

Course	Agricultural Science I
Unit	Introduction to Beef Production
Lesson	Introduction to the Beef Industry
Estimated Time	50 minutes

Student Outcome

Describe the importance of the beef industry in Missouri.

Learning Objectives

1. Describe the importance of the beef industry in Missouri.
2. Explain how the beef industry evolved in the United States.
3. Differentiate between commonly used beef cattle terms.
4. Describe how the segments of the beef industry differ.
5. Identify career opportunities that are available in the beef cattle industry.

Grade Level Expectations

Resources, Supplies & Equipment, and Supplemental Information

Resources

1. PowerPoint Slides
 - PPt 1 – Beef Cattle Industry Flow Chart
2. Activity Sheets
 - AS 1 – A Career in the Beef Industry
3. *Introduction to Beef Production (Student Reference)*. University of Missouri-Columbia: Instructional Materials Laboratory, 1997.
4. *Introduction to Beef Production Curriculum Enhancement*. University of Missouri-Columbia: Instructional Materials Laboratory, 2003.

Supplemental Information

1. Internet Sites
 - “Beef Production Glossary: BIF Fact Sheet.” MU Extension. University of Missouri-Columbia. Accessed June 27, 2007, from <http://extension.missouri.edu/explore/agguides/ansci/g02030.htm>.
 - National Agricultural Statistics Service. United States Department of Agriculture. Accessed June 27, 2007, from <http://www.nass.usda.gov/>.
 - “Missouri Farm Facts.” National Agricultural Statistics Service. United States Department of Agriculture. Accessed June 27, 2007, from http://www.nass.usda.gov/Statistics_by_State/Missouri/Publications/Farm_Facts/.
 - “Beef Cattle Terminology.” Purebred Cattle Pages. Accessed June 27, 2007, from <http://www.pbcattle.com/terminology.htm>.

Interest Approach

Ask students which country leads the world in cattle numbers (India). Ask the students where they think the United States ranks in numbers of cattle and where Missouri ranks nationally in beef cattle numbers (3rd and 2nd, respectively).

Communicate the Learning Objectives

1. Describe the importance of the beef industry in Missouri.
2. Explain how the beef industry evolved in the United States.
3. Differentiate between commonly used beef cattle terms.
4. Describe how the segments of the beef industry differ.
5. Identify career opportunities that are available in the beef cattle industry.

Instructor Directions	Content Outline
<p>Objective 1</p> <p><i>Discuss the importance of beef cattle to Missouri. Explain that beef cattle convert forage to pounds of beef and that much of the land used for forages cannot be planted for grain production, so cattle production is the best use of this land.</i></p> <p><i>Use the Interactive Flash Enhancement "Beef Cow Numbers – Top Ten Counties" to show the top ten beef cow counties in Missouri.</i></p>	<p>Describe the importance of the beef industry in Missouri.</p> <ol style="list-style-type: none">1. Missouri ranks second nationally in total number of beef cows in production.2. More than 7 percent of U.S. cattle operations are found within the state.3. More than 4.5 million head of cows and calves are inventoried in Missouri each year.4. Missouri ranks highly in the production of purebred beef cattle; several nationally recognized herds are located in Missouri.5. Beef production is scattered statewide, with most of the cows in southwestern Missouri.6. In 2004, Polk County ranked first in beef cow numbers.
<p>Objective 2</p> <p><i>Describe the evolution of the beef cattle industry in the United States. Discuss the fact that beef cattle are not native to this continent and had to be imported. Point out the importance of beef cattle production in the settlement of the western United States.</i></p>	<p>Explain how the beef industry evolved in the United States.</p> <ol style="list-style-type: none">1. Christopher Columbus brought the first cattle to the New World on his second voyage.2. The Spanish introduced the Longhorn breed into Mexico in the early 1500s.3. The first known purebred breed to be imported was Shorthorns, which were brought to America in the 1780s.4. Cattle drives brought Longhorn cattle out of Texas to cow towns from which cattle were shipped east.5. The reduction of buffalo herds and the end of clashes with the Native Americans helped open the Great Plains for beef production.

Instructor Directions	Content Outline
	<ol style="list-style-type: none"> 6. The fencing of the west with barbed wire led to the improvement of herds that could be managed more easily. 7. An emphasis on improving herds led to the importation of many modern beef breeds in the 1960s.
<p>Objective 3</p> <p><i>Each livestock production system has a unique set of terms. Ask students if there are any beef terms they do not understand.</i></p>	<p>Differentiate between commonly used beef cattle terms.</p> <ol style="list-style-type: none"> 1. Steer – castrated male 2. Heifer – young female that has not given birth to a calf 3. Bull – mature male 4. Cow – female that has given birth to a calf 5. Polled – genetically without horns 6. Feeder calf – term used for a male or female animal from weaning until the calf is placed into a feedlot 7. Replacement cattle – bulls and heifers that will be used to add to or replace existing breeding stock 8. Slaughter cattle – steers and heifers between 1,000 and 1,350 pounds that will be processed into beef
<p>Objective 4</p> <p><i>Discuss the four major segments of the cattle industry. Point out that Missouri produces many feeder calves that are shipped west to be fed out. Use PPt 1 to illustrate the four major segments of the cattle industry.</i></p> <p><input type="checkbox"/> PPt 1 – Beef Cattle Industry Flow Chart</p>	<p>Describe how the segments of the beef industry differ.</p> <ol style="list-style-type: none"> 1. Purebred breeders produce genetically superior females and herd bulls to be used by commercial cow/calf producers to improve their stock. 2. Cow/calf producers produce steers and heifers, which they may sell at weaning to a backgrounder or feedlot operator as feeder calves. 3. Backgrounders graze the cattle on forages, usually supplemented with small amounts of grain, until they are ready to go to the feedlot. 4. Feedlot operators purchase or custom feed calves from either cow/calf producer or backgrounders; they feed the calves until they are ready for slaughter.
<p>Objective 5</p> <p><i>Emphasize the diversity of beef cattle career opportunities. Some careers require only a high school education, while others require advanced degrees and training. Have students use AS 1 to research a career in the beef cattle</i></p>	<p>Identify career opportunities that are available in the beef cattle industry.</p> <ol style="list-style-type: none"> 1. Beef cattle producer 2. Ranch manager 3. Artificial insemination technician 4. Livestock order buyer 5. Veterinarian 6. Pharmaceutical sales representative

Instructor Directions	Content Outline
<p><i>industry and report their findings to the class.</i></p> <p>📄 AS 1 – A Career in the Beef Industry</p>	<p>7. Equipment sales and services representative 8. Nutritionist 9. Feedlot operator 10. Livestock extension specialist 11. Biotechnology researcher</p>
<p>Application:</p> <p>📄 AS 1 – A Career in the Beef Industry</p>	<p>Answers to AS 1 Answers will vary.</p> <p>Other activities 1. Have students research the history of beef production in another country, such as Argentina or Australia.</p>
<p>Closure/Summary</p>	<p>Though beef cattle are not native to the United States, their production has become very important to the agricultural industry. The beef industry is a vital part of agriculture in Missouri, which is ranked second in the nation in the number of beef cattle and has several nationally recognized purebred herds. Many career opportunities exist in the beef industry for people interested in this field.</p>
<p>Evaluation: Quiz</p>	<p>Answers</p> <p>1. d 2. b 3. c 4. c 5. Christopher Columbus 6. Answers will include any five of the following: beef cattle producer, ranch manager, artificial insemination technician, livestock order buyer, veterinarian, pharmaceutical sales representative, equipment sales and services representative, nutritionist, feedlot operator, livestock extension specialist, and biotechnology researcher. 7. A bull is a mature male, and a steer is a castrated male. A heifer is a young female that has not given birth to a calf.</p>

Lesson 1: Introduction to the Beef Industry

Name _____

A Career in the Beef Industry

Objective: Learn more about the beef industry by conducting an interview with someone in a career related to the industry.

Interview a person with a career in the beef industry. Record his or her name, occupation, and place of employment. Use the questions on this sheet as an aid during the interview. Write down the answers to the questions and any other information that is important. Report about the career to the class.

Name:

Occupation:

Place of Employment:

How long have you worked in your present occupation?

Why did you choose this career?

What training was necessary for this job?

What professional skills do you use?

What jobs have you previously had that helped prepare you for this one?

What other jobs have you considered?

What are your career plans for the future?

What advice would you give someone who is considering a career in this area?

Comments:

UNIT - INTRODUCTION TO BEEF PRODUCTIONName _____

Lesson 1: Introduction to the Beef Industry Date _____

EVALUATION

Circle the letter that corresponds to the best answer.

1. Which industry segment is involved solely in grazing cattle on forages and small amounts of grain until the cattle are ready to be fed out?
 - a. Cow/calf producers
 - b. Purebred producers
 - c. Feedlot producers
 - d. Backgrounders

2. Where does Missouri rank in beef cattle numbers?
 - a. First
 - b. Second
 - c. Third
 - d. Fourth

3. Which industry segment produces genetically superior bulls and heifers to improve stock?
 - a. Cow/calf producers
 - b. Backgrounders
 - c. Purebred producers
 - d. Feedlot operators

4. How many cows and calves are inventoried in Missouri each year?
 - a. More than 2.5 million
 - b. More than 3.5 million
 - c. More than 4.5 million
 - d. More than 5.5 million

Complete the following short answer questions.

5. Who brought the first cattle to the New World?

6. What are five careers in the beef industry?

a.

b.

c.

d.

e.

7. What is the difference between a bull, steer, and heifer?

Course	Agricultural Science I
Unit	Introduction to Beef Production
Lesson	Breeds of Beef Cattle
Estimated Time	90 minutes or 2-50 minute blocks

Student Outcome

Identify the major beef breeds and explain their significance to the beef industry.

Learning Objectives

1. Explain the difference between the *Bos indicus* and *Bos taurus* species of beef cattle.
2. Describe the history and identifying characteristics of beef breeds common in Missouri.
3. Explain factors that influence breed selection.

Grade Level Expectations

SC/LO/1/E/09-11/a

Resources, Supplies & Equipment, and Supplemental Information

Resources

1. Activity Sheets
 -  AS 1 - Beef Breeds
 -  AS 2 - Researching Beef Breeds
2. *Introduction to Beef Production (Student Reference)*. University of Missouri-Columbia: Instructional Materials Laboratory, 1997.
3. *Introduction to Beef Production Curriculum Enhancement*. University of Missouri-Columbia: Instructional Materials Laboratory, 2003.

