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| <b>Course</b>         | Agricultural Science I           |
| <b>Unit</b>           | Introduction to Animal Products  |
| <b>Lesson</b>         | Lamb and Mutton                  |
| <b>Estimated Time</b> | 90 minutes or 2 50-minute blocks |

### Student Outcome

Describe ovine carcass fabrication and grading.

### Learning Objectives

1. Explain how the quality grade of an ovine carcass is determined.
2. Explain how the yield grade of an ovine carcass is determined.
3. Identify the wholesale cuts of lamb and mutton.
4. Identify the retail cuts of lamb and mutton.

### Grade Level Expectations

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

#### Resources

1. PowerPoint Slides
  - ☐ PPt 1 – Quality Grading
  - ☐ PPt 2 – Wholesale Cuts of Lamb
2. Activity Sheets
  - ☐ AS 1 – Yield Grading
3. *Introduction to Animal Products (Student Reference)*. University of Missouri-Columbia: Instructional Materials Laboratory, 1998.
4. *Introduction to Animal Products Curriculum Enhancement*. University of Missouri-Columbia: Instructional Materials Laboratory, 2003.

#### Supplies & Equipment

- ☐ Retail cut identification card set (National Meat Board) or actual retail lamb cuts

#### Supplemental Information

1. Internet Sites
  - ☐ “United States Standards for Grades of Lamb, Yearling Mutton, and Mutton Carcasses.” Agricultural Marketing Service. United States Department of Agriculture. Accessed on October 9, 2007 from <http://www.ams.usda.gov/lsg/stand/standards/lamb-car.pdf>.
  - ☐ American Lamb Board. Accessed on October 9, 2007, from <http://americanlambboard.org/>.
  - ☐ Epley, Richard J. “Retail Meat Cut Selection and Storage.” Extension. University of Minnesota. Accessed on October 9, 2007, from <http://www.extension.umn.edu/distribution/nutrition/DJ1944.html>.
  - ☐ Meat Identification Page. University of Nebraska. Accessed on October 9, 2007, from <http://animalscience.unl.edu/meats/id/>.

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- ❑ “How to Buy Meat.” *Home and Garden Bulletin Number 265*. Agricultural Marketing Service. United States Department of Agriculture. Accessed on October 9, 2007, from <http://www.ams.usda.gov/howtobuy/meat.htm>.
2. Print
- ❑ North American Meat Processors Association. *The Meat Buyers Guide: Meat, Lamb, Veal, Pork, and Poultry*. Hoboken, NJ: John Wiley & Sons, Inc., 2006.
  - ❑ Pond, K. and W. Pond. *Introduction to Animal Science*. New York: John Wiley & Sons, 2000.
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### Interest Approach

Have students try to identify lamb cuts using a retail cut identification card set or actual retail lamb cuts.

### Communicate the Learning Objectives

1. Explain how the quality grade of an ovine carcass is determined.
2. Explain how the yield grade of an ovine carcass is determined.
3. Identify the wholesale cuts of lamb and mutton.
4. Identify the retail cuts of lamb and mutton.

| Instructor Directions   | Content Outline  |
|---|--|
| <p><b>Objective 1</b></p> <p><i>Ask students what determines the quality grade of an ovine carcass. Use PPt 1 as a guide. Explain the differences in maturity and flank streakings.</i></p> <p><input type="checkbox"/> PPt 1 – Quality Grading</p> | <p><b>Explain how the quality grade of an ovine carcass is determined.</b></p> <p>Maturity (Age)</p> <ol style="list-style-type: none"><li>1. Lamb (young lamb and older lamb)<ol style="list-style-type: none"><li>a. Have break points on at least one front shank</li><li>b. Slightly wide and moderately flat ribs; wider as lamb ages</li><li>c. Dark pink to light red lean; fine-textured lean</li></ol></li><li>2. Yearling mutton<ol style="list-style-type: none"><li>a. Either break or spool joints on their front shanks</li><li>b. Wider and flatter ribs</li><li>c. Slightly dark red lean; slightly coarse-textured</li></ol></li><li>3. Mutton<ol style="list-style-type: none"><li>a. Spool joints on their front shanks</li><li>b. Wide, flat rib bones</li><li>c. Dark red lean; course textured</li></ol></li></ol> <p>Flank streaking – Amount of fat streaks within and upon the inside of the flank of the carcass</p> <ol style="list-style-type: none"><li>1. As flank streaking increases, palatability also increases</li><li>2. Ten degrees of flank streaking</li></ol> <p>Final quality grade is determined by combining maturity and degree of flank streaking</p> <ol style="list-style-type: none"><li>1. Prime</li><li>2. Choice</li><li>3. Good</li><li>4. Utility</li><li>5. Cull (mutton only)</li></ol> |

