

History of Poultry Production

Core Area: Animal Science

Unit: Poultry Industry

Lesson # 2: History of Poultry Production

California CTE Standards (Agriculture):

C1.4 Understand the economic impact of leading California agricultural commodities.

C4.1 Understand the evolution and roles of domesticated animals in society.

C4.3 Understand the modern-day uses of animals and animal by-products.

D3.2 Understand the animal management practices that are likely to improve the functioning of the various systems.

D10.1 Know how to synthesize and implement optimum requirements for diet, genetics, habitat, and behavior in the production of large and small animals.

D12.2 Understand the relative importance of the major meat classifications, including the per capita consumption and nutritive value of those classifications.

D12.4 Understand how non-meat products (such as eggs, wool, pelts, hides, and by-products) are harvested and processed.

D12.5 Understand how meat products and non-meat products are marketed.

FS 4.1 Understand past, present, and future technological advances as they relate to a chosen pathway.

FS 8.1 Know major local, district, state, and federal regulatory agencies and entities that affect industry and how they enforce laws and regulations.

California CTE Standards.

Historical and Social Sciences Analysis Skills (Grades 9-12)

Chronological and Spatial Thinking

Skill 1. Students compare the present with the past, evaluating the consequences of past events and decisions and determining the lessons that were learned.

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:

1. National Chicken Council – <http://www.nationalchickencouncil.com/>
2. History World – <http://www.historyworld.net/>

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 have occurred during this period? What changes in consumer trends have been 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 a plenty and 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
 - 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: The "Year of the Egg"
 - i. Combined effort in producing, marketing, and management to push 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 Thinking Process
- a. Implementations
 - i. Nutritional discoveries
 - ii. Disease eradication programs
 - iii. Genetic improvements through traditional breeding
 - iv. Mechanization and automation technologies
7. Consumption in the 80's & 90's
- a. Early movement toward demand for natural, organic, antibiotic free, and locally grown.
 - b. Animal welfare / animal rights concern
 - c. Producer checkoffs to support the promotion of poultry and egg consumption.
 - d. 1980
 - i. Cut-up & furthered process
 - e. 1985
 - i. Surpassed pork
 - f. 1992
 - i. Surpassed beef

- g. 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.
 - h. 1999
 - i. Consumers in the United States eat an estimated 108 pounds of poultry meat per year per person.
 - i. Designer Eggs
 - i. Eggs enhanced with vitamin E, omega-3 fatty acids, etc. become popular.
 - j. 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.
8. The Effect of the Poultry Industry on California Today
- a. The California poultry industry has an enormous impact on the economy. Its sales are in excess of \$2.5 billion annually, making it one of the state's agricultural leaders.
 - b. The California poultry industry provides jobs for over 25,000 people throughout the state and indirectly to tens of thousands more in affiliated industries including trucking and feed suppliers. California poultry industry employees work in a variety of jobs from farm managers to processing plant workers, researchers, accountants, and poultry executives.
9. The Start of the California Egg Industry
- a. The gold rush beginning in 1848 led to the need for large quantities of protein (eggs) to feed the miners. The egg industry was established in Petaluma and these farms were very large for the time, rather than being backyard farms. Petaluma became known as the "Egg basket of the World" during the gold rush.

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.*

10. HAACP (1997)
- a. Hazard Analysis and Critical Control Points (HAACP)
 - 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.

11. 2000's U.S. Poultry goes global
 - a. Markets sought for less desired parts (dark meat, chicken feet, etc.).
 - b. Soviet Union/Russia
 - i. "Bush Legs"
 - ii. Opened International Commerce
 - a. Big increase in demand worldwide
 - b. 20% of American Production

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. T |
| 4. F | 9. T |
| 5. T | 10. F |

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
 - b. Vertical _____
 - i. Production, Processing, & _____
 - ii. New pharmaceutical, biological and production technologies to become more efficient, responsive, and _____.
 - c. Federal _____
5. Continuing On in 50's & 60's
 - a. _____ & media
 - i. Major Companies
 1. Repeat _____
 - b. Brand _____
 - i. _____ Label
 - ii. _____ % are sold under a brand name

6. 1970's _____ Process
 - 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. 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.
9. _____'s U.S. Poultry goes global
 - a. Soviet Union/_____
 - i. "Bush _____"
 - ii. Opened International _____
 1. Big _____ in demand worldwide
 2. _____% of American Production