Supplies & Equipment

- Picture of a black breed of cattle other than Angus, such as black Limousin or black Salers
- Picture of a crossbred beef cow

Supplemental Information

1. Internet Sites
 - "Breeds of Livestock." Oklahoma State University. Accessed June 27, 2007, from <http://www.ansi.okstate.edu/breeds/cattle/>.
 - "Selecting Breeds of Beef Cattle" from "Beef Cattle Breeds and Biological Types." Virginia Cooperative Extension. Virginia State University. Accessed June 27, 2007, from <http://www.ext.vt.edu/pubs/beef/400-803/400-803.html#L3>.
 - "Breeds of Beef Cattle." Dairy and Animal Science, The Pennsylvania State University. Accessed June 27, 2007, from <http://www.das.psu.edu/pdf/steer04.pdf>.
2. Print
 - Felius, Marleen. *Cattle Breeds: An Encyclopedia*. Trafalgar Square Books, 2007.

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- ❑ Thomas, Heather Smith. *Storey's Guide to Raising Beef Cattle: Health/Handling/Breeding*. Rev. Ed. North Adams, MA: Storey Publishing, LLC, 1998.
 - ❑ Thomas, Heather Smith. *Getting Started with Beef and Dairy Cattle*. North Adams, MA: Storey Publishing, LLC, 2005.
 - ❑ Pukite, John. *A Field Guide to Cows: How to Identify and Appreciate America's 52 Breeds*. New York: Penguin Group, 1998.
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Interest Approach

1. Show a picture of a black breed of cattle other than Angus, such as black Limousin or black Salers. Have students try to guess what breed it is.
2. Show students a picture of a crossbred beef cow. Ask them to identify the beef breeds used in breeding.

Communicate the Learning Objectives

1. Explain the difference between the *Bos indicus* and *Bos taurus* species of beef cattle.
2. Describe the history and identifying characteristics of beef breeds common in Missouri.
3. Explain factors that influence breed selection.

Instructor Directions	Content Outline
<p>Objective 1</p> <p><i>Ask students what the main differences are between different breeds that they have seen. Lead into a discussion of the two species of beef cattle, <i>Bos indicus</i> and <i>Bos Taurus</i>.</i></p>	<p>Explain the difference between the <i>Bos indicus</i> and <i>Bos taurus</i> species of beef cattle.</p> <p><i>Bos indicus</i></p> <ol style="list-style-type: none">1. Originated from Zebu cattle from India2. Loose skin3. Large ears4. Humped5. Heat resistant6. Insect resistant <p><i>Bos taurus</i></p> <ol style="list-style-type: none">1. Originated in Europe2. Tight hides3. Small ears4. No humps5. More tolerant of cold weather
<p>Objective 2</p> <p><i>Ask students how many breeds of cattle they can name. Stress that there are more than 200 breeds worldwide.</i></p> <p><i>Point out that many of the breeds common in Missouri are crossbred to produce calves with desirable characteristics.</i></p> <p><i>Hand out AS 1 and have students fill in the chart as you discuss the</i></p>	<p>Describe the history and identifying characteristics of beef breeds common in Missouri.</p> <p>Angus</p> <ol style="list-style-type: none">1. First imported from Scotland by George Grant of Kansas in 18732. Black3. Polled4. Maternal5. High quality carcasses with a large degree of marbling <p>Red Angus</p> <ol style="list-style-type: none">1. Red due to a recessive gene in Black Angus

Instructor Directions	Content Outline
<p><i>different beef breeds.</i></p> <p> AS 1 – Beef Breeds</p> <p><i>After completing the lesson, hand out AS 2 and have each student choose a different beef breed association.</i></p> <p> AS 2 – Researching Beef Breeds</p>	<p>2. Same characteristics as Black Angus</p> <p>Beefmaster</p> <ol style="list-style-type: none"> 1. Developed in Texas in 1931 by Tom Lasater 2. $\frac{1}{4}$ Hereford, $\frac{1}{4}$ Shorthorn, $\frac{1}{2}$ Brahman 3. Red to almost white in color 4. Horned or polled 5. Good growth rate 6. Hardy 7. Maternal 8. Fertile <p>Brahman</p> <ol style="list-style-type: none"> 1. Developed from Zebu cattle from India crossed with several European breeds 2. Gray to black in color 3. Loose hides 4. Large ears 5. Humped 6. Horned 7. Heat resistant 8. Insect resistant <p>Brangus</p> <ol style="list-style-type: none"> 1. Developed in the United States in the early 20th century 2. $\frac{5}{8}$ Angus, $\frac{3}{8}$ Brahman 3. Black 4. Polled 5. Maternal 6. High growth rate 7. Thick carcasses with a minimum of excess fat <p>Charolais</p> <ol style="list-style-type: none"> 1. Introduced into the United States by the King Ranch in the 1930s 2. Originally developed in France 3. White 4. Horned or polled 5. Large 6. Heavily muscled 7. Fast growing

Instructor Directions	Content Outline
	<p>Chianina</p> <ol style="list-style-type: none"> 1. Originated in Italy 2. First used in the United States in the early 1970s 3. Used to produce show steers and as a terminal breed 4. Almost any color 5. Horned or polled 6. Fast growing 7. Extremely large <p>Gelbvieh</p> <ol style="list-style-type: none"> 1. Originated in Germany 2. Imported in the early 1970s 3. Red to golden or black in color 4. Horned or polled 5. Gentle 6. Very maternal <p>Hereford</p> <ol style="list-style-type: none"> 1. Imported from England by Henry Clay in 1817 2. Red with white face and chest; also white on the neck, feet, and switch 3. Horned but used to develop Polled Hereford breed 4. Excellent foragers 5. Tolerant of cold weather <p>Limousin</p> <ol style="list-style-type: none"> 1. Originated in France 2. First introduced into the United States in the late 1960s 3. Light red to dark red or black 4. Horned or polled 5. Lean 6. Heavily muscled <p>Longhorn</p> <ol style="list-style-type: none"> 1. Originally from Spain 2. Brought to Mexico and then Texas in the early 1500s 3. Extremely hardy 4. Almost any color or combination of colors 5. Horned (spreading to four or more feet) 6. Lean meat 7. Adaptable to harsh environmental conditions 8. Resistant to many diseases and parasites

Instructor Directions	Content Outline
	<p>Maine Anjou</p> <ol style="list-style-type: none"> 1. Originated in France 2. Introduced to the United States around 1970 3. Red and white, solid red, black, or black and white in color 4. Horned or polled 5. Heavily muscled 6. Gentle 7. Fast growing 8. Used extensively in producing show steers <p>Salers</p> <ol style="list-style-type: none"> 1. Originated in France 2. Imported in the mid-1970s 3. Black or dark cherry red in color 4. Horned 5. Easy calving 6. High growth <p>Santa Gertrudis</p> <ol style="list-style-type: none"> 1. Developed on the King Ranch in Texas in the early 20th century 2. 5/8 Shorthorn, 3/8 Brahman 3. Dark red 4. Horned or polled 5. Easy calving 6. Good foraging ability <p>Shorthorn</p> <ol style="list-style-type: none"> 1. Originated in England 2. Imported in the late 1700s 3. Red, white, red and white, or roan in color 4. Horned or polled 5. Highly maternal 6. Gentle 7. High-quality carcasses <p>Simmental</p> <ol style="list-style-type: none"> 1. Originally from Switzerland 2. First imported in 1969 3. Solid red, red and white, yellow, black, or black and white in color 4. Horned or polled

Instructor Directions	Content Outline
	<ol style="list-style-type: none"> 5. Large 6. Fast growing 7. Maternal 8. High milk production
<p>Objective 3</p> <p><i>Each producer faces a different situation and different needs for cattle. These factors affect the breed type that a particular producer will select.</i></p>	<p>Explain factors that influence breed selection.</p> <ol style="list-style-type: none"> 1. Needs of the producer 2. Breeds used in the past 3. Available feed and labor resources 4. Goals of the operation 5. Market trends 6. Traits of the breeds
<p>Application:</p> <p> AS 1 – Beef Breeds</p> <p> AS 2 – Researching Beef Breeds</p>	<p>Answers to AS 1 See Objective 2</p> <p>Answers to AS 2 Answers will vary based upon breed students choose.</p> <p>Other Activities:</p> <ol style="list-style-type: none"> 1. Show students pictures of the different breeds of cattle discussed in this lesson and have them identify the breed. 2. Have students search the Internet for information on different breeds. Oklahoma State University has a website that covers many breeds.
<p>Closure/Summary</p>	<p>The two species of cattle are <i>Bos indicus</i> and <i>Bos taurus</i>; all breeds of beef cattle belong to one of these two species or are some combination of the two. Many different breeds are found in Missouri. Producers must decide which breed best meets their needs when selecting a breed for production.</p>
<p>Evaluation: Quiz</p>	<p>Answers:</p> <ol style="list-style-type: none"> 1. b 2. d 3. c 4. e 5. a 6. b 7. a 8. Answers may include any of the following: Angus, Brahman, Brangus, Chianina, Gelbvieh, Limousin,

Instructor Directions	Content Outline
	<p>Longhorn, Maine Anjou, Salers, and Simmental</p> <p>9. Angus, Brahman</p> <p>10. Answers may include any two of the following: Angus, Red Angus, Beefmaster, Brangus, Gelbvieh, Simmental, and Shorthorn</p> <p>11. Answers may include any two of the following: needs of the producer, breeds used in the past, available feed and labor resources, goals of the operation, market trends, and traits of the breeds</p>

Lesson 2: Breeds of Beef Cattle

Name _____

Beef Breeds

Objective: Identify the distinguishing characteristics of major beef breeds.

Fill in the table with information about each of the beef cattle breeds listed.

Breed Name	Color/Colors	When Imported/ Developed	Country of Origin/ Developer	Special Traits
Angus				
Red Angus				
Beefmaster				
Brahman				
Brangus				
Charolais				
Chianina				

Breed Name	Color/Colors	When Imported/ Developed	Country of Origin/ Developer	Special Traits
Gelbvieh				
Hereford				
Limousin				
Longhorn				
Maine Anjou				
Salers				
Santa Gertrudis				
Shorthorn				
Simmental				

Lesson 2: Breeds of Beef Cattle

Name _____

Researching Beef Breeds

Objective: Become more familiar with the various beef breeds.

Obtain the address of one of the major beef breed associations from your instructor. Write a letter to the association requesting information, pictures, videos, etc., for that breed.

When you receive the materials from the breed association, prepare a report for the class. Your report should answer the following questions.

- What is the official name of the breed association?
- What is the history of the breed?
- When was the breed association formed?
- What are the standards for registration?
- What characteristics would disqualify an animal for registration?
- What are the important traits of the breed?

UNIT - INTRODUCTION TO BEEF PRODUCTION Name _____

Lesson 2: Breeds of Beef Cattle

Date _____

EVALUATION

Match the name of the breed on the right with the best description on the left.

- | | | |
|-------|--------------------------|---------------|
| _____ | 1. Black and polled | a. Limousin |
| _____ | 2. Red with white face | b. Angus |
| _____ | 3. Originally from Spain | c. Longhorn |
| _____ | 4. 1/4 Shorthorn | d. Hereford |
| _____ | 5. Originated in France | e. Beefmaster |

Circle the letter that corresponds to the best answer.

