

<b>Course</b>	Agricultural Science I
<b>Unit</b>	Introduction to Poultry Production
<b>Lesson</b>	Overview of the Poultry Industry
<b>Estimated Time</b>	50 minutes

### Student Outcome


Describe the importance of the poultry industry in Missouri.

### Learning Objectives

1. Define terms used in the poultry industry.
2. Explain the economic importance of Missouri's poultry industry.
3. Explain how the poultry industry has evolved.
4. Identify the common breeds and production lines of poultry.
5. Identify the types of poultry enterprises.
6. Identify career opportunities available in the poultry industry.

### Grade Level Expectations

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

1. Activity Sheets
  -  AS 1 – Identify Poultry Class Traits
2. *Introduction to Poultry Production (Student Reference)*. University of Missouri-Columbia: Instructional Materials Laboratory, 1999.
3. *Introduction to Poultry Production Curriculum Enhancement*. University of Missouri-Columbia: Instructional Materials Laboratory, 2003.

### Supplies & Equipment

- ☐ Various poultry products or poultry product packages, such as a carton of eggs, luncheon meat, a whole chicken, etc.

### Supplemental Information

1. Internet Sites
  - ☐ The American Poultry Association. Accessed August 16, 2007, from <http://www.amerpoultryassn.com/>.
  - ☐ "Links in Show Poultry: Clubs." The Poultry Connection. Accessed August 16, 2007, from [http://www.poultryconnection.com/links/Show\\_Poultry/Clubs/](http://www.poultryconnection.com/links/Show_Poultry/Clubs/).
  - ☐ Clark, Edward. "Major Changes in Global Egg Production." WATTPoultry.com. Accessed August 16, 2007, from <http://www.wattpoultry.com/EggIndustry/Article.aspx?id=15040>.
  - ☐ "Small Scale Egg Production (Organic and Nonorganic)." Agricultural Alternatives. Cooperative Extension. The Pennsylvania State University. Accessed August 16, 2007, from [http://agalternatives.aers.psu.edu/livestock/small\\_scale\\_egg/small\\_scale\\_egg.pdf](http://agalternatives.aers.psu.edu/livestock/small_scale_egg/small_scale_egg.pdf).

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- ❑ "Poultry Publications." MU Extension. University of Missouri-Columbia. Accessed August 16, 2007, from <http://extension.missouri.edu/xplor/agguides/poultry/index.htm>.
2. Print
- ❑ *American Standard of Perfection*. American Poultry Association, Inc. Santa Rosa, CA, 2001.
  - ❑ *Missouri Farm Facts*. Columbia: Missouri Agricultural Statistics Service in cooperation with the Missouri Department of Agriculture and the U.S. Department of Agriculture, 2007.
  - ❑ Field, Thomas G., and Robert E. Taylor. *Scientific Farm Animal Production*. 6th ed. Upper Saddle River, N.J.: Prentice-Hall, Inc. 1998.
  - ❑ Gillespie, James R. *Modern Livestock and Poultry Production*. 5th ed. Albany: Delmar, 1997.
  - ❑ Hall, Michelle A., Ed. *Introduction to Avian Bowl*. Clemson University: Clemson, SC, 1997.
  - ❑ Kelly, Debi. Personal Communication. MO Alternative Center: University Extension. University of Missouri, Columbia. 20 March 1998.
  - ❑ Moreng, Robert E. and John S. Avens. *Poultry Science and Production*. Prospect Heights, IL: Waveland Press, 1991.
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### Interest Approach

Set out a dozen eggs, a package of turkey meat, a whole chicken and other poultry products (empty boxes will work). Ask students what these products have in common. After discussion begins on these being agricultural products, ask students to tell you how important poultry products are to the agricultural industry.

### Communicate the Learning Objectives

1. Define terms used in the poultry industry.
2. Explain the economic importance of Missouri's poultry industry.
3. Explain how the poultry industry has evolved.
4. Identify the common breeds and production lines of poultry.
5. Identify the types of poultry enterprises.
6. Identify career opportunities available in the poultry industry.

