

<b>Course</b>	Agricultural Science I
<b>Unit</b>	Introduction to Beef Production
<b>Lesson</b>	Production Systems
<b>Estimated Time</b>	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*. 11<sup>th</sup> 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](http://www.mda.mo.gov/Market/reports_mo.htm).

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2. Print

- ❑ Field, T. G. and R. E. Taylor. *Beef Production Management and Decisions*. 5<sup>th</sup> 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.
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### 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
<b>Objective 1</b>  <i>Discuss the importance of well-planned, usable facilities. Then describe the basic facility needs for each production system.</i>	<b>Determine the facility requirements for the different production systems.</b>  Cow/Calf <ol style="list-style-type: none"><li>1. Handling facilities</li><li>2. Loading/unloading area</li><li>3. Feed/Hay storage</li><li>4. Optional<ol style="list-style-type: none"><li>a. Show/sale barn</li><li>b. Maternity barn</li><li>c. More elaborate handling/working facilities</li><li>d. Office</li></ol></li></ol> Purebred <ol style="list-style-type: none"><li>1. Handling facilities</li><li>2. Loading/unloading area</li><li>3. Feed/Hay storage</li><li>4. Optional<ol style="list-style-type: none"><li>a. Show/sale barn</li><li>b. Maternity barn</li><li>c. More elaborate handling/working facilities</li><li>d. Office</li></ol></li></ol> Backgrounding <ol style="list-style-type: none"><li>1. Handling facilities</li><li>2. Loading/unloading area</li></ol> Feedlot <ol style="list-style-type: none"><li>1. Handling facilities</li><li>2. Loading/unloading area</li><li>3. Feed storage</li></ol>

Instructor Directions	Content Outline
	<ol style="list-style-type: none"> <li>4. Feed mill</li> <li>5. Feeding lots</li> </ol>
<p><b>Objective 2</b></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><b>Describe how forages are used in each of the production systems.</b></p> <p>Cow/Calf producers</p> <ol style="list-style-type: none"> <li>1. Use forages year-round, either through grazing or as hay or haylage harvested in the summer for winter</li> <li>2. May feed cattle on cornstalks or wheat pasture during the winter</li> </ol> <p>Purebred producers</p> <ol style="list-style-type: none"> <li>1. Use forages year-round, either through grazing or as hay or haylage</li> </ol> <p>Backgrounders</p> <ol style="list-style-type: none"> <li>1. Use forages either through grazing or as hay</li> <li>2. May feed cattle on cornstalks or wheat pasture throughout the winter</li> </ol> <p>Feedlot operators</p> <ol style="list-style-type: none"> <li>1. Often feed cattle on grass hay for a few days after they are received</li> <li>2. May use haylages as a base diet, but most use corn silage and grain with protein supplements</li> </ol>
<p><b>Objective 3</b></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><b>Identify the production costs for beef cattle.</b></p> <p>Fixed costs will be similar for all producers despite the type of production system.</p> <ol style="list-style-type: none"> <li>1. Depreciation</li> <li>2. Interest on loans</li> <li>3. Repairs</li> <li>4. Taxes</li> <li>5. Insurance</li> </ol> <p>Variable costs may differ depending on the type of production system.</p> <ol style="list-style-type: none"> <li>1. Feed</li> <li>2. Medications</li> <li>3. Veterinary expenses</li> <li>4. Equipment</li> <li>5. Facilities</li> <li>6. Cost of stock</li> </ol>

<p><b>Objective 4</b></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><b>Describe how one determines which production system to select.</b></p> <p>Little experience, capital, labor, and time</p> <ol style="list-style-type: none"> <li>1. Backgrounding</li> <li>2. Small cow/calf operation</li> </ol> <p>Some experience, capital, labor, and time</p> <ol style="list-style-type: none"> <li>1. Large cow/calf operation</li> <li>2. Small purebred operation</li> </ol> <p>Large amounts of experience, capital, labor, and time</p> <ol style="list-style-type: none"> <li>1. Larger purebred operation</li> <li>2. Feedlot operation</li> </ol>
<p><b>Objective 5</b></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><b>Explain the marketing options available for various production systems.</b></p> <p>Cow/Calf producers</p> <ol style="list-style-type: none"> <li>1. Auctions, including video auctions</li> <li>2. Retained ownership – the cow/calf producer owns the cattle through the feedlot until slaughter</li> <li>3. Livestock order buyer – buyers purchase cattle directly from producers</li> <li>4. Alliance/marketing group – producers form groups to market like sets of cattle together as a branded or labeled product</li> <li>5. Cattle futures market – futures contracts are bought and sold to help manage the financial risk involved in production</li> </ol> <p>Purebred producers</p> <ol style="list-style-type: none"> <li>1. Cattle futures market</li> <li>2. Private treaty sale – a producer and customer privately negotiate the terms of the sale</li> <li>3. Consignment auction – a producer entrusts a group of animals to another party, such as a breed association, to be sold for a commission</li> <li>4. Production sale – one producer or small group of producers sells their animals at an auction that takes place on a farm</li> </ol> <p>Backgrounders</p> <ol style="list-style-type: none"> <li>1. Cattle futures market</li> <li>2. Auctions, including video auctions</li> </ol>

	<p>Feedlot operators</p> <ol style="list-style-type: none"> <li>1. Cattle futures market</li> <li>2. Auctions</li> <li>3. Direct sales to packers based on the live weight or carcass grade of the cattle</li> </ol>
<p><b>Application:</b></p> <p> AS 1 – 90-Day Feeder Steer Budget</p>	<p>Answers to AS 1</p> <p><b>Costs:</b>  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><b>Total Cost:</b> \$32,500 + \$10,800 + \$300 + \$1500 + \$297 = \$45,397</p> <p><b>Projected returns:</b>  99 steers x 635 lbs x \$0.66 per lb = \$41,490.90</p> <p><b>Profit/Loss:</b>  \$41,490.90 - \$45,397 = \$ - 3906.10 (loss)</p> <p><b>Breakeven price:</b>  <math display="block">\frac{45,397}{(99 \times 635)} \times 100 \text{ lbs} = \\$72.21 \text{ per } 100 \text{ lbs}</math></p> <p>Other activities</p> <ol style="list-style-type: none"> <li>1. Have students develop a map and building layout for an extensive beef cattle operation. Students should also research the cost of facilities.</li> <li>2. Take a field trip to visit a local producer who has a well-planned, usable facility.</li> </ol>
<b>Closure/Summary</b>	<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>

<b>Evaluation: Quiz</b>	<p>Answers:</p> <ol style="list-style-type: none"><li>1. d</li><li>2. d</li><li>3. c</li><li>4. a</li><li>5. b</li><li>6. Handling facilities and a loading/unloading area</li><li>7. Answers should include three of the following: auction (including video auctions), alliance/marketing group, livestock order buyer, retained ownership, and cattle futures market.</li><li>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.</li></ol>
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