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| <b>Course</b>         | Agricultural Science I |
| <b>Unit</b>           | Sheep Production       |
| <b>Lesson</b>         | Sheep Enterprises      |
| <b>Estimated Time</b> | 50 minutes             |

### Student Outcome

Describe enterprises in sheep production.

### Learning Objectives

1. Determine the advantages and disadvantages of sheep production.
2. Describe the different types of sheep production enterprises and their respective locations.
3. Identify the primary products and by-products of sheep production.
4. Explain how the sheep industry has changed.

### Grade Level Expectations

### Resources, Supplies & Equipment, and Supplemental Information

#### Resources

1. PowerPoint Slides
  - PPt 1 – U.S. Meat Consumption
  - PPt 2 – U.S. Sheep Production
  - PPt 3 – U.S. Wool Production from 1975 to 1999
2. Activity Sheets
  - AS 1 – Advantages and Disadvantages of Sheep Production
  - AS 2 – Retail Cuts of Lamb
3. *Sheep Production (Student Reference)*. University of Missouri-Columbia: Instructional Materials Laboratory, 2001.
4. *Sheep Production Curriculum Enhancement*. University of Missouri-Columbia: Instructional Materials Laboratory, 2003.

#### Supplies & Equipment

- Sheep products and by-products to display for the interest approach, such as meat products, wool, and clothing.

#### Supplemental Information

1. Internet Sites
  - Animal Science Publications. MU Extension. University of Missouri-Columbia. Accessed June 14, 2007, from <http://extension.missouri.edu/explore/agguides/ansci/>.
  - Sheep Industry. American Sheep Industry Association. Accessed June 14, 2007, from [http://www.sheepusa.org/index.phtml?page=site/text&nav\\_id=12a9b27a1d9a8073956d70cd71cadaab](http://www.sheepusa.org/index.phtml?page=site/text&nav_id=12a9b27a1d9a8073956d70cd71cadaab).

## Interest Approach

Bring a sweater, blanket, wool slippers, and any other materials derived from sheep to the classroom. Ask the students what the products have in common. Do they use these products? How often? What other products do the students use that come from sheep? The instructor can then determine how much the students know about sheep and the products that are derived from sheep.

## Communicate the Learning Objectives

1. Determine the advantages and disadvantages of sheep production.
2. Describe the different types of sheep production enterprises and their respective locations.
3. Identify the primary products and by-products of sheep production.
4. Explain how the sheep industry has changed.

| Instructor Directions   | Content Outline  |
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| <p><b>Objective 1</b></p> <p><i>Ask students why producers would (or would not) want to raise sheep. Also discuss how to overcome the disadvantages associated with sheep production. In your discussion of the disadvantages of sheep production, refer to Ppt 1 to illustrate the consumption rates of lamb. Have students complete AS 1 and ask them to identify the advantages and disadvantages of sheep production.</i></p> <p> AS 1 - Advantages and Disadvantages of Sheep Production</p> <p> Ppt 1 - U.S. Meat Consumption</p> | <p><b>Determine the advantages and disadvantages of sheep production.</b></p> <p>Advantages</p> <ol style="list-style-type: none"><li>1. Eat a variety of forages including weeds and brush</li><li>2. Eat grain lost at harvest</li><li>3. Very versatile: can graze in various environments<ol style="list-style-type: none"><li>a. On rugged mountain areas</li><li>b. On land where a crop cannot be produced</li><li>c. In colder regions (wool breeds)</li></ol></li><li>4. Frequently have multiple births</li><li>5. Can be raised on limited acreage</li><li>6. Low initial investment</li><li>7. Yields many useful by-products</li><li>8. Provides healthful meat<ol style="list-style-type: none"><li>a. More digestible than other red meats</li><li>b. Lower cholesterol because it does not marbleize</li><li>c. Provides protein</li><li>d. High in B vitamins, niacin, zinc, and iron</li></ol></li></ol> <p>Disadvantages</p> <ol style="list-style-type: none"><li>1. Low consumer consumption rate</li><li>2. Fluctuation in meat processing and marketing structure</li><li>3. Low wool prices</li><li>4. Easy prey for predators</li><li>5. Susceptible to disease and injuries</li><li>6. Susceptible to a variety of external and internal parasites</li></ol> |