Instructor Directions	Content Outline
<b>Objective 1</b>  <i>Ask students what birds they think should be included in the definition of poultry. Record the responses. Discuss the reasons for including these birds in their definition of poultry.</i>	<b>Define terms used in the poultry industry.</b>  Poultry is defined as economically important birds used either for food or show (includes chickens, turkeys, quail, ducks, geese, and guineas, and to some extent pheasants, partridges and peafowl).  Poultry terms <ol style="list-style-type: none"><li>1. Pullet — a young female chicken</li><li>2. Hen — a sexually mature female chicken (usually more than 10 months old) that has started to lay eggs</li><li>3. Chick — a baby chicken of either gender</li><li>4. Broiler or fryer — a young male or female chicken, tender-meated with flexible breastbone cartilage, marketed at 6 to 8 weeks of age</li><li>5. Roaster — a young male or female chicken, tender-meated with breastbone cartilage somewhat less flexible than a broiler or fryer, usually marketed at 7 to 10 weeks of age</li><li>6. Capon — a surgically unsexed male chicken (usually under 8 months old) used for specialty markets</li><li>7. Cockerel — a male chicken less than one year old</li><li>8. Rooster — a sexually mature male chicken</li><li>9. Poult — a male or female baby turkey</li></ol>

<p><b>Objective 2</b></p> <p><i>Using the most recent copy of <u>Missouri Farm Facts</u>, discuss the economic impact the poultry industry has in Missouri and throughout the country. Determine which states produce the most turkey, broilers, hens, and eggs.</i></p>	<p><b>Explain the economic importance of Missouri's poultry industry.</b></p> <ol style="list-style-type: none"> <li>1. Turkey production <ol style="list-style-type: none"> <li>a. Missouri ranks 5th for turkey production at 20 million head or 7.6 percent of total US production.</li> <li>b. 2006 total value of production equals \$236 million.</li> </ol> </li> <li>2. Broiler production <ol style="list-style-type: none"> <li>a. Missouri ranks 10th for broiler production at 250 million head or 3.2 percent of total US production.</li> <li>b. 2006 total value of production equals \$403 million.</li> </ol> </li> <li>3. Egg production <ol style="list-style-type: none"> <li>a. Missouri ranks 14th for egg production at 1.9 million or 2.1 percent of total U.S. production.</li> <li>b. 2006 total value of production equals \$85 million.</li> </ol> </li> <li>4. All chickens (except broilers) <ol style="list-style-type: none"> <li>a. Missouri ranks 16th for chicken production at 9.4 million head or 2.1 percent of total U.S. production.</li> <li>b. 2006 total value of sales equals \$1.6 million.</li> </ol> </li> <li>5. Poultry and eggs accounted for 27 percent of total livestock cash receipts in Missouri in 2006.</li> <li>6. Meat animals accounted for 60 percent of total livestock cash receipts in Missouri in 2006.</li> <li>7. Total pounds of broiler meat produced was 1,075,000 pounds in 2006 in Missouri.</li> <li>8. Total pounds of turkey meat produced was 589,600 pounds in 2006 in Missouri.</li> <li>9. Provides many people with careers in production and marketing.</li> <li>10. Manufacturing companies support enterprises with equipment and facilities.</li> </ol>
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<p><b>Objective 3</b></p> <p><i>Discuss the differences between the poultry industry of the past and the large enterprises that exist today. Ask students how many times a week they eat a poultry product and tie this in with the increase in demand from consumers for poultry products.</i></p>	<p><b>Explain how the poultry industry has evolved.</b></p> <ol style="list-style-type: none"> <li>1. Early settlers with small backyard flocks were considered small farm enterprises.</li> <li>2. In the 1800s farmers began to specialize in poultry production; poultry shows began in the 1850s.</li> <li>3. The American Poultry Association was founded in 1873. The publication of <i>American Standards of Perfection</i> was created in 1874 to establish standards for showing birds.</li> <li>4. Highly specialized industry with the southeastern and midwestern part of the U.S. being the overall largest producers of poultry.</li> <li>5. Major types of poultry enterprises <ol style="list-style-type: none"> <li>a. Egg production <ol style="list-style-type: none"> <li>1. Number of laying hen farms has decreased, but the size of farms and flocks has grown significantly.</li> <li>2. Decrease in total number of laying hens, but egg production has been steady due to an increased rate-of-lay per hen.</li> <li>3. Decrease in egg consumption per person due to alternative breakfast foods and problems with cholesterol.</li> </ol> </li> <li>b. Broiler production and turkey production <ol style="list-style-type: none"> <li>1. Broiler and turkey sales have skyrocketed since the late 1960s.</li> <li>2. Increase in consumption due to processing into other products and the small amount of cholesterol found in broilers and turkeys.</li> </ol> </li> <li>c. Replacement pullets, broiler chicks, and poults <ol style="list-style-type: none"> <li>1. Broiler chicks and poult production facilities are typically located close to production facility.</li> <li>2. Breeder flocks are somewhat isolated from production farms.</li> <li>3. Hatcheries incubate fertilized eggs, hatch, and deliver chicks and poults.</li> <li>4. Some hatcheries provide vaccinations, egg injections, and beak trimming.</li> <li>5. Pullets and turkeys are sexed at the hatchery.</li> </ol> </li> </ol> </li> </ol>
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#### Objective 4