6. Which breed did Henry Clay introduce to America?

- a. Simmental
- b. Hereford
- c. Santa Gertrudis
- d. Shorthorn

7. *Bos indicus* cattle originated in which country?

- a. India
- b. United States
- c. Russia
- d. England

Complete the following short answer questions.

8. What are four breeds that can be black?
 - a.
 - b.
 - c.
 - d.
9. Which two breeds were used to develop the Brangus?
 - a.
 - b.
10. What are two maternal breeds of cattle?
 - a.
 - b.
11. What are two considerations when choosing a breed?
 - a.
 - b.

Course	Agricultural Science I
Unit	Introduction to Beef Production
Lesson	Principles of Beef Cattle Selection
Estimated Time	90 minutes or 2-50 minute blocks

Student Outcome

Utilize the available information to select beef cattle.

Learning Objectives

1. Identify the parts of a beef animal.
2. Identify the wholesale cuts of beef.
3. Determine the criteria used in the selection of slaughter and feeder cattle.
4. Determine the criteria used in the selection of breeding cattle.
5. Explain the difference between crossbred and purebred breeding systems.

Grade Level Expectations

SC/EC/3/B/09-11/a SC/LO/3/E/09-11/a
 SC/LO/3/B/09-11/d SC/LO/3/E/09-11/c

Resources, Supplies & Equipment, and Supplemental Information

Resources

1. PowerPoint Slides
 - PPt 1 - Parts of a Beef Animal
 - PPt 2 - Wholesale Cuts of Beef
 - PPt 3 - Thickness
 - PPt 4 - U.S.D.A. Grades for Feeder Steers
2. Activity Sheets
 - AS 1 - Parts of a Beef Animal
 - AS 2 - Calculating Adjusted Weaning Weights
 - AS 3 - EPDs and the Performance of Limousin Bulls
3. *Introduction to Beef Production (Student Reference)*. University of Missouri-Columbia: Instructional Materials Laboratory, 1997.
4. *Introduction to Beef Production Curriculum Enhancement*. University of Missouri-Columbia: Instructional Materials Laboratory, 2003.

Supplies & Equipment

- Picture of a champion market steer from a major show

supplemental Information

1. Internet Sites

- Animal Science Publications. MU Extension. University of Missouri-Columbia. Accessed June 28, 2007, from <http://extension.missouri.edu/explore/agguides/ansci/>.
- TheBeefSite.com. 5M Enterprises, LTD. Accessed June 28, 2007, from <http://www.thebeefsite.com/articles/>.
- Livestock and Forages Publications. Cooperative Extension Service. University of Arkansas, Division of Agriculture. Accessed June 28, 2007, from <http://www.aragriculture.org/livestock/publications.htm>.
- "Retail Beef Cuts, Yellowsheet.com." Stewart-Miller Incorporated. Accessed June 28, 2007, from <http://www.yellowsheet.com/retail/>.
- "Beef Cuts." Certified Angus Beef, LLC. Accessed June 28, 2007, from <http://www.certifiedangusbeef.com/chef/cuts.php>.
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2. Print

- Field, T. G. and R. E. Taylor. *Beef Production Management and Decisions*. 5th Ed. Upper Saddle River, NJ: Prentice Hall, 2006.
 - Ensminger, M.E. *Beef Cattle Science*. 7th Ed. Upper Saddle River, NJ: Prentice Hall, 2002.
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Interest Approach

1. Show a picture of a champion market steer from a major show (e.g., the Missouri State Fair) from a trade magazine or semen catalog. Discuss the value that the steer generated and how selection was a key to its success.
2. Allow students to participate in judging contests. Many area, district, and state livestock judging contests are open to agricultural education students.

Communicate the Learning Objectives

1. Identify the parts of a beef animal.
2. Identify the wholesale cuts of beef.
3. Determine the criteria used in the selection of slaughter and feeder cattle.
4. Determine the criteria used in the selection of breeding cattle.
5. Explain the difference between crossbred and purebred breeding systems.

Instructor Directions	Content Outline
<p>Objective 1</p> <p><i>Display Ppt 1 and pass out AS 1 to students. While correctly labeling the diagram, discuss the importance of knowing the correct terms for various parts of the beef animal. Confusion can arise from trying to describe an animal using incorrect terminology.</i></p> <p><input type="checkbox"/> Ppt 1 - Parts of a Beef Animal</p> <p><input type="checkbox"/> AS 1 - Parts of a Beef Animal</p>	<p>Identify the parts of a beef animal.</p> <ol style="list-style-type: none">1. Muzzle2. Face3. Eye4. Poll5. Throat6. Dewlap7. Hoof8. Dewclaw9. Cannon bone10. Knee11. Forearm12. Brisket13. Shoulder14. Loin15. Heart girth16. Ribs17. Belly18. Flank19. Hock20. Round21. Rump22. Hip bone23. Tail head24. Pin bones25. Twist26. Cod/udder27. Switch

Instructor Directions	Content Outline
<p>Objective 2</p> <p><i>Discuss the difference between a wholesale and retail cut of meat. Display PPT 2 and discuss the different cuts of beef. Emphasize that the purpose of raising beef cattle is for food. Stress the fact that producers are not producing cattle but beef for human consumption.</i></p> <p><input type="checkbox"/> PPT 2 - Wholesale Cuts of Beef</p>	<p>Identify the wholesale cuts of beef.</p> <ol style="list-style-type: none"> 1. Round 2. Sirloin 3. Short loin 4. Rub 5. Chuck 6. Flank 7. Short plate 8. Brisket 9. Fore shank
<p>Objective 3</p> <p><i>Ask students to describe the difference between slaughter cattle and feeder cattle. Survey students about what characteristics would be important to each type of animal. As an example of muscling, display PPT 3.</i></p> <p><input type="checkbox"/> PPT 3 - Thickness</p> <p><i>While discussing feeder cattle frame size, display PPT 4 to demonstrate the USDA grading</i></p>	<p>Determine the criteria used in the selection of slaughter and feeder cattle.</p> <p>Slaughter cattle</p> <ol style="list-style-type: none"> 1. Muscling <ol style="list-style-type: none"> a. Thicker cattle have more muscle thickness and width along their top line and through their rump and stifle. b. Observe the size of the forearm, the thickness along the top of the calf, and thickness and depth of the quarter. 2. Size <ol style="list-style-type: none"> a. Size suggests the potential carcass weight of the animal. b. Packers prefer a carcass weight of 600 to 850 pounds with a live weight between 1,000 and 1,250 pounds. 3. External Fat <ol style="list-style-type: none"> a. Cattle must have 1/2 inch or less of external fat at the 12th and 13th rib area to have the potential to reach choice-quality grade. b. Steers and heifers will have a smooth appearance along the ribs, pones of fat opposite the pin bones, and evidence of fat on the cod or udder region and through the brisket. <p>Feeder Cattle</p> <ol style="list-style-type: none"> 1. Frame size <ol style="list-style-type: none"> a. Frame size is determined by looking at height in

Instructor Directions	Content Outline
<p><i>system for frame size and muscling.</i></p> <p>☐ PPt 4 – USDA Grades of Feeder Steers</p>	<p>relation to age.</p> <p>b. Feeder steers and heifers may have a large, medium, or small frame.</p> <p>c. Frame size is based on a prediction of what the live weight of the calf will be when it has 1/2 inch of external fat in the 12th and 13th rib area.</p> <p>2. Muscling</p> <p>a. Feeder steers and heifers may have a muscle score of 1, 2, or 3, with the lower number indicating the more muscular animal.</p> <p>b. Scores depend on the animal's thickness.</p>
<p>Objective 4</p> <p><i>Ask students why selecting breeding animals carefully is important. Stress that breeding animals will have a long-term impact on a producer's herd because of females kept as replacements. Have students complete AS 2 and AS 3 after discussing EPDs.</i></p> <p>☒ AS 2 – Calculating Adjusted Weaning Weights</p> <p>☒ AS 3 – EPDs and the Performance of Limousin Bulls</p>	<p>Determine the criteria used in the selection of breeding cattle.</p> <ol style="list-style-type: none"> 1. Skeletal – ease of movement <ol style="list-style-type: none"> a. Taking long strides off both ends of the skeleton b. Filling its track c. Setting feet down square and wide 2. Volume/capacity <ol style="list-style-type: none"> a. Deep sided b. Wide ribbed c. Spring or curvature of rib cage 3. Muscling – Heavily muscled 4. Balance <ol style="list-style-type: none"> a. Long bodied b. Level topped c. Uniform in depth d. Stout boned e. Clean fronted 5. Performance values <ol style="list-style-type: none"> a. Actual weights – birth weight, weaning weight, yearling weight b. Feed to gain rations 6. Frame score – height in relation to age <ol style="list-style-type: none"> a. Males larger than females b. Range from one to ten, with five to seven considered ideal 7. EPDs – expected progeny differences <ol style="list-style-type: none"> a. Birth weight (BW) EPD – prediction in pounds of the difference in birth weights b. Weaning weight (WW) EPD – prediction of the difference in pounds in weaning weights c. Yearling weight (YW) EPD – difference in pounds at one year of age

Instructor Directions	Content Outline
	<p>d. Milk (M) EPD – difference in pounds in the weaning weights of the calves produced by the parent’s female offspring due to the milk production of the cow</p>
<p>Objective 5</p> <p><i>Ask students about the importance of proper selection for commercial producers using crossbreeding and for purebred breeders. For which is it more important?</i></p>	<p>Explain the difference between crossbred and purebred breeding systems.</p> <p>Crossbred</p> <ol style="list-style-type: none"> 1. Crossbreeding is mating in their herd animals of different breeds to take advantage of their different characteristics and produce offspring that display heterosis, or hybrid vigor. 2. Producers buy purebred bulls to use. 3. Most producers sell feeder calves or retain ownership through the feedlot. 4. Daughters of bulls are kept as replacements. <p>Purebred</p> <ol style="list-style-type: none"> 1. Breeders use registered bulls and females of the same breed to produce bulls and females that will be purchased by other purebred breeders and commercial producers.
<p>Application:</p> <p> AS 1 – Parts of a Beef Animal</p>	<p>Answers to AS 1</p> <ol style="list-style-type: none"> 1. Poll 2. Eye 3. Face 4. Muzzle 5. Throat 6. Dewlap 7. Brisket 8. Forearm 9. Knee 10. Cannon bone 11. Dewclaw 12. Flank 13. Hock 14. Switch 15. Round 16. Pin bones 17. Tail head 18. Rump 19. Hip bone

