		90										90	

ANNUAL SUMMARY OF S.O.E. PROGRAMS

Name Mark Dawson Age 14

Course: Ag. (1) 2, 3, 4 or _____ (Semester) Year 19 _____

	I	II	III	IV Agribusiness Employment
Name of Program	Dairy	Corn		Corn Topping
Opening Date	Jan. 1	Jan. 1		July 1
Closing Date	Dec. 31	Dec. 31		Aug. 31
Opening Units (Size)	2 heifers			
TOTAL INCOME				
1. Closing Inventory	4010.00	19.00		13.90
2. Journal Income	6219.00	3050.00		1475.00
3. Total Income (1+2=3)	$10,229.00	$3069.00	$	$1488.90
TOTAL EXPENSE				
4. Opening Inventory	2167.00	0		16.25
5. Journal Expenses	5144.11	2513.95		32.00
6. Total Expense (4+5=6)	7311.00	2513.95		48.25
7. PROFIT OR LOSS (line 3−6=7)	$2918.00	$555.05	$	$1440.65
EFFICIENCY FACTORS PERTAINING TO PROGRAM				
8. Production	30,950#	200T		295 hr.
(ie, lb. of milk, bushels of wheat, lb. of beef)	2 calves			
9. Total hours of Self Labor	164	61		295 hr.
*10. Cost per Unit of Production (line 5÷8)	$ .17	$12.57	$	$ .11
11. Income per Unit of Production (line 7÷8)	.09	2.78		4.88
12. Income per hour of Self Labor (line 7÷9)	17.79	9.10		4.88
13. _____				

14. Occupational Skills Total Hours (Column M — page 30-33) _____

*Include cost of consumable items (feed, vaccine, etc.) in opening inventory minus consumable items (feed, vaccine, etc.) in closing inventory.

SUMMARY OF IMPROVEMENT PROGRAMS (List)

1. _____ 4. _____
2. _____ 5. _____
3. _____ 6. _____

SUMMARY OF AGRICULTURAL SKILLS PERFORMED (List)

1. _____ 6. _____
2. _____ 7. _____
3. _____ 8. _____
4. _____ 9. _____
5. _____ 10. _____

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 140 - H

UNIT TEST

Name _____ Score_____

1. Match terms associated with SAE to their correct definition. Write the correct numbers in the blank.

_____a.	Category of the total business for which individual records are kept as a part of the total record-keeping system	1.	Supervised Agricultural Experience (SAE) Program
_____b.	Itemized list of assets and their values pertaining to the SAE program; listed according to enterprises at the close of the record-keeping period	2.	Occupational experience
		3.	Laboratory experience
_____c.	Part of SAE program that involves ownership or placement experiences in school or community facilities under the direction of the vocational agriculture instructor; students are not paid for this experience	4.	Occupational skills
		5.	Occupational objective
_____d.	Itemized list of assets and their values pertaining to the SAE program; listed according to enterprises at the start of the record-keeping period	6.	Enterprise
		7.	Scope
_____e.	Consists of practical agricultural activities performed by students outside of scheduled classroom and laboratory time	8.	Beginning inventory
		9.	Asset
_____f.	Any fixed quantity, amount, distance, or measure used as a standard for counting or measuring items or assets	10.	Unit
		11.	Unit price
_____g.	A statement that lists the assets and liabilities of the business at a particular time, usually at the end of the accounting year (also called a balance sheet)	12.	Ending inventory
		13.	Net worth
		14.	Liabilities
_____h.	Monetary value assigned to individual units; used to figure overall value	15.	Lien
_____i.	Financial claims against a business	16.	Financial statement
_____j.	Part of the SAE program that involves jobs or practices performed to improve the student's occupational competence		

_____k. Extent, size or volume of the SAE program or an enterprise of the SAE program

_____l. Difference between total assets and total liabilities

_____m. Part of SAE program that involves production farming or agribusiness employment to gain knowledge, skill, on-the-job experience and income

_____n. Any item of value owned or claimed as part of the business

_____o. Claim against property for an amount of money owed to someone or a business

_____p. A person's career goal

2. Describe the three types of SAE programs.

a._____

_____

_____

_____

_____

_____

_____

b. _____

_____

_____

_____

_____

_____

_____

c._____

_____

_____

_____

_____

_____

_____

3. List 6 reasons for participating in a supervised agricultural experience program.

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

4. Select from the following list factors to consider when choosing an SAE program. Write an "X" in the blank before each correct answer.