*Review common poultry terms used when referring to breeds and production lines. Acquaint the students with common breeds and strains of poultry used for egg-laying, broilers, and turkeys. Point out which breeds and strains produce white eggs and which produce brown eggs.*

#### AS 1 – Identify Poultry Class Traits

#### Identify the common breeds and production lines of poultry.

1. Poultry is divided into breeds, varieties, types and classes.
  - a. Breed - group of birds that share the same characteristics and have a common origin.
  - b. Variety - a subdivision of a breed that is based on a group of specific traits, such as color or comb shape.
  - c. Type - describes the purpose for which the bird is used, egg-type or meat-type.
  - d. Class - associates the bird with its place of origin; the general classes are Mediterranean, American, English, and Asiatic.
2. Strains are families or breeding populations possessing common traits.
  - a. Strain shows relationship more exacting than for others of similar appearance.
  - b. Strain crossing refers to crossing of different strains of the same variety.
  - c. Many commercial strains exist: Cobb, Hubbard, DeKalb, Hyline, Babcock, and Shaver.
3. *American Standard of Perfection* lists more than 300 different breeds and varieties.
4. Most breeds of poultry are the product of cross mating, crossbreeding, or inbreeding.
  - a. Cross mating involves mating birds within the same breed.
  - b. Crossbreeding is mating birds of different breeds or varieties.
  - c. Inbreeding is mating birds that are closely related to get specific traits.
5. Common egg producing breeds
  - a. The common white, egg-layer hen is Single Comb White Leghorn.
  - b. Smaller flock owners raise dual-purpose brown egg-producing strains.
6. Broilers
  - a. Most common meat producer is a cross between the male Cornish (English class) and the female White Plymouth Rock (American class).
  - b. This cross has a low rate of egg production but it is efficient in meat production.

	<ol style="list-style-type: none"> <li>7. Strains of turkeys <ol style="list-style-type: none"> <li>a. Typically referred to as their strain name rather than their variety name.</li> <li>b. Common commercial strains are Broad-Breasted Large White, Beltsville Small White, Nicholas, and British United Turkey (BUT).</li> </ol> </li> </ol>
<p><b>Objective 5</b></p> <p><i>Ask students how many birds they would need to raise to be considered a commercial enterprise. What type of enterprise would the be, if they have birds, but are not considered a commercial enterprise?</i></p>	<p><b>Identify the types of poultry enterprises.</b></p> <ol style="list-style-type: none"> <li>1. Commercial enterprises <ol style="list-style-type: none"> <li>a. The three types are egg production, broiler or turkey production, and pullets and poults raised for replacement.</li> <li>b. Vertical integration means that one enterprise owns and controls more than one type of production operation. <ol style="list-style-type: none"> <li>1. Run by poultry processors or manufacturers who are in charge of most management decisions and problem solving.</li> <li>2. Almost all meat production and 50 percent of egg production are under this system.</li> <li>3. Most products are sold under a brand name, such as Tyson, Holly Farms, Cargill, or Con-Agra.</li> </ol> </li> <li>c. Commercial broiler fowl, laying hens, and turkeys are produced by genetic companies that own breeding fowl. <ol style="list-style-type: none"> <li>1. Incubate and hatch layer and broiler chicks.</li> <li>2. Provide producers with the bird, vaccinations, feeding, lighting, and pullet-growing program.</li> <li>3. Veterinary and technical field services provided by company.</li> </ol> </li> <li>d. Laying hen facilities raise birds in quantities of 100,000 or more. <ol style="list-style-type: none"> <li>1. Raise hens in cages in environmentally controlled housing.</li> <li>2. Specific lighting, ventilation, feeding programs, and automated egg collection.</li> </ol> </li> </ol> </li> <li>2. Backyard enterprises raise their own birds for eggs and meat. <ol style="list-style-type: none"> <li>a. Requires minimal amount of space and provides fresh eggs and meat.</li> </ol> </li> </ol>