Instructor Directions	Content Outline
<p data-bbox="181 562 505 680">  AS 2 - Calculating Adjusted Weaning Weights </p> <p data-bbox="181 1052 597 1169">  AS 3 - EPDs and the Performance of Limousin Bulls </p>	<p data-bbox="659 222 886 531"> 20. Loin 21. Shoulder 22. Belly 23. Ribs 24. Heart girth 25. Hoof 26. Cod/udder 27. Twist </p> <p data-bbox="659 579 898 611">Answers to AS 2</p> <p data-bbox="659 617 1268 688">1. $\frac{600 - 75}{180} \times 205 + 75 + 0 = 673$ lbs.</p> <p data-bbox="659 695 1284 766">2. $\frac{480 - 90}{180} \times 205 + 90 + 20 = 554$ lbs.</p> <p data-bbox="659 772 1284 844">3. $\frac{390 - 70}{210} \times 205 + 70 + 54 = 436$ lbs.</p> <p data-bbox="659 850 1284 921">4. $\frac{690 - 80}{210} \times 205 + 80 + 54 = 729$ lbs.</p> <p data-bbox="659 928 1284 999">5. $\frac{515 - 79}{211} \times 205 + 79 + 40 = 543$ lbs.</p> <p data-bbox="659 1052 898 1083">Answers to AS 3</p> <p data-bbox="659 1092 1446 1283"> 1. 2, 1, 4, 3 BW EPDs, low to high 2. 3, 4, 1, 2 WW EPDs, high to low 3. 4, 3, 1, 2 YW EPDs, high to low, or fastest growth to slowest growth. Cattle will be over one year of age when sold, so the YW EPD will be expressed. </p> <p data-bbox="659 1331 898 1362">Other Activities:</p> <p data-bbox="659 1371 1292 1442"> 1. Use EPD information for a judging class. 2. Show a video on selection and judging. </p>
<p data-bbox="155 1461 399 1493">Closure/Summary</p>	<p data-bbox="659 1461 1430 1577"> Selecting feeder, slaughter, or breeding animals is a complex task. Producers can make wise choices if they keep in mind the traits needed by productive animals. </p>
<p data-bbox="155 1598 383 1629">Evaluation: Quiz</p>	<p data-bbox="659 1598 797 1629">Answers:</p> <p data-bbox="659 1638 740 1902"> 1. d 2. g 3. i 4. b 5. h 6. e 7. a </p>

Instructor Directions	Content Outline
	<ol style="list-style-type: none">8. c9. f10. j11. d12. b13. a14. Answers may include any three of the following: soundness, volume/capacity, muscling, balance, performance values, frame size, or EPDs.15. Producers use crossbred breeding systems to take advantage of the characteristics of different breeds and produce offspring that display heterosis, or hybrid vigor.

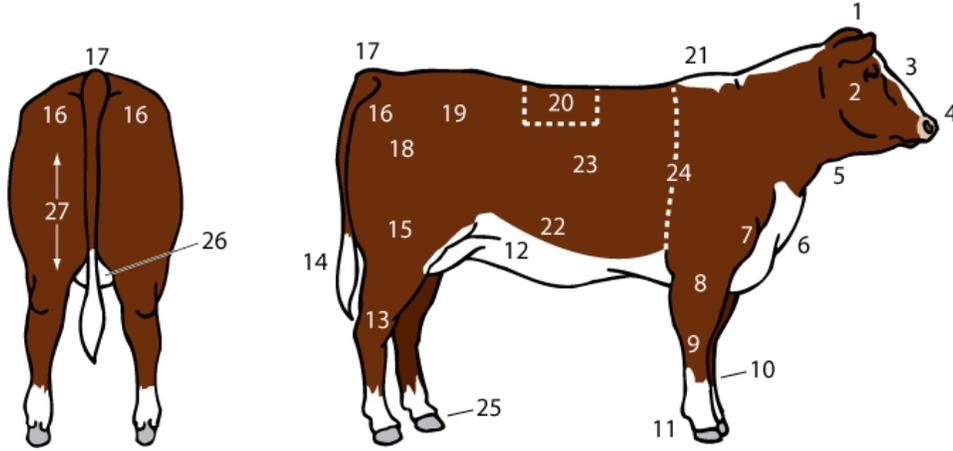
Lesson 3: Principles of Beef Cattle Selection

Name _____

Parts of a Beef Animal

Objective: Identify the parts of a beef animal.

Write the names of the parts of a beef animal in the numbered blanks.



- 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. _____

Lesson 3: Principles of Beef Cattle Selection

Name _____

Calculating Adjusted Weaning Weights

$$\text{Adjusted weaning weight} = \frac{\text{actual weight} - \text{birth weight}}{\text{age (days)}} \times 205 + \text{birth weight} + \text{age of cow adjustment}$$

Objective: Calculate adjusted weaning weights.

Age of Cow Adjustment		
Age (Years)	Adjustment for Male Calves	Adjustment for Female Calves
2	+60	+54
3	+40	+36
4	+20	+18
5-10	0	0
+11	+20	+18

Using the formula adjustment given adjusted weaning calves in the Round to the nearest pound.

and the age of cow above, calculate the weights for the following problems.

Example: Calculate the adjusted weaning weight for a 200-day-old bull calf from a three-year-old cow. The calf had a birth weight of 80 pounds and now weighs 500 pounds.

$$\frac{500 - 80}{200} \times 205 + 80 + 40 = 550.5$$

The calf has an adjusted weaning weight of 551 lbs.

1. A six-month-old heifer calf had a birth weight of 75 pounds and now weighs 600 pounds. The cow was five years old.

Lesson 3: Principles of Beef Cattle Selection

Name _____

EPDs and the Performance of Limousin Bulls**Objective:** Use expected progeny differences to select bulls for breeding.

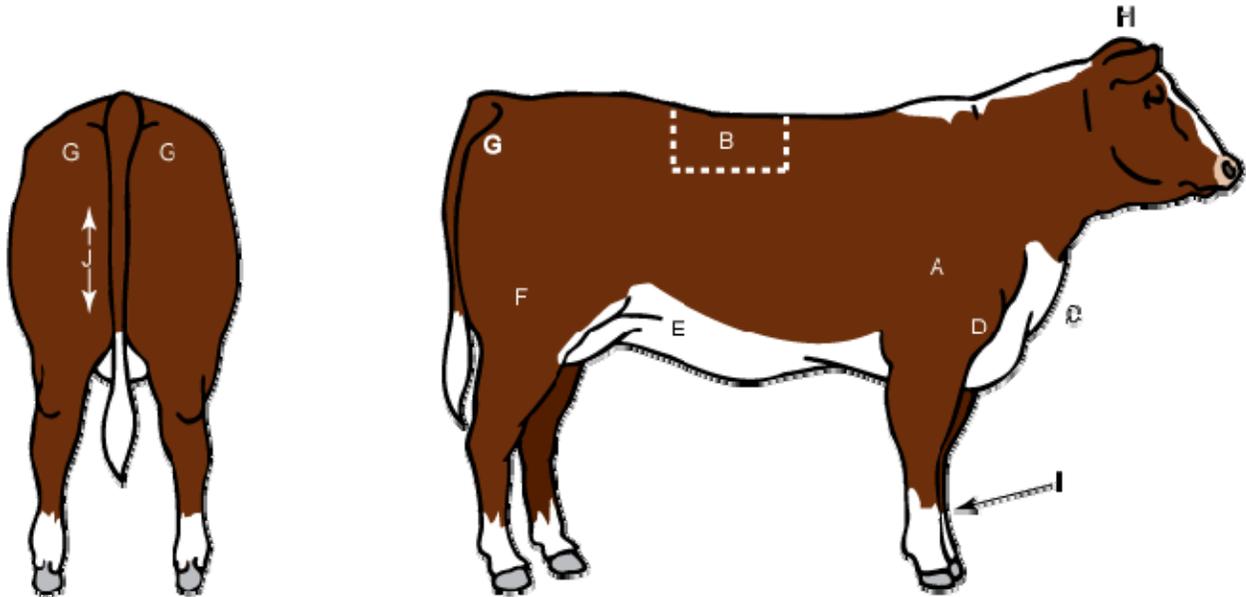
Bull	BW EPD	WW EPD	YW EPD	Milk EPD
1	+1.0	+15	+25	-7
2	-5.0	+ 5	+13	+10
3	+6.0	+49	+50	+4
4	+3.0	+30	+56	+2

Use the information in the table to rank the bulls for breeding purposes.

- Rank the Limousin bulls as if you were selecting a bull to breed first-calf heifers. Explain your answer.
- Rank the bulls as if you were purchasing a bull to use for breeding; all calves will be sold at weaning. Explain your answer.
- Rank the Limousin bulls as if you were purchasing a bull to use in your herd. You currently keep steers and feed them until they reach 1,250 pounds and/or 15 months of age. Explain your answer.

EVALUATION

Write the letter from the diagram in the blank next to the name of that part of the beef animal.



1. ____ Brisket
2. ____ Pin bones
3. ____ Cannon bone
4. ____ Loin
5. ____ Poll
6. ____ Flank
7. ____ Heart girth
8. ____ Dewlap
9. ____ Round
10. ____ Twist

Circle the letter that corresponds to the best answer.

11. Which of the following is *not* a wholesale cut of beef?
- a. Loin
 - b. Round
 - c. Flank
 - d. Shoulder
12. To have the potential to reach choice grade, slaughter cattle should have how much external fat around the 12th and 13th ribs?
- a. $\frac{1}{4}$ inch or less
 - b. $\frac{1}{2}$ inch or less
 - c. $\frac{3}{4}$ inch or less
 - d. 1 inch or less
13. Which of the following muscle scores for feeder cattle indicates the most muscular animal?
- a. 1
 - b. 2
 - c. 3
 - d. 4

Complete the following short answer questions.

14. What are three criteria used in the selection of breeding cattle?
- a.
 - b.
 - c.
15. Why do producers use crossbred breeding systems?

Course	Agricultural Science I
Unit	Introduction to Beef Production
Lesson	Production Systems
Estimated Time	50 minutes

Student Outcome

Compare various beef production systems.

Learning Objectives

1. Determine the facility requirements for the different production systems.
2. Describe how forages are used in each of the production systems.
3. Identify the production costs for beef cattle.
4. Describe how one determines which production system to select.
5. Explain the marketing options available for various production systems.

Grade Level Expectations

Resources, Supplies & Equipment, and Supplemental Information

Resources

1. PowerPoint Slides
 - PPT 1 – Facilities
2. Activity Sheets
 - AS 1 – 90-Day Feeder Steer Budget
3. *Introduction to Beef Production (Student Reference)*. University of Missouri-Columbia: Instructional Materials Laboratory, 1997.
4. *Introduction to Beef Production Curriculum Enhancement*. University of Missouri-Columbia: Instructional Materials Laboratory, 2003.