| Instructor Directions   | Content Outline  |
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|   | <ol style="list-style-type: none"> <li>7. Must be carefully managed</li> <li>8. High labor cost to manage sheep</li> </ol>   |
| <p><b>Objective 2</b></p> <p><i>Ask students to determine what types of sheep enterprises are in the community. Refer to PPT 2 to illustrate where sheep are produced, e.g., the Corn Belt and the Midwest, and how many. (Explain that corn is cultivated in the central part of the United States. However, because crops are diversified throughout the country, the term "Corn Belt" is not as exact as it once was.)</i></p> <p><i>Ask students why they think more sheep are produced in those locations. Why do some states produce only a few sheep? Ask students which enterprise type they think offers the greatest advantages and which type is subject to problems.</i></p> <p><i>During class discussion, determine which sheep are most suited for showing. Refer students to the section entitled Showing Sheep in the appendix.</i></p> <p>☐ PPT 2 – U.S. Sheep Production</p> | <p><b>Describe the different types of sheep production enterprises and their respective locations.</b></p> <p>Purebred</p> <ol style="list-style-type: none"> <li>1. Purebred sheep produce superior genetic traits using stud rams and ewes. <ol style="list-style-type: none"> <li>a. Purebred operations produce rams that are sold to producers who want to integrate certain genetic traits into their breeding operations.</li> <li>b. Purebred types produce replacement ewes that are sold to new producers entering the business or to established producers who want to replace their older ewes.</li> </ol> </li> <li>2. Operations must be very focused and specialized in providing good breeding stock to sell to producers.</li> <li>3. Examples of genetic traits of the breeding stock include the following: <ol style="list-style-type: none"> <li>a. Improved carcass qualities</li> <li>b. Improved growth rate</li> </ol> </li> <li>4. Some purebreds are exhibited in shows at local, county, state, and national levels.</li> <li>5. Purebred operations are located throughout the United States. Most operations are in the East.</li> </ol> <p>Farm flock</p> <ol style="list-style-type: none"> <li>1. Farm flocks are the most common type of enterprise.</li> <li>2. Farm flocks are usually small - from about 10 sheep to several hundred. <ol style="list-style-type: none"> <li>a. They are often part of a diverse farming operation where crops and other animals are also raised.</li> <li>b. The flocks tend to be a secondary enterprise for producers, so numbers are kept to a minimum.</li> </ol> </li> <li>3. They are raised in a feed lot and/or grazed in pastures.</li> <li>4. The sheep are raised for meat production and for wool even though wool is declining in value.</li> <li>5. Farm flock animals are not usually shown at fairs.</li> <li>6. Some producers have sheep on the farm to use acres of land that cannot be tilled. The sheep clean up the</li> </ol> |

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|                       | <p>weeds and brush and do not require a full-time shepherd.</p> <p>7. The majority of farm flocks are located in central, eastern, and southern United States. Half of the flocks are located in the Corn Belt region.</p> <p>Range</p> <ol style="list-style-type: none"> <li>1. Range producers have large flocks of about 1,000 sheep or more that graze on hundreds to thousands of acres of inexpensive land. The amount of land they graze on depends on the quality of the forages.</li> <li>2. Range lambs are generally smaller than purebred or farm flock animals and are raised for processing.</li> <li>3. Range producers choose this method of sheep production due to the lack of quality grazing land available in the area.</li> <li>4. The majority of range operations exist in the western states.</li> </ol> <p>Club lamb (also called market lamb)</p> <ol style="list-style-type: none"> <li>1. Club lambs are raised for carcass quality and overall eye appeal.</li> <li>2. They are generally a crossbred animal with a short life span due to their purpose.</li> <li>3. The size of the sheep will differ depending on the genetic traits of the animal.</li> <li>4. Some families show club lambs as 4-H and FFA projects at fairs on the local, county, state, regional, and national levels. (Direct students to Fitting Market Lambs in the appendix for further information.)</li> <li>5. There are several reasons to show club lambs. <ol style="list-style-type: none"> <li>a. Prize money</li> <li>b. Recognition</li> <li>c. Recreational, family-oriented activity</li> </ol> </li> <li>6. Some club lambs are raised as hobby sheep to produce meat and wool.</li> <li>7. Club lambs are produced all over the United States but predominantly in grain-producing areas in the Midwest.</li> </ol> |

