Lesson # 2

History of Poultry Production

Core Area: Animal Science

Unit: Poultry Industry

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National Agriculture, Food and Natural Resources (AFNR) Career Cluster Content Standards:

ABS.06.03 Develop strategies for marketing plan implementation.
ABS.06.04 Develop specific tactics to market AFNR products and services.
AS.01.01 Evaluate the development and implications of animal origin, domestication and distribution.
AS.02.03 Select animals for specific purposes and maximum performance based on anatomy and physiology.
AS.03.01 Prescribe and implement a prevention and treatment program for animal diseases, parasites and other disorders.
AS.07.01 Design animal housing, equipment and handling facilities for the major systems of animal production.
FPP.01.01 Evaluate the significance and implications of changes and trends in the food products and processing industry.
FPP.01.02 Work effectively with industry organizations, groups and regulatory agencies affecting the food products and processing industry.
FPP.04.01 Utilize harvesting, selection and inspection techniques to obtain quality food products for processing.
**Student Learning Objectives.** Instruction in this lesson should result in students achieving the following objectives:

1. Students will be able to identify the technology, consumer trends, and changes in poultry production throughout modern history.

**List of Resources.** The following resources may be useful in teaching this lesson:


**List of Equipment, Tools, Supplies, and Facilities.**

- Computer and Data Projector
- Internet Connection
- Power Point Presentation
- Copies of Student Handouts
- Poster Paper
- Markers or Colored Pencils
- Magazine Clippings
- Scissors
- Glue Sticks

**Terms.** The following terms are presented in this lesson (shown in bold italics):

- Broiler
- Evisceration
- Hatchery
- Federal Inspection and Grading
- Marketing
- Production
- Processor
- Vertical Integration

**Interest Approach.** Use an interest approach that will prepare the students for the lesson.

*With the guidance from the instructor, have students discuss the domestication of poultry. Note: The first known domesticated poultry are believed to be the red jungle fowl, a member of the pheasant family, which lives in the forests and bamboo jungles of India and southeast Asia. Jungle fowl were captured and kept for their eggs and for meat by about 2000 BC in Asia. It is thought that all domestic poultry in the world today are descended from this one species.*

*Instructor may ask students if they or someone they know raises poultry at home. Allow for student responses and then make the connection with modern poultry production beginning with household flocks in people’s backyards.*
SUMMARY OF CONTENT AND TEACHING STRATEGIES

Objective 1: Students will be able to identify the technology, consumer trends, and changes in poultry production throughout modern history.

Anticipated Problem: When did modern poultry production begin? What technology innovations occurred during this period? What changes in consumer trends were observed during this period?

(Distribute Poultry Production History Student Note Sheet, refer to PowerPoint slides 2-10)

1. Early Production Years
   a. Prior to 1900’s
      i. Household Flocks
      ii. Backyards
      iii. Sunday Dinners
      iv. Dual-purpose
         a) Primarily kept for eggs, meat was a by-product of males and culled females.
      v. Year round production limited
         a) Photoperiod not understood.
   b. 1910-1920
      i. Interest in capons developed as a means of producing meaty poultry for consumption, as opposed to separating and fattening the excess males (with their poor meat qualities) from egg production flocks. Capons were considered to be a high quality food.
      ii. WWI prompted more backyard flocks as people produced meat and eggs for the military.
      iii. Sport fighting was popular in some areas; created a concern for disease control as such birds were transported to other areas.

Activity/Teacher Notes: Elaborate on information presented by asking students, “How does photoperiod have an effect on production?” Discuss with students that poultry are naturally seasonal breeders. They initiate reproduction in response to the increase in day length, which occurs each spring. In a natural setting, spring is an ideal time for the raising of young chicks, given the favorable weather and food supply. In commercial settings, reproduction and rearing of young birds is necessary year round. To allow year round operation, poultry producers use artificial lighting that can be regulated depending on the desired photoperiod.

2. Broiler Period
   a. 1920’s-1930’s
      i. Chicken Meat Production
         a) Delmarva Peninsula, Georgia, Arkansas, and New England
         a. Replaced tobacco and cotton as the soil was depleted.
b) Favorable weather conditions, adequate land and water, and access to supplies of corn and soybeans (favorable grain shipping rates via Mississippi barges).

b. Mrs. Wilmer Steele of Sussex County, Delaware
   i. Pioneer of the commercial broiler industry.
   ii. Flock of 500 chicks intended to be sold for meat, 1923.
   iii. 1926, capacity of 10,000 birds.