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| <p><b>Objective 2</b></p> <p><i>Ask students how the yield grade of an ovine carcass is determined. Show the formula. Explain that yield grades are based primarily on the amount of backfat or external fat the ovine carcass has. Have students complete AS 1.</i></p> <p> AS 1 – Yield Grading</p> | <p><b>Explain how the yield grade of an ovine carcass is determined.</b></p> <p>Yield grades of ovine carcasses are based on external fat</p> <ol style="list-style-type: none"> <li>1. The primary factor is fat thickness over the center ribeye muscle between the 12<sup>th</sup> and 13<sup>th</sup> ribs</li> <li>2. Unusual fat distribution adjusts the measurement upward or downward</li> </ol> <p>The formula for yield grade is:<br/> <math>YG = 0.4 + (10 \times \text{adjusted fat thickness in inches})</math></p> <p>Yield grades range from 1 to 5.</p>  |
| <p><b>Objective 3</b></p> <p><i>Ask students to list the wholesale cuts of lamb and mutton. Use PPt 2 as a guide.</i></p> <p> PPt 2 – Wholesale Cuts of Lamb</p>  | <p><b>Identify the wholesale cuts of pork.</b></p> <ol style="list-style-type: none"> <li>1. Shoulder</li> <li>2. Rib/rack</li> <li>3. Loin</li> <li>4. Leg</li> <li>5. Foreshank/breast</li> </ol>   |
| <p><b>Objective 4</b></p> <p><i>Ask students which retail cuts of lamb and mutton come from each wholesale cut. Use a retail cut identification card set or actual retail lamb cuts as aids.</i></p>   | <p><b>Identify the retail cuts of pork.</b></p> <ol style="list-style-type: none"> <li>1. Leg       <ol style="list-style-type: none"> <li>a. French style leg</li> <li>b. American style leg</li> <li>c. Leg steak</li> <li>d. Lamb leg, sirloin half</li> <li>e. Sirloin chops</li> </ol> </li> <li>2. Loin       <ol style="list-style-type: none"> <li>a. Loin roast</li> <li>b. Loin chops</li> <li>c. Double loin chops</li> </ol> </li> <li>3. Rib/rack       <ol style="list-style-type: none"> <li>a. Rib roast</li> <li>b. Rib chops</li> <li>c. Rack of lamb</li> </ol> </li> <li>4. Shoulder       <ol style="list-style-type: none"> <li>a. Square cut shoulder</li> <li>b. Rolled shoulder</li> <li>c. Arm chop</li> <li>d. Blade chop</li> <li>e. Arm roast</li> </ol> </li> </ol> |