Supplemental Information

1. Internet Sites
 - Animal Science Publications. MU Extension. University of Missouri-Columbia. Accessed June 29, 2007, from <http://extension.missouri.edu/explore/agguides/ansci/>.
 - "Beef Cattle Facility Requirements." *Midwest Plan Service*. 11th Ed. Accessed June 29, 2007, from <http://www.beeflinks.com/facility.htm>.
 - "Beef Cattle Housing and Feedlot Facilities." Saskatchewan Agriculture and Food Department. Government of Saskatchewan. Accessed June 29, 2007, from <http://www.thecattlesite.com/articles/728/beef-cattle-housing-and-feedlot-facilities>.
 - "Missouri Markets Reports." Missouri Department of Agriculture. Accessed June 29, 2007, from http://www.mda.mo.gov/Market/reports_mo.htm.

2. Print

- ❑ Field, T. G. and R. E. Taylor. *Beef Production Management and Decisions*. 5th Ed. Upper Saddle River, NJ: Prentice Hall, 2006.
 - ❑ Thomas, H. S. *Storey's Guide to Raising Beef Cattle: Health/Handling/Breeding*. Rev. Ed. North Adams, MA: Storey Publishing, LLC, 1998.
-

Interest Approach

Ask students what types of facilities are needed in beef production. Make a list of the facilities. Discuss the high cost of facilities and how important careful planning is.

Communicate the Learning Objectives

1. Determine the facility requirements for the different production systems.
2. Describe how forages are used in each of the production systems.
3. Identify the production costs for beef cattle.
4. Describe how one determines which production system to select.
5. Explain the marketing options available for various production systems.

Instructor Directions	Content Outline
<p>Objective 1</p> <p><i>Discuss the importance of well-planned, usable facilities. Then describe the basic facility needs for each production system.</i></p>	<p>Determine the facility requirements for the different production systems.</p> <p>Cow/Calf</p> <ol style="list-style-type: none">1. Handling facilities2. Loading/unloading area3. Feed/Hay storage4. Optional<ol style="list-style-type: none">a. Show/sale barnb. Maternity barnc. More elaborate handling/working facilitiesd. Office <p>Purebred</p> <ol style="list-style-type: none">1. Handling facilities2. Loading/unloading area3. Feed/Hay storage4. Optional<ol style="list-style-type: none">a. Show/sale barnb. Maternity barnc. More elaborate handling/working facilitiesd. Office <p>Backgrounding</p> <ol style="list-style-type: none">1. Handling facilities2. Loading/unloading area <p>Feedlot</p> <ol style="list-style-type: none">1. Handling facilities2. Loading/unloading area3. Feed storage

Instructor Directions	Content Outline
	<ol style="list-style-type: none"> 4. Feed mill 5. Feeding lots
<p>Objective 2</p> <p><i>Ask students why beef cattle can thrive on forages. Describe the ruminant stomach (see Introduction to Animal Nutrition, Lesson 2 – PPT 1 and PPT 3). Point out that some land is only suitable for grass production. List on the board how each production system uses forages.</i></p>	<p>Describe how forages are used in each of the production systems.</p> <p>Cow/Calf producers</p> <ol style="list-style-type: none"> 1. Use forages year-round, either through grazing or as hay or haylage harvested in the summer for winter 2. May feed cattle on cornstalks or wheat pasture during the winter <p>Purebred producers</p> <ol style="list-style-type: none"> 1. Use forages year-round, either through grazing or as hay or haylage <p>Backgrounders</p> <ol style="list-style-type: none"> 1. Use forages either through grazing or as hay 2. May feed cattle on cornstalks or wheat pasture throughout the winter <p>Feedlot operators</p> <ol style="list-style-type: none"> 1. Often feed cattle on grass hay for a few days after they are received 2. May use haylages as a base diet, but most use corn silage and grain with protein supplements
<p>Objective 3</p> <p><i>Obtain a Missouri Department of Agriculture Weekly Market report with current prices. Ask the class what types of costs are incurred in raising beef cattle. List the costs and discuss the current prices for cattle. Hand out AS 1 to students and have them develop a sample budget for a cow/calf producer.</i></p> <p> AS 1 – 90-Day Feeder Steer Budget</p>	<p>Identify the production costs for beef cattle.</p> <p>Fixed costs will be similar for all producers despite the type of production system.</p> <ol style="list-style-type: none"> 1. Depreciation 2. Interest on loans 3. Repairs 4. Taxes 5. Insurance <p>Variable costs may differ depending on the type of production system.</p> <ol style="list-style-type: none"> 1. Feed 2. Medications 3. Veterinary expenses 4. Equipment 5. Facilities 6. Cost of stock

<p>Objective 4</p> <p><i>Emphasize to the class that beef production is hard work. Point out that large amounts of money can be invested in beef cattle with little guarantee of profit. Describe the importance of assessing individual talents and interests when selecting a production system. Point out that students are better off starting small.</i></p>	<p>Describe how one determines which production system to select.</p> <p>Little experience, capital, labor, and time</p> <ol style="list-style-type: none"> 1. Backgrounding 2. Small cow/calf operation <p>Some experience, capital, labor, and time</p> <ol style="list-style-type: none"> 1. Large cow/calf operation 2. Small purebred operation <p>Large amounts of experience, capital, labor, and time</p> <ol style="list-style-type: none"> 1. Larger purebred operation 2. Feedlot operation
<p>Objective 5</p> <p><i>List local cattle markets on the board. Ask students if any differences exist between how cattle are marketed today and how they were marketed in the past.</i></p> <p><i>Describe the major terminal markets, such as St. Joseph or the St. Louis stockyard. Discuss the importance of communication and sales skills to purebred breeders.</i></p>	<p>Explain the marketing options available for various production systems.</p> <p>Cow/Calf producers</p> <ol style="list-style-type: none"> 1. Auctions, including video auctions 2. Retained ownership – the cow/calf producer owns the cattle through the feedlot until slaughter 3. Livestock order buyer – buyers purchase cattle directly from producers 4. Alliance/marketing group – producers form groups to market like sets of cattle together as a branded or labeled product 5. Cattle futures market – futures contracts are bought and sold to help manage the financial risk involved in production <p>Purebred producers</p> <ol style="list-style-type: none"> 1. Cattle futures market 2. Private treaty sale – a producer and customer privately negotiate the terms of the sale 3. Consignment auction – a producer entrusts a group of animals to another party, such as a breed association, to be sold for a commission 4. Production sale – one producer or small group of producers sells their animals at an auction that takes place on a farm <p>Backgrounders</p> <ol style="list-style-type: none"> 1. Cattle futures market 2. Auctions, including video auctions

	<p>Feedlot operators</p> <ol style="list-style-type: none"> 1. Cattle futures market 2. Auctions 3. Direct sales to packers based on the live weight or carcass grade of the cattle
<p>Application:</p> <p>AS 1 – 90-Day Feeder Steer Budget</p>	<p>Answers to AS 1</p> <p>Costs: Cattle – 100 steers x 500 lbs. x \$.65 per lb = \$32,500 Feed – 10 lbs x 90 days x 100 steers x \$.12 per lb = \$10,800 Vaccinations – 100 steers x \$3 = \$300 Rent – 100 steers x 3 months x \$5 = \$1500 Commission – 99 x \$3 = \$297</p> <p>Total Cost: \$32,500 + \$10,800 + \$300 + \$1500 + \$297 = \$45,397</p> <p>Projected returns: 99 steers x 635 lbs x \$0.66 per lb = \$41,490.90</p> <p>Profit/Loss: \$41,490.90 - \$45,397 = \$ - 3906.10 (loss)</p> <p>Breakeven price: $\frac{45,397}{(99 \times 635)} \times 100 \text{ lbs} = \\$72.21 \text{ per } 100 \text{ lbs}$</p> <p>Other activities</p> <ol style="list-style-type: none"> 1. Have students develop a map and building layout for an extensive beef cattle operation. Students should also research the cost of facilities. 2. Take a field trip to visit a local producer who has a well-planned, usable facility.
<p>Closure/Summary</p>	<p>Production systems vary greatly in terms of the costs and demands placed on the operator. A producer needs to consider these factors when choosing a production system. He or she should keep costs and potential profits in mind when running an operation. One very important factor to consider is the type of facilities needed, because they can be expensive to construct. It is very important that facilities be well planned and usable. Feed costs are also important, using forages effectively is vital. To make a profit, a producer should carefully evaluate the marketing options available and choose the best one.</p>

Evaluation: Quiz

Answers:

1. d
 2. d
 3. c
 4. a
 5. b
 6. Handling facilities and a loading/unloading area
 7. Answers should include three of the following: auction (including video auctions), alliance/marketing group, livestock order buyer, retained ownership, and cattle futures market.
 8. Feedlot operators often feed cattle on grass hay for the first few days after they are received. They may use haylages as a base diet, but most use corn silage and grain with protein supplements.
-

Lesson 4: Production Systems

Name _____

90-Day Feeder Steer Budget

Objective: Plan a budget covering the costs of raising feeder steers.

A producer is considering buying and backgrounding 100 feeder steers that are 500 lbs each at \$.65 per pound. The producer must develop a budget showing projected costs to help decide whether to buy the steers. For 100 lbs of feed grain, the cost is \$12.00, and each steer will be fed ten pounds a day for 90 days. The steers are expected to gain 1½ pounds a day. Vaccination charges will be \$3.00 a head. Pasture rent is \$5.00 a head per month. The producer assumes that one of the steers will be lost due to death before sale. The sale barn charges a commission of \$3.00 a head. The steers should sell at \$.66 a pound.

Develop a budget showing costs, total cost, projected returns, and profit or loss in the space provided below. Then calculate the breakeven price for the producer. (Round to the nearest cent.)

Costs

Returns

Profit/loss

Breakeven price

UNIT - INTRODUCTION TO BEEF PRODUCTION Name _____

Lesson 4: Production Systems

Date _____

EVALUATION

Circle the letter that corresponds to the best answer.

1. Which of the following expenses is a variable expense?
 - a. Interest
 - b. Repairs
 - c. Insurance
 - d. Equipment

2. What is a private treaty sale?
 - a. A producer sells his or her animals at an auction that takes place on the farm.
 - b. A producer sells his or her cattle through another party, such as a breed association.
 - c. A producer allows a third party to secretly negotiate the terms of a sale.
 - d. A producer and customer privately negotiate the terms of the sale.

3. Which production system requires the fewest facilities?
 - a. Cow/calf
 - b. Purebred
 - c. Backgrounding
 - d. Feedlot

4. Which of the following is a fixed expense?
 - a. Taxes
 - b. Feed
 - c. Medications
 - d. Facilities

5. Producers with little knowledge of and experience with beef cattle may be best suited for what type of operation?
 - a. Feedlots
 - b. Backgrounding
 - c. Small purebred operation
 - d. Large cow/calf operation

Complete the following short answer questions.

