

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

### Student Outcome

Describe pork carcass fabrication and grading.

### Learning Objectives

1. Identify the quality characteristics of pork.
2. Explain how the amount of saleable product is determined.
3. Identify the wholesale cuts of pork.
4. Identify the retail cuts of pork.

### Grade Level Expectations

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

#### Resources

1. PowerPoint Slides
  - ☐ PPt 1 – Calculating Percent Muscle
  - ☐ PPt 2 – Wholesale Cuts of Pork
2. Activity Sheets
  - ☐ AS 1 – Calculating Percent Muscle
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 or actual retail pork cuts

#### Supplemental Information

1. Internet Sites
  - ☐ Meat Identification Page. University of Nebraska. Accessed on October 9, 2007, from <http://animalscience.unl.edu/meats/id/>.
  - ☐ "Purchasing Pork: A Consumer Guide to Identifying Retail Pork Cuts." Illinois Pork Producers Association. Accessed on October 9, 2007, from [http://www.ilpork.com/recipe\\_page/porkcuts.pdf](http://www.ilpork.com/recipe_page/porkcuts.pdf).
  - ☐ "All About Pork." National Pork Board. Accessed on October 9, 2007, from [http://www.theotherwhitemeat.com/aspx/all\\_about\\_pork/](http://www.theotherwhitemeat.com/aspx/all_about_pork/).
  - ☐ Missouri Pork Association. Accessed on October 9, 2007, from <http://www.mopork.com/>.

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2. Print

- ❑ 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 pork cuts using a retail cut identification card set or actual retail pork cuts.

### Communicate the Learning Objectives

1. Identify the quality characteristics of pork.
2. Explain how the amount of saleable product is determined.
3. Identify the wholesale cuts of pork.
4. Identify the retail cuts of pork.

Instructor Directions	Content Outline
<b>Objective 1</b>  <i>Discuss the characteristics of pork that are evaluated for quality. Explain that unlike beef that receives a quality grade, these characteristics are evaluated to determine pork quality but no "grade" is assigned.</i>	<b>Describe the quality characteristics of pork.</b> <ol style="list-style-type: none"><li>1. Muscle color – Five color scores, with reddish pink being the ideal color. Carcasses scoring 1 or 5 should be eliminated from consideration.<ol style="list-style-type: none"><li>a. 1 = Pale pinkish gray</li><li>b. 2 = Grayish pink</li><li>c. 3 = Reddish pink</li><li>d. 4 = Purplish red</li><li>e. 5 = Dark purplish red</li></ol></li><li>2. Muscle firmness/wetness condition – Carcasses scoring 1 or 2 should be eliminated from consideration.<ol style="list-style-type: none"><li>a. 1 = Very soft and very watery</li><li>b. 2 = Soft and watery</li><li>c. 3 = Slightly firm and moist</li><li>d. 4 = Firm and moderately dry</li><li>e. 5 = Very firm and dry</li></ol></li><li>3. Marbling (intramuscular fat) – Carcasses scoring a 1 or 5 should be eliminated from consideration.<ol style="list-style-type: none"><li>a. 1 = Devoid to practically devoid</li><li>b. 2 = Traces to slight</li><li>c. 3 = Small to modest</li><li>d. 4 = Moderate to slightly abundant</li><li>e. 5 = Moderately abundant or greater</li></ol></li><li>4. Other tissue conditions – Carcasses should be eliminated from consideration if these are evident.<ol style="list-style-type: none"><li>a. Steatosis – Fatty infiltration in muscle area caused by problems, such as muscle atrophy</li><li>b. Soft, oily fat – Unattractive and likely to turn rancid during processing and storage</li></ol></li></ol>

<p><b>Objective 2</b></p> <p><i>Ask students how the amount of saleable product is determined on a pork carcass. List the factors that go into calculating the percent muscle of a pork carcass. Explain the concept of paying premiums for carcasses over 50 percent muscle and docking the purchase price in calculating percent muscle of a carcass. Use PPt 1 as a guide. Have students complete AS 1.</i></p> <p> PPt 1 – Calculating Percent Muscle</p> <p> AS 1 – Calculating Percent Muscle</p>	<p><b>Explain how the amount of saleable product is determined.</b></p> <p>The amount of saleable product is determined by calculating percent of muscle or percent lean of a pork carcass.</p> <ol style="list-style-type: none"> <li>1. Hot carcass weight in pounds (HCW)</li> <li>2. Backfat measurement at the 10<sup>th</sup> rib (10<sup>th</sup> rib BF)</li> <li>3. Loin muscle area at the 10<sup>th</sup> rib (LMA)</li> <li>4. Percent muscle equation</li> </ol> $\frac{88.307 - (0.036 \times \text{HCW}) - (18.574 \times 10^{\text{th}} \text{ rib BF}) + (3.734 \times \text{LMA})}{170} \times 100 = \% \text{ muscle}$
<p><b>Objective 3</b></p> <p><i>Ask students what are the wholesale cuts of pork. Use PPt 2 as a guide.</i></p> <p> PPt 2 – Wholesale Cuts of Pork</p>	<p><b>Identify the wholesale cuts of pork.</b></p> <ol style="list-style-type: none"> <li>1. Shoulder butt</li> <li>2. Picnic shoulder</li> <li>3. Loin</li> <li>4. Leg</li> <li>5. Side (Belly)</li> </ol>
<p><b>Objective 4</b></p> <p><i>Using aids such as a retail cut identification card set or actual retail pork cuts, discuss what retail cuts of pork are produced from the wholesale cuts. Explain to the class that pork cuts can be fresh or smoked/cured, which adds flavor.</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. Bone-in fresh ham</li> <li>b. Smoked ham</li> <li>c. Fresh ham roast, boneless</li> <li>d. Leg cutlets</li> </ol> </li> <li>2. Loin <ol style="list-style-type: none"> <li>a. Boneless center loin roast</li> <li>b. Bone-in sirloin roast</li> <li>c. Boneless sirloin roast</li> <li>d. Center rib roast</li> <li>e. Rib chop</li> <li>f. Tenderloin</li> <li>g. Back ribs</li> </ol> </li> </ol>