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| <p><b>Objective 3</b></p> <p><i>Ask the students to name some common products and by-products that may come from sheep. Have them use the Internet to discover how these by-products are created. After discussing primary wholesale cuts, ask students to complete AS 2.</i></p> <p><i>For further information on lamb meat, refer students to Cooking Lamb in the appendix, which provides tips on cooking lamb, nutritional information, and recipes. Explain that the by-products discussed below represent only a sample list.</i></p> <p> AS 2 – Retail Cuts of Lamb</p> | <p><b>Identify the primary products and by-products of sheep production.</b></p> <p>Primary wholesale cuts (edible)</p> <ol style="list-style-type: none"> <li>1. Leg (most expensive)</li> <li>2. Loin (most expensive)</li> <li>3. Rib</li> <li>4. Shoulder</li> <li>5. Breast/foreshank</li> </ol> <p>By-products</p> <ol style="list-style-type: none"> <li>1. From hide and wool <ol style="list-style-type: none"> <li>a. Shoe linings</li> <li>b. Slippers</li> <li>c. Leather gloves</li> <li>d. Book bindings</li> <li>e. Carpet</li> <li>f. Blankets</li> <li>g. Lanolin – a fatty substance removed from sheep wool; when refined it is used in cosmetics, ointments, and many other products</li> <li>h. Insulation</li> <li>i. Tennis balls</li> <li>j. Clothing</li> <li>k. Fleece products - used in nursing homes to relieve bedsores</li> </ol> </li> <li>2. From fats and fatty acids <ol style="list-style-type: none"> <li>a. Chewing gum</li> <li>b. Medicines</li> <li>c. Dish soap</li> <li>d. Candles</li> <li>e. Shaving cream</li> <li>f. Antifreeze</li> <li>g. Crayons</li> <li>h. Dog food</li> <li>i. Explosives</li> <li>j. Tires</li> </ol> </li> <li>3. From bones, horns, and hooves <ol style="list-style-type: none"> <li>a. Gelatin desserts</li> <li>b. Toothbrushes</li> <li>c. Photographic film</li> </ol> </li> </ol> |

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|   | <ul style="list-style-type: none"> <li>d. Shampoo and conditioner</li> <li>e. Plywood and paneling</li> <li>f. Bone china</li> <li>g. Wallpaper</li> <li>h. Marshmallows</li> <li>i. Piano keys</li> <li>j. Bandage strips</li> </ul>   |
| <p><b>Objective 4</b></p> <p><i>Ask students why consumer demands for sheep have changed. Have them predict how the sheep industry will change in response to these new demands. Show PPT 3 to illustrate how wool production has declined in the United States.</i></p> <p><input type="checkbox"/> PPT 3 – U.S. Wool Production from 1975 to 1999</p> | <p><b>Explain how the sheep industry has changed.</b></p> <p>In 1942, 56 million sheep were raised in the United States. In 2000, there were only 7.2 million sheep in the United States.</p> <ol style="list-style-type: none"> <li>1. The number of total producers is decreasing.</li> <li>2. Large operations, which are taking over small farms, are producing other livestock animals that are more profitable such as cattle and swine. <ul style="list-style-type: none"> <li>a. Other livestock have less deadly health hazards.</li> <li>b. They experience less stress than sheep.</li> <li>c. There is a smaller loss due to predators.</li> <li>d. It is hard for producers to find seasonal laborers to work on the farm.</li> </ul> </li> </ol> <p>In 1961, a lamb carcass sold for approximately 15¢ per pound. As of April 2001, the average price of a retail cut of lamb in Missouri ranged from \$2.00 per pound for ground meat (burger) to \$8.00 per pound for lamb chops and loins.</p> <ol style="list-style-type: none"> <li>1. The total number of lambs produced is decreasing, which causes the supply available to meet demand to decrease, therefore increasing the price.</li> <li>2. Prices fluctuate throughout the year depending on the season. Lamb prices from February through June are generally higher than normal because of the demand for lamb meat during the Easter season.</li> </ol> <p>Wool prices are declining. The price of shorn wool in 1978 was 75¢ per pound. In 1988 it rose to \$1.38 per pound, but in 1998 it was 60¢ per pound.</p> <ol style="list-style-type: none"> <li>1. At times it may cost the producer of a small flock more to shear the sheep than what the wool is worth, causing producers to produce and sell less wool.</li> <li>2. Consumers' preferences are changing. They want</li> </ol> |