6. What facilities are required for backgrounding cattle?

7. What are three different marketing options available to cow/calf producers?
 - a.
 - b.
 - c.

8. How are forages used by feedlot operators?

Course	Agricultural Science I
Unit	Introduction to Beef Production
Lesson	Herd Health
Estimated Time	50 minutes

Student Outcome

Develop a herd health plan.

Learning Objectives

1. Identify the common health problems of beef cattle.
2. Determine the type of herd health program used for each production system.
3. Describe the proper techniques for administration of medications and vaccinations.

Grade Level Expectations

Resources, Supplies & Equipment, and Supplemental Information

Resources

1. PowerPoint Slides
 - PPt 1 – Herd Health Program Based on Spring Calving (March 1 to April 30)
 - PPt 2 – Routes of Administration
2. Activity Sheets
 - AS 1 – Information about Vaccines
3. *Introduction to Beef Production (Student Reference)*. University of Missouri-Columbia: Instructional Materials Laboratory, 1997.
4. *Introduction to Beef Production Curriculum Enhancement*. University of Missouri-Columbia: Instructional Materials Laboratory, 2003.

Supplies & Equipment

- Pictures of beef cattle affected by disease
- Different types of animal health care products

Supplemental Information

1. Internet Sites
 - Animal Science Publications. MU Extension. University of Missouri-Columbia. Accessed June 29, 2007, from <http://extension.missouri.edu/explore/agguides/ansci/>.
 - "Beef Cattle Herd Health Vaccination Schedule." Cooperative Extension Service. University of Arkansas. Accessed June 29, 2007, from http://www.uaex.edu/Other_Areas/publications/PDF/FSA-3009.pdf.
 - "Beef Quality Assurance Injection Sites and Techniques." Department of Animal Biotechnology. University of Nevada-Reno. Accessed June 29, 2007, from <http://www.cabnr.unr.edu/ab/Extension/Cattleman/Cattleman2002/Page01.htm>

2. Print

- ❑ Campbell, J. R., M. D. Kenealy, and K. L. Campbell. *Animal Sciences: The Biology, Care, and Production of Domestic Animals*. 4th ed. New York: McGraw-Hill Companies, 2003.
 - ❑ Thomas, H. S. *Storey's Guide to Raising Beef Cattle: Health/Handling/Breeding*. Rev. Ed. North Adams, MA: Storey Publishing, LLC, 1998.
 - ❑ Thomas, H. S. *Getting Started with Beef and Dairy Cattle*. North Adams, MA: Storey Publishing, LLC, 2005.
-

Interest Approach

1. Show pictures of beef cattle affected by disease. Ask the students to guess what type of disease is affecting the cattle.
2. Bring in different types of animal health care products to begin a discussion.

Communicate the Learning Objectives

1. Identify the common health problems of beef cattle.
2. Determine the type of herd health program used for each production system.
3. Describe the proper techniques for administration of medications and vaccinations.

Instructor Directions	Content Outline
<p>Objective 1</p> <p><i>Ask the students about their experiences with sick animals. List the diseases on the board along with symptoms and preventative measures.</i></p>	<p>Identify the common health problems of beef cattle.</p> <p>Anaplasmosis</p> <ol style="list-style-type: none">1. Symptoms – weight loss and labored breathing2. Prevention and treatment<ol style="list-style-type: none">a. Controlling insectsb. Vaccinesc. Tetracyclined. Daily doses of antibiotics <p>Blackleg</p> <ol style="list-style-type: none">1. Symptoms<ol style="list-style-type: none">a. Swollen and inflamed musclesb. Lamenessc. Cracking noise when gas under skin is pressed2. Prevention – vaccines <p>Bovine respiratory syncytial virus (BRSV)</p> <ol style="list-style-type: none">1. Symptoms<ol style="list-style-type: none">a. Discharge from the mouth and noseb. Feverc. Hacking cough2. Prevention – vaccine <p>Bovine virus diarrhea</p> <ol style="list-style-type: none">1. Symptoms<ol style="list-style-type: none">a. Diarrheab. Feverc. Coughingd. Nasal discharge2. Prevention – vaccine

Instructor Directions	Content Outline
	<p>Brucellosis</p> <ol style="list-style-type: none"> 1. Symptoms – abortions and sterility in cows and bulls 2. Prevention – vaccine <p>Fescue Foot</p> <ol style="list-style-type: none"> 1. Symptoms <ol style="list-style-type: none"> a. In severe cases, loss of one or both of the rear hooves, as well as the tips of the ears and tail b. Arched back c. Rough coat d. Stiffness or lameness 2. Prevention – mixing legumes with fescue <p>Grass tetany</p> <ol style="list-style-type: none"> 1. Symptoms – trembling and staggering 2. Prevention and treatment – feeding magnesium supplements and intravenous administration of a solution containing magnesium and calcium <p>Infectious bovine rhinotracheitis (IBR, red nose)</p> <ol style="list-style-type: none"> 1. Symptoms <ol style="list-style-type: none"> a. Respiratory form – fever, nasal discharge, and reddened muzzle b. Reproductive form – inflammation of the vagina and vulva and abortions c. Pinkeye – symptoms similar to pinkeye 2. Prevention – vaccine <p>Leptospirosis</p> <ol style="list-style-type: none"> 1. Symptoms <ol style="list-style-type: none"> a. Fever b. Rapid respiration c. Poor appetite d. Jaundice e. Abortions f. Weak calves g. Stillbirths 2. Prevention – vaccine <p>Pinkeye</p> <ol style="list-style-type: none"> 1. Symptoms <ol style="list-style-type: none"> a. Pinkish color to eye b. Watery eye

Instructor Directions	Content Outline
	<ul style="list-style-type: none"> c. White eye due to cloudy film 2. Prevention – vaccines and fly control <p>Scours</p> <ul style="list-style-type: none"> 1. Symptoms – diarrhea 2. Prevention – vaccines and good sanitation <p>Shipping fever</p> <ul style="list-style-type: none"> 1. Symptoms <ul style="list-style-type: none"> a. High fever b. Coughing c. Difficulty in breathing d. Discharge from the eyes and nose 2. Prevention – vaccine <p>Vibriosis</p> <ul style="list-style-type: none"> 1. Symptoms – abortion with no outward signs of disease and poor conception rates 2. Prevention – vaccine
<p>Objective 2</p> <p><i>Ask students if they have ever helped in vaccinating or treating a calf for a disease. Focus on the importance of proper techniques and a complete herd health program that emphasizes prevention. List the treatments needed for each type of production. Use Ppt 1 to illustrate the timing of vaccinations and treatments for parasites in a spring calving herd.</i></p> <p><input type="checkbox"/> Ppt 1 – Herd Health Program Based on Spring Calving (March 1 to April 30)</p>	<p>Determine the type of herd health program used for each production system.</p> <p>Cow/calf producers and purebred breeders</p> <ul style="list-style-type: none"> 1. Feeder calves before weaning <ul style="list-style-type: none"> a. IBR b. Parainfluenza (PI-3) c. BVD d. BRSV e. Pasteurella f. Clostridial diseases (blackleg) g. External parasites h. Internal parasites 2. Replacement bulls and heifers – vaccinations usually given 30 days before breeding <ul style="list-style-type: none"> a. BVD b. IBR c. PI-3 d. Leptospirosis e. Vibriosis f. Hemophilus pneumonia g. Pasteurella

Instructor Directions	Content Outline
	<ul style="list-style-type: none"> h. Clostridial diseases i. Brucellosis (four- to nine-month-old heifers) j. External parasites k. Internal parasites <p>3. Mature cows and bulls</p> <ul style="list-style-type: none"> a. Leptospirosis b. Vibriosis c. BVD d. IBR e. Clostridial diseases f. Internal parasites g. External parasites <p>Backgrounders and feedlot operators</p> <ul style="list-style-type: none"> 1. IBR 2. PI-3 3. BVD 4. BRSV 5. Pasteurella 6. Clostridial diseases 7. External parasites 8. Internal parasites
<p>Objective 3</p> <p><i>Have students think about the types of shots they have received. Display PPt 2 and discuss the various methods of administering vaccines and other health products to animals. Emphasize that subcutaneous injections should be used whenever possible. Describe how a subcutaneous injection prevents tissue damage to the muscle of the calf.</i></p> <p><input type="checkbox"/> PPt 2 – Routes of Administration</p> <p><i>Give students a veterinary supply catalog, such as the Jeffers catalog, and have them complete AS 1.</i></p>	<p>Describe the proper techniques for administration of medications and vaccinations.</p> <ul style="list-style-type: none"> 1. Intramuscular (IM) – made into the muscle; should be given in the neck 2. Subcutaneous (Sub-Q) – given between the skin and muscle; should be given in the loose skin of the neck 3. Oral or drench – administered by mouth 4. Intranasal (IN) – sprayed into the nasal cavity 5. Intravenous (IV) – administered into the jugular vein

Instructor Directions	Content Outline
 AS 1 - Information about Vaccines	
<p>Application:</p>  AS 1 - Information about Vaccines	<p>Answers to AS 1 Answers will vary</p> <p>Other Activities</p> <ol style="list-style-type: none"> 1. Have students research the causes, symptoms, prevention and treatment of diseases in greater detail. MU Guide sheets and the Internet are both good resources. 2. Take a field trip to a veterinarian's office or have a veterinarian visit the classroom. Have him or her discuss the importance of disease prevention.
Closure/Summary	<p>Herd health is essential to the success of any beef operation. The local veterinarian and animal health supplier can give valuable advice and assistance in developing a herd health program. Most diseases can be prevented through proper vaccinations.</p>
Evaluation: Quiz	<p>Answers:</p> <ol style="list-style-type: none"> 1. a 2. b 3. d 4. c 5. An intranasal vaccine is sprayed into the nose. 6. Answers may include any four of the following: IBR, PI-3, BVD, BRSV, pasteurella, and clostridial diseases.

Lesson 5: Herd Health

Name _____

Information about Vaccines

Objective: Research vaccines available for treating diseases in beef cattle.

Using a veterinary supply catalog that describes vaccines for beef cattle, complete the following chart.

Disease	Brand Name	Dosage	Price per Dose	Special Precautions
Blackleg				
IBR				
PI-3				
BVD				
BRSV				
Leptospirosis				
Vibriosis				

Course	Agricultural Science I
Unit	Introduction to Beef Production
Lesson	Herd Management
Estimated Time	50 minutes

Student Outcome

Explain management factors important to profitable beef production.

Learning Objectives

1. Describe how nutrition affects herd health.
2. Explain the factors to consider in reproductive management.
3. Describe the identification methods for beef cattle.