	<ul style="list-style-type: none"> <li>b. Popular dual-purpose breeds are Rhode Island Red, Plymouth Rock, New Hampshire, Wyandotte, and Orpington.</li> </ul> <ol style="list-style-type: none"> <li>3. Niche market enterprises produce eggs and meat using alternative or organic methods. <ul style="list-style-type: none"> <li>a. Organic refers to products produced free of synthetic chemicals and drugs.</li> <li>b. Standards exist but vary from state to state.</li> <li>c. The USDA Agricultural Marketing Service developed the National Organic Program.</li> </ul> </li> </ol>
<p><b>Objective 6</b></p> <p><i>Ask students to identify different employment opportunities based on what they have already learned about the poultry industry. List these careers.</i></p>	<p><b>Identify career opportunities available in the poultry industry.</b></p> <ol style="list-style-type: none"> <li>1. The poultry industry provides careers from marketing to research.</li> <li>2. Industry has grown dramatically and systems have become very specialized.</li> <li>3. Developing technology and research creates employment opportunities and many specialized jobs.</li> <li>4. Occupations that require training and/or certification are chick sexer, artificial insemination technician, blood tester, and sanitation worker.</li> <li>5. Occupations that require a college degree are poultry breeding, field service personnel, waste systems manager, personnel officer, and accountant.</li> <li>6. Occupations that require an advanced degree are poultry scientist, geneticist, and veterinarian.</li> </ol>
<p><b>Application</b></p> <p> AS 1 – Identify Poultry Class Traits</p>	<p>Answers to AS 1</p> <p>Suggested references used for this activity sheet include: <i>American Standard of Perfection</i> and <i>Introduction to Avian Bow</i>.</p> <p><b>Class – American</b></p> <ol style="list-style-type: none"> <li>1. Color of Skin – Yellow</li> <li>2. Color of Ear Lobe – Red</li> <li>3. Feathered Shanks – No</li> <li>4. Egg Color – Brown</li> </ol> <p><b>Class – Asiatic</b></p> <ol style="list-style-type: none"> <li>1. Color of Skin – White and Yellow</li> <li>2. Color of Ear Lobe – Red</li> <li>3. Feathered Shanks – Yes</li> <li>4. Egg Color – Brown</li> </ol> <p><b>Class – English</b></p> <ol style="list-style-type: none"> <li>1. Color of Skin – White and Yellow</li> </ol>

	<ol style="list-style-type: none"> <li>2. Color of Ear Lobe – Red</li> <li>3. Feathered Shanks – No</li> <li>4. Egg Color – Brown and White</li> </ol> <p><b>Class – Mediterranean</b></p> <ol style="list-style-type: none"> <li>1. Color of Skin – White and Yellow</li> <li>2. Color of Ear Lobe – White</li> <li>3. Feathered Shanks – No</li> <li>4. Egg Color - White</li> </ol> <p>Other Activities</p> <ol style="list-style-type: none"> <li>1. Have students research different breeds in the <i>American Standard of Perfection</i> and prepare short oral reports that describe breed characteristics and standards.</li> <li>2. Have students research and construct a timeline of the development of the poultry industry in the United States and Missouri.</li> <li>3. One designated student can contact a local poultry producer where they can talk with human resource personnel about the range of jobs available. If there is not a poultry plant in the community, contact The Poultry Federation (TPF). Have the student share this information with the class.</li> </ol>
<b>Closure/Summary</b>	<p>The poultry industry has changed dramatically in the last 40 years as consumption of meat products has increased and rate-of-lay has improved. Poultry is a group of birds considered economically important (i.e. layers, broilers, and turkeys). The industry is very important to the economy of Missouri. The three different poultry enterprises are commercial, backyard, and niche market. A common breed in the commercial market is the Single Comb White Leghorn for egg production and a cross of the male Cornish with the female White Plymouth Rock for meat production. The common turkey strain used for meat is the Broad Breasted Large White. There are many employment opportunities in the poultry industry, which is another reason why the industry is so important for Missouri.</p>
<b>Evaluation: Quiz</b>	<p>Answers</p> <ol style="list-style-type: none"> <li>1. g</li> <li>2. d</li> <li>3. f</li> <li>4. c</li> <li>5. e</li> </ol>

	<ol style="list-style-type: none"> <li>6. a</li> <li>7. i</li> <li>8. b</li> <li>9. j</li> <li>10. h</li> <li>11. b</li> <li>12. c</li> <li>13. a</li> <li>14. Poultry is any group of birds that are economically important either for food or show.</li> <li>15. Cholesterol awareness or further processing</li> <li>16. Egg, broiler, turkey, and replacement pullets</li> <li>17. Cross mating, crossbreeding, and inbreeding</li> <li>18. Broad-breasted Large White, Beltsville Small White, Nicholas, and British United Turkey</li> <li>19. This breed has been bred for superior meat production and has very low egg production. Dual breeds are a better choice and any of the following are appropriate: Rhode Island Red, Plymouth Rock, New Hampshire, Wyandotte, or Orpington.</li> <li>20. Any three of the following careers: artificial insemination technician, blood tester, sanitation worker, poultry breeding, field service personnel, waste systems manager, personnel officer, accountant, poultry scientist, geneticist, and veterinarian.</li> </ol>
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