	<ul style="list-style-type: none"> <li>h. Boneless rib end roast</li> <li>i. Country-style ribs</li> <li>j. Boneless rib end chop</li> <li>k. Canadian style bacon</li> <li>l. Sirloin chop</li> <li>m. Boneless center loin chop</li> <li>n. Butterfly chop</li> <li>o. Loin chop</li> </ul> <ul style="list-style-type: none"> <li>3. Shoulder butt <ul style="list-style-type: none"> <li>a. Bone in blade roast</li> <li>b. Boneless blade roast</li> <li>c. Ground pork</li> <li>d. Sausage</li> <li>e. Blade steak</li> </ul> </li> <li>4. Picnic shoulder <ul style="list-style-type: none"> <li>a. Smoked picnic</li> <li>b. Arm picnic roast</li> <li>c. Smoked hocks</li> </ul> </li> <li>5. Side <ul style="list-style-type: none"> <li>a. Sliced bacon</li> <li>b. Spareribs</li> <li>c. Slab bacon</li> </ul> </li> <li>6. Variety meats <ul style="list-style-type: none"> <li>a. Tongue</li> <li>b. Heart</li> <li>c. Sweetbreads</li> <li>d. Brains</li> <li>e. Liver</li> <li>f. Kidney</li> </ul> </li> </ul>
<b>Application</b>   AS 1 – Calculating Percent Muscle	<b>Answers to AS 1</b>  1. $\frac{88.307 - (0.036 \times 167) - (18.574 \times 0.8) + (3.734 \times 5.0)}{170} \times 100 = 50.7\%$ 2. $\frac{88.307 - (0.036 \times 166) - (18.574 \times 0.7) + (3.734 \times 4.8)}{170} \times 100 = 51.3\%$ 3. $\frac{88.307 - (0.036 \times 187) - (18.574 \times 0.9) + (3.734 \times 7.5)}{170} \times 100 = 54.7\%$ 4. $\frac{88.307 - (0.036 \times 194) - (18.574 \times 1.1) + (3.734 \times 6.8)}{170} \times 100 = 50.8\%$

	<p>5. <math>\frac{88.307 - (0.036 \times 184) - (18.574 \times 0.6) + (3.734 \times 5.5)}{170} \times 100 = 53.6\%</math></p> <p>6. <math>\frac{88.307 - (0.036 \times 179) - (18.574 \times 0.5) + (3.734 \times 7.0)}{170} \times 100 = 58.1\%</math></p> <p>7. <math>\frac{88.307 - (0.036 \times 173) - (18.574 \times 0.9) + (3.734 \times 8.7)}{170} \times 100 = 57.6\%</math></p> <p>8. <math>\frac{88.307 - (0.036 \times 174) - (18.574 \times 1.2) + (3.734 \times 6.0)}{170} \times 100 = 48.3\%</math></p> <p>9. <math>\frac{88.307 - (0.036 \times 172) - (18.574 \times 1.0) + (3.734 \times 4.3)}{170} \times 100 = 46.8\%</math></p> <p>10. <math>\frac{88.307 - (0.036 \times 198) - (18.574 \times 0.9) + (3.734 \times 9.0)}{170} \times 100 = 57.7\%</math></p> <p>Other activities</p> <p>1. How do methods of preparation influence the palatability and enjoyment of pork when it is consumed? Evaluate effect of end point temperature on juiciness, tenderness, and flavor. Compare tenderloin or loin chop with blade steak and/or spareribs.</p>
<b>Closure/Summary</b>	<p>The quality of pork carcasses is determined by evaluating muscle color, muscle firmness/wetness, marbling, and other tissue conditions. Pork carcasses are valued on a cutability basis using the percent muscle or percent lean formula. The formula uses hot carcass weight, average backfat measurement, and loin muscle area. Pork carcasses are then cut into wholesale and retail cuts and sold to consumers as fresh or cured pork.</p>
<b>Evaluation: Quiz</b>	<p>Answers</p> <p>1. a</p> <p>2. c</p> <p>3. b</p> <p>4. d</p> <p>5. a</p> <p>6. b</p> <p>7. d</p>