Grade Level Expectations

SC/LO/1/B/09-11/b

SC/ST/1/B/09-11/a

SC/ST/1/C/09-11/a

Resources, Supplies & Equipment, and Supplemental Information

Resources

1. PowerPoint Slides
 - PPT 1 – Gestation Table
2. Activity Sheets
 - AS 1 – Herd Management Calendar
3. *Introduction to Beef Production (Student Reference)*. University of Missouri-Columbia: Instructional Materials Laboratory, 1997.
4. *Introduction to Beef Production Curriculum Enhancement*. University of Missouri-Columbia: Instructional Materials Laboratory, 2003.

Supplemental Information

1. Internet Sites
 - Animal Science Publications. MU Extension. University of Missouri-Columbia. Accessed June 29, 2007, from <http://extension.missouri.edu/explore/agguides/ansci/>.
 - "Beef Cattle Identification." *Livestock Management*. Cooperative Extension Program. University of Arkansas. Accessed June 29, 2007, from http://www.uaex.edu/Other_Areas/publications/PDF/UAPB/FSA-3002.pdf.
 - National Animal Identification System. Animal and Plant Health Inspection Service. United States Department of Agriculture. Accessed June 29, 2007, from <http://animalid.aphis.usda.gov/nais/index.shtml>.
2. Print
 - Kellems, R. O., and D. C. Church. *Livestock Feeds and Feeding*. 5th ed. Upper Saddle River, NJ: Prentice Hall, 2002.
 - Peters, A. and Ball, P. J.H. *Reproduction in Cattle*. 3rd Ed. Blackwell Publishing Limited, 2004.
 - Thomas, H. S. *Storey's Guide to Raising Beef Cattle: Health/Handling/Breeding*. Rev. Ed.

North Adams, MA: Storey Publishing, LLC, 1998.

- ❑ Thomas, H. S. *Getting Started with Beef and Dairy Cattle*. North Adams, MA: Storey Publishing, LLC, 2005.

3. Electronic Media

- ❑ *Animal Nutrition Interactive PowerPoints*. University of Missouri-Columbia: Instructional Materials Laboratory, 2006.
-

Interest Approach

Ask students when herd bulls should be turned out with the cows to have calving begin on March 1 and end on April 30. Discuss their answers. Point out that beef cows have a gestation length between 280 and 290 days. Also, focus on the fact that cows will not experience estrus until 60 to 90 days after the birth of the calf.

Communicate the Learning Objectives

1. Describe how nutrition affects herd health.
2. Explain the factors to consider in reproductive management.
3. Describe the identification methods for beef cattle.

Instructor Directions	Content Outline
<p>Objective 1</p> <p><i>Describe the importance of proper nutrition to health and production. Refer to the nutrition unit for specific information about animal nutrition. Discuss possible diets used for beef cattle.</i></p>	<p>Describe how nutrition affects herd health.</p> <p>Components of nutrition</p> <ol style="list-style-type: none">1. Energy – provided by fats and carbohydrates2. Protein3. Vitamins4. Minerals5. Water <p>Maintenance</p> <ol style="list-style-type: none">1. Involves replacing cells, repairing damaged cells, and fighting off diseases2. Requires a balanced diet with essential vitamins and minerals <p>Production increases nutritional needs</p> <ol style="list-style-type: none">1. Growth and development2. Gestation3. Lactation
<p>Objective 2</p> <p><i>Ask students to list various factors to consider when managing reproduction. Discuss the factors with the class. Hand out AS 1 and use PPT 1 to have students develop a herd management calendar.</i></p> <p> AS 1 – Herd Management Calendar</p>	<p>Explain the factors to consider in reproductive management.</p> <p>Limit calving season to 60 days to ensure uniformity at weaning.</p> <p>Turn the bull out 60 to 90 days after the first calf is born and lock it up 90 days after the last calf to maintain the current calving cycle.</p> <p>Evaluate bulls for breeding soundness by having their semen checked before turning them out with the cows;</p>

Instructor Directions	Content Outline
<p>☐ PPt 1 - Gestation Table</p>	<p>replace bulls that fail the exams to help ensure that cows will be bred.</p> <p>Check for heat when using artificial insemination.</p> <p>Check all females for pregnancy 60 days after the bull has been locked up; sell open cows.</p>
<p>Objective 3</p> <p><i>Ask students how someone who is unfamiliar with a herd could find a sick animal in a group of cattle that have no form of identification. Discuss the various identification methods.</i></p>	<p>Describe the identification methods for beef cattle.</p> <p>Ear tags – plastic tags that hang in the ear of the animal; can be removed if necessary</p> <p>Tattoos – permanent form of identification in which numbers and a herd prefix are tattooed in the ear of the animal</p> <p>Brands</p> <ol style="list-style-type: none"> 1. Fire brands – method of identification in which a hot branding iron is used to burn a number or symbol into the hide permanently 2. Freeze brands – permanent method of identification in which a branded iron is placed in liquid nitrogen or dry ice and alcohol and then used to brand the calf; grows back with white hair
<p>Application:</p> <p>☒ AS 1 - Herd Management Calendar</p>	<p>Answers to AS 1</p> <p>Use PPt 1 - Gestation Table as a basis for evaluating student answers.</p> <p>Other activities:</p> <ol style="list-style-type: none"> 1. Bring in different types of ear tags and an ear gun/tagger and let the students practice applying the tags to cardboard cutouts of an ear. 2. Take a field trip to a local beef producer and let the students practice body condition scoring cows using the body condition scoring poster available from the Missouri Farmers Association.
<p>Closure/Summary</p>	<p>Several factors are important in managing beef cattle effectively. Cattle require proper nutrition to maximize production and remain healthy. Reproduction should be managed closely to ensure reproductive efficiency. Proper identification is necessary for record keeping purposes.</p>

Instructor Directions	Content Outline
Evaluation: Quiz	<p>Answers:</p> <ol style="list-style-type: none">1. d2. a3. They should be replaced to help ensure that cows will be bred.4. Answers may include any four of the following: energy, protein, vitamins, minerals, and water.5. Freeze branding involves placing the branding iron in liquid nitrogen or dry ice and alcohol to make it cold. White hair grows in after the branding. Fire brands involve using a branding iron heated in a fire. The iron burns away the hair to leave a brand.

Lesson 6: Herd Management

Name _____

Herd Management Calendar

Objective: Plan a herd management calendar.

Suppose that you have been asked to manage a herd of 100 cows. The producer currently allows bulls to run with the cow herd all year, and the cows calve year round. The producer has been noticing a decrease in the number of calves born over the last several years and has had problems putting together large sets of calves that are similar in size for sale.

Using the table provided, form a detailed plan for managing the herd more effectively. Give dates where applicable.

Month	Management Practices
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

UNIT - INTRODUCTION TO BEEF PRODUCTION Name _____

Lesson 6: Herd Management

Date _____

EVALUATION

Circle the letter that corresponds to the best answer.

1. Nutritional needs are increased for all of the following except:
 - a. Growth.
 - b. Gestation.
 - c. Lactation.
 - d. Maintenance.

2. How long should the calving season be?
 - a. 60 days
 - b. 100 days
 - c. Three months
 - d. Does not matter

Complete the following short answer questions.

3. What should be done with bulls that fail breeding soundness exams? Why?

4. Balanced diets for beef cattle contain several components. What are four of the components?
 - a.
 - b.
 - c.
 - d.

5. How do freeze branding and fire branding differ?

Course	Agricultural Science I
Unit	Introduction to Beef Production
Lesson	Industry Concerns
Estimated Time	50 minutes

Student Outcome

Evaluate concerns of the beef industry.

Learning Objectives

1. Identify consumer concerns about the beef industry.
2. Explain the difference between animal rights and animal welfare.
3. Explain how the beef industry is addressing consumer concerns.

Grade Level Expectations

SC/ST/1/B/09-11/a	SC/ST/1/C/09-11/a	SC/ST/3/B/09-11/a
SC/ST/3/B/09-11/b	SC/ST/3/B/09-11/c	SC/ST/3/D/09-11/a

Resources, Supplies & Equipment, and Supplemental Information

Resources

1. Activity Sheets
 -  AS 1 – Debating Animal Rights Versus Animal Welfare
2. *Introduction to Beef Production (Student Reference)*. University of Missouri-Columbia: Instructional Materials Laboratory, 1997.
3. *Introduction to Animal Nutrition Curriculum Enhancement*. University of Missouri-Columbia: Instructional Materials Laboratory, 2003.

Supplemental Information

1. Internet Sites
 - “Consumer Confidence in Beef Safety Remains Stable, Strong in 2005.” *Issues Update*. National Cattleman’s Beef Association. Accessed July 2, 2007 from <http://www.beefusa.org/uDocs/foodsafetytrackingresearch.pdf>.

Interest Approach

Ask students to discuss what the term animal welfare means to them.

Communicate the Learning Objectives

1. Identify consumer concerns about the beef industry.
2. Explain the difference between animal rights and animal welfare.
3. Explain how the beef industry is addressing consumer concerns.

Instructor Directions	Content Outline
<p>Objective 1</p> <p><i>Ask students what concerns consumers have about beef cattle and beef cattle production.</i></p>	<p>Identify consumer concerns about the beef industry.</p> <ol style="list-style-type: none">1. Food safety – Consumers are becoming increasingly concerned with bacterial and chemical contaminants and residues from growth hormones and antibiotics left in meat.2. Environmental concerns – The American public is concerned with environmental issues, such as the pollution of groundwater and the overgrazing of public lands in the west.3. Ethics – Cases of unethical showing practices, especially centering around ownership and the illegal use of performance-enhancing steroids, have attracted attention.4. Animal rights – Some groups feel that animals have the same rights as humans.
<p>Objective 2</p> <p><i>Make two columns on the board and write down the differences between animal rights and animal welfare.</i></p>	<p>Explain the difference between animal rights and animal welfare.</p> <p>Animal rights</p> <ol style="list-style-type: none">1. Animal rights activists feel that animals have rights and should not be used for food or research.2. Castration, dehorning, and vaccinations are all viewed as inhumane because they alter the animal from its original state and because many of them are done without anesthetics. <p>Animal welfare</p> <ol style="list-style-type: none">1. Animal welfare is a concern for the well-being of animals used by humans.2. Producers are responsible for providing the food and shelter necessary for the animal.3. Most producers are in fact concerned with animal welfare.

Objective 3

Have students focus on what can or should be done to address these concerns. Focus on the need to educate producers and consumers about beef production.

After the discussion, have students carry out the debate outlined on AS 1. Divide the class into two groups – one supporting animal rights and the other advocating animal welfare. Allow the groups to research the subject in preparation for the debate. Moderate the debate for the students.

 AS 1 - Debating Animal Rights Versus Animal Welfare

Explain how the beef industry is addressing consumer concerns.