**Activity/Teacher Notes:** Elaborate on information presented by asking students, “Why is it important to be around a large supply of corn and soybeans?” Discuss with students that the close proximity to large supplies of corn grain and soybeans would allow poultry producers to have adequate and a more affordable source of feed.

3. The 1940’s
   a. WWII promoted larger flocks for eggs and meat to feed troops; rationing of meats increased egg consumption.
   b. Feed mills, Farms, Hatcheries & Processors
      i. Separate entities
   c. “New York Dressed”
      i. Birds killed and plucked
      ii. Head, feet, and internal organs remain
   d. 1942
      i. “On-line” evisceration – removal of internal organs
      ii. Ready to cook packaging
   e. 1949
      i. USDA Grading Program
   f. Egg producers started using wire cages
      i. Birds were healthier, production was more efficient.
   g. Egg consumption declined after WWII (when meat rationing ended) and a controversial study on the cholesterol content of eggs.
   h. Movement from Rural to Urban
      i. Less family flocks as people migrated off the farm and into the city.

**Activity/Teacher Notes:** Elaborate on information presented by asking students, “What is the benefit of USDA Grading of poultry products?” Discuss with students the benefits of having a safe, wholesome product and the consistent level of quality associated with USDA graded poultry and eggs.

4. 50’s & 60’s
   a. **Broilers** are # 1 source of poultry meat.
   b. Increased Flock Sizes
      i. Improved management practices
      ii. Waste management concerns
      iii. Need for disease control and prevention
         a) Vaccines and medications
   c. Larger individual producers and concentration of production.
      i. Negotiation of inputs (feed and equipment costs)
      ii. Marketing contracts and production contracts
a) Marketing contract guaranteed the grower a market with a processor, price based on current market.
b) Production contract guaranteed the grower a market and a market price.
d) Movement to vertical integration
e) Vertical Integration
   i. Production, Processing, and Marketing
   ii. New pharmaceutical, biological, and production technologies become more efficient, responsive, and profitable.
f) 1954: National Broiler Council Established
   i. Created to stimulate consumer demand. In 1990, the name was changed to the National Chicken Council.
g) USDA Mandatory Federal Inspection in 1959

5. Continuing On in 50’s & 60’s
   a. Television & media
      i. Major Companies
         a) Repeat Business
   b. Brand names
      i. Private Label Began
   c. 1960: Expansion of the Egg Industry
      i. Combined effort in producing, marketing, and management to move from smaller egg farms to a larger commercial industry. This was made possible with advancements in machinery in layer housing.

Activity/Teacher Notes: Elaborate on information presented by asking students, “What impact did television and its advertising have on poultry production?” Discuss with students the concept of brand marketing and the benefits of brand recognition for poultry companies.

6. 1970’s Advances through Research
   a. Nutritional discoveries
   b. Disease eradication programs
   c. Genetic improvements through traditional breeding
   d. Mechanization and automation technologies

7. Consumption in the 80’s & 90’s
   a. 1980
      i. Cut-up & furthered processed
   b. 1985
      i. Surpassed pork
   c. 1992
      i. Surpassed beef
d. Further Processing
   i. Convenience items vs. Whole bird sales (1980’s)
      a) Consumer preferences started to shift towards cut-up meat and
         further processed as compared to purchasing whole birds.

e. 2008
   i. Consumers in the United States eat an estimated 85 pounds of poultry meat
      per year per person.

f. Designer Eggs
   i. Eggs enhanced with vitamin E, omega-3 fatty acids, etc. become popular.

g. A steady rise of per capita egg consumption, or amount consumed per person, has
   grown in recent years. This rebound can be seen for three main reasons:
      a) Fast food implementation of eggs in breakfast foods.
      b) An increased health perception based on recent research.
      c) Further processed items that contain egg products like cake mix or
         egg noodles.

*Activity/Teacher Notes:* Elaborate on information presented by asking students, “Why do you
think chicken consumption has surpassed pork and beef?” Discuss with student the lower cost
of chicken and the emphasis on less fat in the consumer’s diet.

8. HACCP (1997)
   a. Hazard Analysis and Critical Control Points (HACCP)
      i. Control system program in all large poultry slaughter establishments.
         a) Program developed and conducted by the plant under USDA
            supervision.
         b) Chemical, physical, and microbiological hazards can be controlled,
            reduced, or eliminated.
         c) Pathogen reduction is a key component of USDA’s initiatives.