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|   | <p>more nylon, Dacron, and other synthetic fibers that are easy to care for.</p>  |                       |                    |     |  |      |   |     |                      |          |                                    |                  |                                      |
| <p><b>Application:</b></p> <p>📄 AS 1 – Advantages and Disadvantages of Sheep Production</p> <p>📄 AS 2 – Retail Cuts of Lamb</p> | <p>Answers to AS 1<br/>Answers will vary.</p> <p>Answers to AS 2<br/>Students may list various retail cuts based on their research. The cuts listed below are samples. The prices per cut will vary.</p> <table border="0" data-bbox="649 735 1429 1071"> <thead> <tr> <th data-bbox="649 735 909 787"><u>Wholesale Cuts</u></th> <th data-bbox="909 735 1429 787"><u>Retail Cuts</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="649 787 909 861">Leg</td> <td data-bbox="909 787 1429 861">Whole leg, round leg steak, boneless leg</td> </tr> <tr> <td data-bbox="649 861 909 934">Loin</td> <td data-bbox="909 861 1429 934">Loin chop, loin roast, medallion, boneless loin</td> </tr> <tr> <td data-bbox="649 934 909 976">Rib</td> <td data-bbox="909 934 1429 976">Rib chops, rib roast</td> </tr> <tr> <td data-bbox="649 976 909 1018">Shoulder</td> <td data-bbox="909 976 1429 1018">Arm chop, boneless rolled shoulder</td> </tr> <tr> <td data-bbox="649 1018 909 1071">Foreshank/breast</td> <td data-bbox="909 1018 1429 1071">Stew meat, lamb patties, Denver ribs</td> </tr> </tbody> </table> <p>Other activities</p> <ol style="list-style-type: none"> <li>1. Survey the agricultural community to determine the enterprise types. Discuss why those types of enterprises exist in the community.</li> <li>2. Invite someone familiar with showing sheep to attend class, and after the discussion of the four enterprise types, have him/her demonstrate how to fit a sheep for show. Ask him/her to perform every aspect of the process for the students so they can learn exactly what kind of work it takes to get a sheep ready for show. If no one is available or if you would like to complement the demonstration, you could show a video on judging market lambs.</li> </ol> | <u>Wholesale Cuts</u> | <u>Retail Cuts</u> | Leg | Whole leg, round leg steak, boneless leg | Loin | Loin chop, loin roast, medallion, boneless loin | Rib | Rib chops, rib roast | Shoulder | Arm chop, boneless rolled shoulder | Foreshank/breast | Stew meat, lamb patties, Denver ribs |
| <u>Wholesale Cuts</u>   | <u>Retail Cuts</u>  |                       |                    |     |  |      |   |     |                      |          |                                    |                  |                                      |
| Leg   | Whole leg, round leg steak, boneless leg  |                       |                    |     |  |      |   |     |                      |          |                                    |                  |                                      |
| Loin  | Loin chop, loin roast, medallion, boneless loin   |                       |                    |     |  |      |   |     |                      |          |                                    |                  |                                      |
| Rib   | Rib chops, rib roast  |                       |                    |     |  |      |   |     |                      |          |                                    |                  |                                      |
| Shoulder  | Arm chop, boneless rolled shoulder  |                       |                    |     |  |      |   |     |                      |          |                                    |                  |                                      |
| Foreshank/breast  | Stew meat, lamb patties, Denver ribs  |                       |                    |     |  |      |   |     |                      |          |                                    |                  |                                      |
| <p><b>Closure/Summary</b></p>   | <p>Sheep production has changed a great deal over the past 60 years. Enterprises in the industry are very different from each other. They range from a very small number of sheep to very large flocks. The types of sheep enterprises differ in size but they also differ in purpose. Purebred enterprises produce the replacement ewes, whereas the other enterprises raise the sheep for meat. In recent years,</p>  |                       |                    |     |  |      |   |     |                      |          |                                    |                  |                                      |

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|                                | <p>producers have seen the demand for lamb and wool decrease. The demand for products and by-products from sheep has fluctuated because consumers want new products and have changing needs.</p>   |
| <p><b>Evaluation: Quiz</b></p> | <p>Answers:</p> <ol style="list-style-type: none"> <li>1. a</li> <li>2. d</li> <li>3. b</li> <li>4. c</li> <li>5. c</li> <li>6. b</li> <li>7. d</li> <li>8. a</li> <li>9. Advantages: (any two of the following) <ol style="list-style-type: none"> <li>a. Eat a variety of forages including weeds and brush</li> <li>b. Eat grain lost at harvest</li> <li>c. Very versatile animal that can graze in various environments: <ol style="list-style-type: none"> <li>1. On rugged mountain areas</li> <li>2. On land where a crop cannot be produced</li> <li>3. In colder regions (wool breeds)</li> </ol> </li> <li>d. Frequently have multiple births</li> <li>e. Can be raised on limited acreage</li> <li>f. Low initial investment</li> <li>g. Yields many products</li> <li>h. Provides healthful meat</li> </ol> </li> <li>10. Disadvantages: (any two of the following) <ol style="list-style-type: none"> <li>a. Low consumer consumption rate</li> <li>b. Fluctuation in meat processing and marketing structure</li> <li>c. Low wool prices</li> <li>d. Easy prey for predators</li> <li>e. Susceptible to disease and injuries</li> <li>f. Susceptible to a variety of internal and external parasites</li> <li>g. Must be carefully managed</li> <li>h. High labor cost to manage sheep</li> </ol> </li> </ol> |