

<b>Course</b>	Agricultural Science I
<b>Unit</b>	Introduction to Swine Production
<b>Lesson</b>	Breeds of Swine
<b>Estimated Time</b>	90 minutes or 2 50-minute blocks

### Student Outcome

Identify the major swine breeds and their significance in the industry.

### Learning Objectives



1. Describe the identifying characteristics and histories of the common swine breeds.
2. Determine factors that influence breed selection.
3. Explain how hybrid hogs are developed.
4. Explain the differences between inbreeding, outcrossing, and crossbreeding.

### Grade Level Expectations

SC/LO/3/1/E/09-11/a

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

#### Resources

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

#### Supplies & Equipment

- ☐ Photographs of each swine breed to be discussed

#### Supplemental Information

1. Internet Sites
  - ☐ “Breeds of Livestock.” Oklahoma State University. Accessed July 5, 2007, from <http://www.ansi.okstate.edu/breeds/swine/>.
  - ☐ “The Different Breeds of Swine.” The Pig Site. Accessed July 5, 2007, from <http://www.thepigsite.com/backroom/69/breeds-of-swine>.
  - ☐ “Breeds of Swine.” Catawba Country Schools. Accessed July 5, 2007, from [http://www.catawba.k12.nc.us/schoolpages/bunkerhill/eoc/thomas/animal%201/swinebreeds\\_files/frame.htm](http://www.catawba.k12.nc.us/schoolpages/bunkerhill/eoc/thomas/animal%201/swinebreeds_files/frame.htm).
2. Print
  - ☐ Baker, Meelee, and Robert E Mikesell. *Animal Science Biology and Technology*. Danville, Ill.: Interstate Publishers, Inc., 1996.
  - ☐ Ensminger, M.E. *Stockman’s Handbook Digest*. Danville, Ill.: Interstate Publishers, Inc., 1992.



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- ❑ Gillespie, James R. *Modern Livestock and Poultry Production*. 5<sup>th</sup> ed. Albany: Delmar, 1997.
  - ❑ Lee, Jasper S., et al. *Introduction to Livestock and Poultry Production*. Danville, Ill.: Interstate Publishers, Inc., 1996.
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## Interest Approach



Show photographs of the different breeds of swine. Ask students to identify and discuss the physical difference between the breeds. Have students create two different categories that illustrate the differences (ear type and coloration). Ask several students to discuss what categories they chose and how these categories distinguish differences between the breeds.

## Communicate the Learning Objectives

1. Describe the identifying characteristics and histories of the common swine breeds.
2. Determine factors that influence breed selection.
3. Explain how hybrid hogs are developed.
4. Explain the differences between inbreeding, outcrossing, and crossbreeding.

Instructor Directions	Content Outline
<p><b>Objective 1</b></p> <p><i>Ask the class how many breeds of hogs they can name. Discuss the fact that there are relatively few breeds of swine compared to other animal species. Discuss ear type and coloration, which are the major visible differences between breeds. Hand out AS 1 and have students fill in the chart as you discuss the different beef breeds.</i></p> <p> AS 1 – Breeds of Hogs</p> <p><i>After completing the lesson, hand out AS 2 and have each student choose a different swine breed association. Students should complete AS 2 for the next class period.</i></p> <p> AS 2 – Researching Swine Breeds</p>	<p><b>Describe the identifying characteristics and histories of the common swine breeds.</b></p> <p>Berkshire</p> <ol style="list-style-type: none"><li>1. Black with six white points and erect ears</li><li>2. Produce high quality meat</li><li>3. Imported from England in the early 1800s</li></ol> <p>Chester White</p> <ol style="list-style-type: none"><li>1. White with small drooping ears</li><li>2. Once popular for their durability and ruggedness</li><li>3. Good mothering ability</li><li>4. Originated in Pennsylvania in the early 1800s</li></ol> <p>Duroc</p> <ol style="list-style-type: none"><li>1. Red with drooping ears</li><li>2. Used to produce fast-growing market hogs</li><li>3. Developed in the United States in the mid-1800s by crossing red hogs from New York and New Jersey</li></ol> <p>Hampshire</p> <ol style="list-style-type: none"><li>1. Black with a white belt around the front of the body and erect ears</li><li>2. Used to produce lean, heavily muscled offspring</li><li>3. Imported from England during the early 1800s</li></ol> <p>Landrace</p> <ol style="list-style-type: none"><li>1. White with large, droopy ears that cover the entire face</li></ol>