9. The Impact of the Poultry Industry Today
   a. The poultry industry has an enormous impact on the economy. Its sales are in
      excess of $60.0 billion annually, making it one of the nation’s agricultural leaders.
   
   b. The poultry industry provides jobs for over 400,000 people and indirectly to
      hundreds of thousands more in affiliated industries including trucking and feed
      suppliers. Poultry industry employees work in a variety of jobs from farm managers
      to processing plant workers, researchers, accountants, and poultry executives.
10. 2000’s U.S. Poultry goes global
   a. Markets sought (leg quarters, chicken feet, etc.)
   b. Expanded International Commerce
      a) Russia was primary market
      b) Large increase in demand worldwide
      c) 20% of American Production exported
      d) Opportunity for expansion to China and Latin America

**Activity/Teacher Notes:** Elaborate on information presented by asking students, “Why was it beneficial for the poultry industry when exports began to Russia?” Discuss with the students the great potential of export markets such as Russia that were not previously open to U.S. poultry producers due to political differences.

**Review/Summary.** Focus the review of the lesson around the student learning objectives. Ask students to explain the content associated with each objective. Use their responses as the basis for determining any areas that need to be covered again.

**Application.** Consider having students create a timeline depicting the history of modern poultry production. The instructor may choose to have each student create their own complete timeline or students can be divided into groups and assigned an era of the timeline to complete as a group project. Students may be provided with poster paper, markers or colored pencils, rulers, magazines for clipping, scissors, and glue sticks. Once groups have developed their era timelines, each group can post their section on the board along with the others to complete the entire history of the modern poultry industry.

**Evaluation.** Evaluation should focus on student achievement of the objectives for the lesson. Various techniques can be used, such as a written test. A sample test is attached.

**Answers to Sample Test:**

**Part One: Matching**

E  1. Broiler  
I  2. Hatchery  
G  3. Processor  
H  4. Evisceration  
C  5. Federal inspection and grading  
D  6. Marketing  
F  7. Production  
B  8. Vertical integration  
A  9. Dual purpose
Part Two: T / F

1. T  6. T
2. F  7. T
3. T  8. F
4. F
5. T
Poultry Production History Student Note Sheet

1. ______ Production Years
   a. Prior to __________________
      i. Household ______________
      ii. Backyards
      iii. Sunday ______________
      iv. purpose
      v. _________ round production limited
         1. ______________ not understood

2. ___________ Period
   a. 1920's-__________'s
      i. Chicken ___________ Production
         1. Delmarva Peninsula, Georgia, Arkansas, and ______ ____________
         2. _______________ weather conditions, adequate land and water,
            and access to supplies of corn and soybeans.
      b. Mrs. Wilmer Steele of Sussex County, Delaware
         i. Pioneer of the commercial _______________ industry
         ii. Flock of _________ chicks intended to be sold for meat, 1923.
         iii. 1926, capacity of ______________ birds

3. The 19_____'s
   a. Feed mills, Farms, Hatcheries & ________________
      i. ________________ entities
   b. “New _______________ Dressed”
      i. Birds killed and ________________
      ii. Head, feet and internal organs ________________
   c. ________________
      i. “On-line” ________________
      ii. Ready to __________ packaging
   d. 1949
      i. ________________ Grading Program

4. 50's & 60's
   a. ________________ are # 1 source of poultry meat.
   b. Vertical ________________
      i. Production, Processing, & ________________
      ii. New pharmaceutical, biological and production technologies to become
           more efficient, responsive, and ________________.
   c. USDA ________________ Federal inspection.

5. Continuing On in 50’s & 60’s
   a. ________________ & media
      i. Major Companies
         1. Repeat ________________
   b. Brand ________________
   c. ________________ Label began
6. 1970’s Advances through ______________
   a. Implementations
      i. ______________ discoveries
      ii. Disease ______________ programs
      iii. ______________ improvements through traditional breeding
      iv. Mechanization and automation ________________.

7. _______________ in the 80’s & 90’s
   a. 1980
      i. __________ & furthered process
   b. 1985
      i. Surpassed __________
   c. 1992
      i. Surpassed __________

8. __________’s U.S. Poultry goes global
   a. ______________ was primary market
   b. Large ______________ in demand worldwide
   c. _____% of American production exported

9. HACCP (1997)
   a. ______________ Analysis and Critical Control Points (HACCP)
      i. ______________ system program in all large poultry slaughter establishments
         1. Chemical, physical and microbiological hazards can be controlled, reduced, or ________________.
         2. ______________ reduction is a key component of USDA’s initiatives.