_____a. Personal interest

_____b. Relatives' agricultural backgrounds

_____c. Local secondary agriculture department requirement

_____d. Facilities available

_____e. Current feed prices

_____f. My friends' interests

_____g. Background and knowledge

_____h. Transportation needs and availability

_____i. Personal preference of ag instructor

_____j. Finances available

5. List four factors to consider in developing a plan for a long-term SAE program.

   a. _____

   _____

   b. _____

   _____

   c. _____

   _____

   d. _____

   _____

6. List five characteristics of a good SAE program.

   a. _____

   _____

   b. _____

   _____

   c. _____

   _____

   d. _____

   _____

   e. _____

   _____

7. List six student responsibilities in conducting SAE programs.

   a. _____

   _____

   b. _____

   _____

   c. _____

   _____

d. _____

_____

e. _____

_____

f. _____

_____

8. List four sources for financing productive enterprises.

a. _____

b. _____

c. _____

d. _____

9. Arrange in order the steps involved in obtaining a loan from a credit source. Write a "1" before the first step, a "2" before the second step, and so on.

_____a. Complete application papers

_____b. Meeting with credit sources

_____c. Prepare presentation

_____d. Identify possible credit sources

_____e. Select credit source preferred

_____f. Develop a budget and financial statement

_____g. Compare advantages and disadvantages of each credit source contacted

_____h. Call to make appointments with credit sources

_____i. Draw up and sign a contract

10. List the types of SAE program records.

a. _____

b. _____

c. _____

d. _____

11. List five reasons for keeping records on your SAE program.

    a. _____

    b. _____

    c. _____

    d. _____

    e. _____

12. Select from a list standards for keeping records on your SAE program. Write an "X" in the blank before each correct answer.

    _____a. Review and update record book each week

    _____b. Keep records on a calendar year from July 1 to June 30

    _____c. Ask instructor for help as needed

    _____d. Make entries neat, complete, easy to read

    _____e. Use pen for entries

    _____f. Complete all relevant pages in record book

    _____g. Use one record book for your entire 4-year program

    _____h. Enter income and expenses at the end of each month

    _____i. Use a pencil for entries

    _____j. Keep record book accessible and protected

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 140 - H

ANSWERS TO TEST

1.

a.	6	g.	16	l.	13
b.	12	h.	11	m.	2
c.	3	i.	14	n.	9
d.	8	j.	4	o.	15
e.	1	k.	7	p.	5
f.	10				

2. a. Occupational experience (OE)--Part of SAE program that involves production f arming or agribusiness employment to gain knowledge, skill, on-the-job experience and income

Includes:
Ownership experience (production program)-- a type of OE in which students have personal ownership of the materials and other inputs required and have managerial responsibilities

Placement experience (agribusiness employment)--A type of OE in which students work for other people or are self-employed in agriculture

Improvement program--Improve appearance and/or real estate value of home or farm; Increase efficiency and/or profits; Increase family comfort and/or convenience; May or may not provide financial return; Carried out in addition to other SAE components; Programs include new construction; the repair or renovation of existing facilities; painting; the improvement, repair and construction of farm equipment and machinery; property beautification; recreational facilities; and the improvement of land, irrigation and utilities

b. Laboratory experience (LE)--Part of SAE program that involves ownership or placement experiences in school or community facilities under the direction of the vocational agriculture instructor. Students are not paid for this experience

c. Occupational skills (OS)--Part of the SAE program that involves jobs or practices performed to improve the student's occupational competence. The student is not generally paid to master these skills. Usually, these skills are not directly related to the student's occupational choice or improvement projects, but should serve to enrich the student's background

3. Answer should include six of the following:

Learning responsibility; Gaining experience; Earning money; Developing management abilities; Preparing for a career; Learning record keeping; Learning skills or improving skills in agriculture; Becoming established in farming or an agribusiness occupation; Developing self-discipline; Developing human relations skills; Gaining experience in money management

4. a, c, d, g, h, j

5. Answer should include four of the following:

   Occupational objective area; Facilities and finances available, as needed for expansion; Net income expected; Degree of independence expected; Anticipated scope of program in four years; Areas of interest; Support of parents or other parties

6. Answer should include five of the following:

   Based upon the student's interests; Has an agricultural focus; Provides for the development of a large number of abilities; Sufficient in scope to be challenging; Contains diversity; Provides an opportunity to make management decisions; Has the potential for profit; Requires student's involvement most of the year; Provides opportunities for expansion; Can lead to future business ownership or employment in agriculture

7. Answer should include six of the following:

   Consider the responsibilities; Keep teacher, parents and employers informed; Set goals for yourself; Keep records of financial concerns and experiences gained; Seek advice/assistance from your ag instructor; Meet financial obligations; Carry out your SAE program plan; Self-evaluate your progress; Develop an SAE program that will be valuable to you

8. Local bank or other credit institution; FFA chapter loan program; Parents or other individuals; Self-financing with job or savings account

9.

a.	8	d.	3	g.	6
b.	5	e.	7	h.	4
c.	2	f.	1	i.	9

10. Inventories; Skills and experience records; Financial records and planning guides; FFA and other leadership activities

11. Answer should include five of the following:

    Cash flow analyzation; Money management; Profit/loss determination; Financial progress observation over several years; Basis for sound management decisions; Investment and purchasing guidance; FFA awards; Information for income tax returns; Information for obtaining a loan

12. a, c, d, f, i, j