Instructor Directions	Content Outline
	<ol style="list-style-type: none"> <li>2. Used as a maternal breed because of their mothering ability</li> <li>3. Imported from Denmark in the 1930s</li> </ol> <p>Pietrain</p> <ol style="list-style-type: none"> <li>1. Spotted with erect ears</li> <li>2. Leanest and most heavily muscled hogs; often carry a stress gene linked to meat quality problems</li> <li>3. Used to produce terminal sires</li> <li>4. Imported from Germany and Poland</li> </ol> <p>Poland China</p> <ol style="list-style-type: none"> <li>1. Black with six white points (like Berkshires) but with drooping ears</li> <li>2. Have been used to increase growth rates, but popularity has decreased because it has not kept up with the trend toward leanness</li> <li>3. Originated in Ohio in the first half of the 19<sup>th</sup> century</li> </ol> <p>Spotted</p> <ol style="list-style-type: none"> <li>1. Black and white spots and drooping ears</li> <li>2. Have been used because of their rapid growth, but their numbers are small in comparison with other breeds used by the swine industry</li> <li>3. Originated in Indiana from the Poland China breed</li> <li>4. Purebred association formed in 1914</li> </ol> <p>Yorkshire</p> <ol style="list-style-type: none"> <li>1. White with erect ears</li> <li>2. Used for mothering traits</li> <li>3. Used for lean, heavily muscled, fast-growing market hogs</li> <li>4. Imported from England in the early 1800s</li> </ol>
<p><b>Objective 2</b></p> <p><i>Ask students who raise swine for projects which breeds they prefer. If few or no swine producers are present, begin by reviewing the various types of production systems. Stress to students that most commercial producers use a variety of breeds.</i></p>	<p><b>Determine factors that influence breed selection.</b></p> <ol style="list-style-type: none"> <li>1. Breeds used in the past</li> <li>2. Litter sizes</li> <li>3. Leanness</li> <li>4. Muscle</li> <li>5. Current growth rates</li> <li>6. Efficiency in the conversion of feed to pork</li> </ol>

Instructor Directions	Content Outline
<p><b>Objective 3</b></p> <p><i>Describe the trend in the swine industry toward larger operation that demand consistent genetics. Discuss with the class that companies have genetically selected hogs to be used for specific purposes.</i></p>	<p><b>Explain how hybrid hogs are developed.</b></p> <ol style="list-style-type: none"> <li>Hybrid hogs are developed by crossing multiple breeds and selecting for desired traits.</li> <li>Companies offer hybrid hogs varying in use from a maternal to a terminal emphasis.</li> </ol>
<p><b>Objective 4</b></p> <p><i>Review the Animal Reproduction unit from IML and discuss the various types of breeding systems.</i></p>	<p><b>Explain the differences between inbreeding, outcrossing, and crossbreeding.</b></p> <p>Inbreeding - mating two related animals in an attempt to concentrate desired traits in offspring</p> <ol style="list-style-type: none"> <li>Closebreeding - mating closely related animals</li> <li>Linebreeding - mating animals that are slightly or distantly related (only one shared ancestor)</li> </ol> <p>Outcrossing - mating unrelated animals of the same breed, which is more popular and safer than inbreeding because inbreeding can concentrate undesirable and even detrimental traits</p> <p>Crossbreeding - mating animals of two different breeds, resulting in a hybrid offspring that should maximize heterosis, or hybrid vigor</p>
<p><b>Application:</b></p> <p> AS 1 – Breeds of Hogs</p> <p> AS 2 – Researching Swine Breeds</p>	<p>Answers to AS 1 See Objective 1</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"> <li>Conduct more in-depth research on the history and development of breeds of swine used in the United States. Students can search the Internet for information on different breeds.</li> </ol>
<p><b>Closure/Summary</b></p>	<p>Several breeds may be used in swine production. Producers should select breeds that fit their needs and use them in a breeding program that will improve their herd.</p>

Evaluation: Quiz	Answers
	<ol style="list-style-type: none"> <li>1. i</li> <li>2. c</li> <li>3. e</li> <li>4. f</li> <li>5. d</li> <li>6. d</li> <li>7. c</li> <li>8. Answers should include three of the following: breeds used in the past, litter sizes, leanness, muscle, current growth rates, or efficiency in the conversion of feed to pork.</li> <li>9. Inbreeding is mating two related animals in an attempt to concentrate desired traits in offspring. Crossbreeding is mating animals of two different breeds, resulting in a hybrid offspring that should maximize heterosis, or hybrid vigor.</li> <li>10. Hybrid hogs are developed by crossing multiple breeds and selecting for desired traits.</li> </ol>