|   | <div><div><div>f. Blade roast</div><div>5. Foreshank/breast</div><div>a. Breast</div><div>b. Riblets</div><div>c. Foreshank</div><div>6. Variety meats</div><div>a. Patties</div><div>b. Liver</div><div>c. Kidney</div><div>d. Heart</div></div></div>   |             |                          |             |   |     |     |   |      |     |   |     |     |   |      |     |   |      |     |   |      |     |   |     |     |   |      |     |   |      |     |    |      |     |
|---|---|-------------|--------------------------|-------------|---|-----|-----|---|------|-----|---|-----|-----|---|------|-----|---|------|-----|---|------|-----|---|-----|-----|---|------|-----|---|------|-----|----|------|-----|
| <div><div>Application</div><div><div><div><div></div><div>AS 1 – Calculating Percent Muscle</div></div></div></div></div> | <div><div>Answers to AS 1</div><table><tr><th>Carcass #</th><th>Adjusted Fat Measurement</th><th>Yield Grade</th></tr><tr><td>1</td><td>0.4</td><td>4.4</td></tr><tr><td>2</td><td>0.25</td><td>2.9</td></tr><tr><td>3</td><td>0.1</td><td>1.4</td></tr><tr><td>4</td><td>0.15</td><td>1.9</td></tr><tr><td>5</td><td>0.22</td><td>2.6</td></tr><tr><td>6</td><td>0.31</td><td>3.5</td></tr><tr><td>7</td><td>0.5</td><td>5.4</td></tr><tr><td>8</td><td>0.16</td><td>2.0</td></tr><tr><td>9</td><td>0.12</td><td>1.6</td></tr><tr><td>10</td><td>0.18</td><td>2.2</td></tr></table><div><div>Other activities</div><div><div>1. Visit a local meat processor to observe an ovine carcass being cut into retail and wholesale cuts.</div><div>2. Research Kosher regulations for ovine slaughter.</div></div></div></div> | Carcass #   | Adjusted Fat Measurement | Yield Grade | 1 | 0.4 | 4.4 | 2 | 0.25 | 2.9 | 3 | 0.1 | 1.4 | 4 | 0.15 | 1.9 | 5 | 0.22 | 2.6 | 6 | 0.31 | 3.5 | 7 | 0.5 | 5.4 | 8 | 0.16 | 2.0 | 9 | 0.12 | 1.6 | 10 | 0.18 | 2.2 |
| Carcass #   | Adjusted Fat Measurement  | Yield Grade |                          |             |   |     |     |   |      |     |   |     |     |   |      |     |   |      |     |   |      |     |   |     |     |   |      |     |   |      |     |    |      |     |
| 1   | 0.4   | 4.4         |                          |             |   |     |     |   |      |     |   |     |     |   |      |     |   |      |     |   |      |     |   |     |     |   |      |     |   |      |     |    |      |     |
| 2   | 0.25  | 2.9         |                          |             |   |     |     |   |      |     |   |     |     |   |      |     |   |      |     |   |      |     |   |     |     |   |      |     |   |      |     |    |      |     |
| 3   | 0.1   | 1.4         |                          |             |   |     |     |   |      |     |   |     |     |   |      |     |   |      |     |   |      |     |   |     |     |   |      |     |   |      |     |    |      |     |
| 4   | 0.15  | 1.9         |                          |             |   |     |     |   |      |     |   |     |     |   |      |     |   |      |     |   |      |     |   |     |     |   |      |     |   |      |     |    |      |     |
| 5   | 0.22  | 2.6         |                          |             |   |     |     |   |      |     |   |     |     |   |      |     |   |      |     |   |      |     |   |     |     |   |      |     |   |      |     |    |      |     |
| 6   | 0.31  | 3.5         |                          |             |   |     |     |   |      |     |   |     |     |   |      |     |   |      |     |   |      |     |   |     |     |   |      |     |   |      |     |    |      |     |
| 7   | 0.5   | 5.4         |                          |             |   |     |     |   |      |     |   |     |     |   |      |     |   |      |     |   |      |     |   |     |     |   |      |     |   |      |     |    |      |     |
| 8   | 0.16  | 2.0         |                          |             |   |     |     |   |      |     |   |     |     |   |      |     |   |      |     |   |      |     |   |     |     |   |      |     |   |      |     |    |      |     |
| 9   | 0.12  | 1.6         |                          |             |   |     |     |   |      |     |   |     |     |   |      |     |   |      |     |   |      |     |   |     |     |   |      |     |   |      |     |    |      |     |
| 10  | 0.18  | 2.2         |                          |             |   |     |     |   |      |     |   |     |     |   |      |     |   |      |     |   |      |     |   |     |     |   |      |     |   |      |     |    |      |     |
| <div><div>Closure/Summary</div></div>   | <div><div>Ovine carcasses are quality graded using maturity and degree of flank streakings. Ovine yield grades are calculated using adjusted external fat measurements. Ovine carcasses are then cut into wholesale and retail cuts.</div></div>  |             |                          |             |   |     |     |   |      |     |   |     |     |   |      |     |   |      |     |   |      |     |   |     |     |   |      |     |   |      |     |    |      |     |
| <div><div>Evaluation: Quiz</div></div>  | <div><div>Answers</div><div><div>1. c</div><div>2. a</div><div>3. d</div><div>4. a</div><div>5. d</div><div>6. b</div><div>7. Flank streaking and maturity</div></div></div>  |             |                          |             |   |     |     |   |      |     |   |     |     |   |      |     |   |      |     |   |      |     |   |     |     |   |      |     |   |      |     |    |      |     |