Food safety

1. Local, state, and national cattlemen's associations have developed programs that focus on correcting practices that might trouble consumers.
 - a. The Missouri Cattlemen's Association sponsors the Beef Quality Assurance Program with the goal of making producers aware of the issues that affect the safety and wholesomeness of beef.
 - b. The Beef Quality Assurance Program aims at educating producers about proper management practices, proper record keeping for drug usage, details about various growth hormones and vaccines used in beef cattle production, and correct usage, dosage, and withdrawal times for hormones and vaccines.
2. USDA inspection program to reduce bacterial contamination focuses on bacterial counts rather than visual inspection.

Environment

1. The National Cattlemen's Beef Association presents several Environmental Stewardship Awards annually to producers who use innovative methods to protect natural resources.
2. The Association's publications for consumers emphasize that beef production is environmentally friendly.

Ethics

1. A major focus of many 4-H and FFA leaders has been to educate young people and their parents on the damaging impact of unethical showing practices.
2. The Missouri State Fair has adopted the National Code of Show Ring Ethics formulated by the International Association of Fairs and Expositions; exhibitors must sign a form that guarantees that they will not violate the code, and if they do, they forfeit any prizes won and may be barred from exhibiting their animals.

	<p>Animal welfare</p> <ol style="list-style-type: none"> 1. The Beef Quality Assurance Program gives guidelines on how to handle and care for animals. 2. The Missouri Beef Quality Assurance Program manual includes a Code of Ethics that stresses the humane treatment of cattle. 3. Producers have relied on these industry associations to get the word out to consumers that beef producers care for the welfare of their animals.
<p>Application:</p> <p> AS 1 – Debating Animal Rights Versus Animal Welfare</p>	<p>Answers to AS 1 Answers will vary and student participation should be accounted for.</p> <p>Other activities: Show students the videos <i>Cattlemen Care About the Environment</i> (7 minutes), <i>Cattlemen Care About Animal Welfare</i> (10 minutes), and <i>Cattlemen Care About Beef Safety</i> (12 minutes).</p>
<p>Closure/Summary</p>	<p>Producers must focus on addressing the concerns of consumers. Beef cattle producers must assure consumers that the beef they consume is a safe and wholesome product that was produced humanely and in a way that did not harm the environment. Producers must also concentrate on behaving ethically, especially in showing activities.</p>
<p>Evaluation: Quiz</p>	<p>Answers:</p> <ol style="list-style-type: none"> 1. d 2. b 3. a 4. c 5. Animal welfare is a concern for the well-being of animals used by humans. Producers are responsible for providing food and shelter necessary for the animal. Animal rights activists feel that animals have the same inborn rights as humans and should not be used for food or research. 6. The goal of the Beef Quality Assurance Program is to make producers aware of issues that affect the safety and wholesomeness of beef.

Lesson 7: Industry Concerns

Name _____

Debating Animal Rights Versus Animal Welfare

Objective: Explore issues surrounding beef production.

The class will debate about animal rights and animal welfare. The instructor will assign you to a group to argue one position or the other. Use any available resources to find information that supports your argument. Your research should answer the following questions.

- What do people mean when they use the words “animal rights?”
- What does the term “animal welfare” mean?
- What has prompted discussion about animal rights and animal welfare?
- How have animal rights and animal welfare affected agriculture?

When you have completed researching your position, the instructor will moderate the debate.

UNIT - INTRODUCTION TO BEEF PRODUCTION Name _____

Lesson 7: Industry Concerns

Date _____

EVALUATION

Circle the letter that corresponds to the best answer.

1. Which of the following is not a food safety concern of consumers?
 - a. Bacterial contamination of beef products
 - b. Residues in beef from antibiotics
 - c. Hormone residues in their meat
 - d. The right of cattle to receive medicines

2. What is one way that the concern about unethical behavior in the showring is being addressed?
 - a. Passing federal laws that make all unethical showring practices illegal
 - b. Educating young people about ethical issues through 4-H and FFA
 - c. Emphasizing the need to spread information about animal rights to producers
 - d. Educating consumers about how cattle are shown in the ring

3. Which of the following topics is addressed in the Beef Quality Assurance program sponsored by the Missouri Cattlemen's Association?
 - a. Details about growth hormones and vaccines
 - b. Unethical medical practices in the showring
 - c. How medications used on cattle affect the environment
 - d. The practice of working cattle unethically

4. Which of the following is an environmental concern held by consumers?
 - a. The right of cattle to good grazing areas
 - b. Overgrazing of private farmland
 - c. Pollution of ground water
 - d. How medications used on cattle affect the environment

Complete the following short answer questions.

5. What is the difference between animal welfare and animal rights?

6. What is the goal of the Beef Quality Assurance Program?

Agricultural Science I

Curriculum Guide: *Introduction to Beef Production*

Unit Objective:

Students will demonstrate an understanding of basic principles of beef production by comparing and contrasting the management options applied by regional beef producers and presenting their findings in an oral report.

Show-Me Standards: 2.1, CA6

References:

Individual breed associations

Introduction to Beef Production. University of Missouri-Columbia, Instructional Materials Laboratory, 1997.

Missouri Cattlemen's Association. Accessed April 8, 2003, from <http://mocattle.org/>.

Instructional Strategies/Activities:

- Students will engage in study questions in lessons 1 through 7.
- Students will complete AS 1.1, A Career in the Beef Industry; and AS 6.1, Herd Management Calendar.
- Additional activities that relate to the unit objective can be found under the heading "Other Activities" in the following location: p. 55 (1, 2).

Performance-Based Assessment:

Students will work in groups to compare and contrast the management options applied by beef producers in their area. Each group will interview a different beef producer to learn about the operation and the management techniques the producer prefers and why. Following the interviews, groups will be paired to compare and contrast their findings. The groups will present their findings to the class in a brief oral report.

Assessment will be based on the overall content and presentation of the report. At the instructor's discretion students will contribute to the assessment process by providing a brief evaluation of the performance of the other members of their group.

Introduction to Beef Production Instructor Guide

The instructor should assign the performance-based assessment activity at the beginning of the unit. Students will work toward completing the activity as they progress through the unit lessons. The assessment activity will be due at the completion of the unit.

1. Prior to assigning the performance-based assessment, contact beef producers in the area and develop a list of producers willing to be interviewed by students.
 - a. It is preferable to have more producers, rather than fewer, if possible, because this will provide more opportunity for varied management styles and will help ensure a sufficient number of producers in case any must later cancel the interview.
 - b. Additional sources for interview subjects or information on beef management could include the following.
 - Upper-level students involved in beef production
 - Missouri Cattlemen's Association, accessed April 9, 2003, from <http://mocattle.org/>.
 - Individual breed associations
2. Divide the class into an even number of groups and assign each group one of the beef producers to interview. If preferred, arrange for telephone interviews with producers or have them attend class for a panel discussion.
3. Lead students in a discussion to develop a uniform interview questionnaire. A uniform questionnaire is important because students will be comparing and contrasting the information they collect. Use questions from AS 1.1, A Career in the Beef Industry, as a starting point, if desired.
4. Have students interview their assigned producer about his or her beef operation and management techniques.
5. Following the interviews, pair up groups to discuss how the two operations are similar and different. Each group will present its findings to the class in a brief oral report.
 - a. Explain that the pairs of groups should discuss their presentations so that their reports work together to provide a clear and thorough picture of the two operations rather than present the same information.
 - b. Students should be prepared to answer questions about their reports.

Agricultural Science I

6. If desired, have students contribute to the assessment process by completing a short evaluation of the performance of each member of their original group. A peer evaluation form is included following the scoring guide.
 - a. Have students complete the peer evaluation form by following the instructions listed at the top. Students should base their assessment on how much each person contributed to the project.
 - b. If tasks are divided so that students do only one type of task to contribute to the project, have students adjust their peer evaluation form by disregarding the category that does not apply to a particular teammate. Instead of assessing teammates on two categories worth 0 to 3 points, students will assess teammates on one category worth 0 to 6 points.
 - c. To determine the final peer evaluation score, add up the scores that a student receives from the other members of the group and divide the total by the number of scores received. The maximum number of points possible for each student is 6.

7. The final assessment score will be based on the overall content and presentation of the report and the final peer evaluation score.

**Introduction to Beef Production
Student Handout**

1. The instructor will divide the class into groups and provide each group with the name of a beef producer.
2. Your group will interview the producer about his or her beef operation and management techniques.
3. Following the interviews, your group will meet with another group to discuss how the two operations are similar and different.
4. Present your findings to the class in a brief oral report. Remember that your group's report should work with the other group's report to provide a clear and thorough picture of the two operations rather than present the same information.
5. Be prepared to answer questions from your instructor and classmates regarding your report.
6. If requested, you will contribute to the assessment process by completing a short evaluation of each member of your original group's performance in conducting the interview and making the presentation.
 - a. When the project is complete, fill out the peer evaluation score sheet.
 - b. Give the completed score sheet to your instructor.
7. Your final assessment score will be based on the content and presentation of your report and your final peer evaluation score.

Agricultural Science I

Introduction to Beef Production Scoring Guide

Name _____

Assessment Area	Criteria	0 Points	1 Point	2 Points	3 Points	4 Points	Weight	Total
Information and Content of Oral Report	<ul style="list-style-type: none"> <input type="checkbox"/> Addresses key topics <input type="checkbox"/> Information is complete <input type="checkbox"/> Facts are accurate <input type="checkbox"/> Content works with other group's report and does not present the same information <input type="checkbox"/> Answers questions about content correctly 	0 criteria met	1-2 criteria met	3 criteria met	4 criteria met	All 5 criteria met	X 18	
Presentation of Oral Report	<ul style="list-style-type: none"> <input type="checkbox"/> Well organized <input type="checkbox"/> Engages listeners <input type="checkbox"/> Speaks clearly <input type="checkbox"/> Uses correct grammar <input type="checkbox"/> Maintains good posture and eye contact 	0 criteria met	1-2 criteria met	3 criteria met	4 criteria met	All 5 criteria met	X 5.5	
Peer Evaluation							6 pts. maximum	
TOTAL								

Final Assessment Total _____/100 pts.

Comments:

**Introduction to Beef Production
Peer Evaluation**

Name _____

Write your name on the line above. Fill in the names of your teammates in the spaces provided below. For each category listed below, give each teammate a score from 0 to 3 based on his or her contribution to the project. Use the following guide.

- 0 – no contribution
- 1 – minimal contribution
- 2 – average contribution
- 3 – excellent contribution

Add the person’s score in each category and place the total in the column at the right. Give the completed score sheet to your instructor.

Project development includes tasks such as conducting interviews and doing research. Project completion includes assembling or presenting the project. If tasks are divided so that you or your teammates do only one type of task to contribute to the project, consult the instructor about how to adjust your evaluation form.

Name of Teammate	Project Development 0-3 Points	Project Completion 0-3 Points	Total (6 Points Max.)

