

Course	Agricultural Science I
Unit	Introduction to Poultry Production
Lesson	Health Issues
Estimated Time	50 minutes

Student Outcome

Identify poultry flock health issues.

Learning Objectives

1. Explain the requirements for maintaining a healthy poultry flock.
2. Describe how common viral diseases are prevented and controlled in poultry.
3. Describe how common bacterial diseases are prevented and controlled in poultry.
4. Describe how common internal and external parasites are prevented and controlled in poultry.
5. Explain the importance of biosecurity.

Grade Level Expectations

SC/ST/3/B/09-11/a


SC/ST/3/B/09-11/b

SC/ST/3/B/09-11/c

SC/ST/3/D/09-11/a

Resources, Supplies & Equipment, and Supplemental Information

Resources

1. Activity Sheets
 -  AS 1 – Symptoms, Treatment, and Prevention of Disease
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

- ☐ Preserved tapeworms, lice, or other parasites

Supplemental Information

1. Internet Sites
 - ☐ “Animal Science Publications.” MU Extension. University of Missouri-Columbia. Accessed September 14, 2007, from <http://extension.missouri.edu/explore/agguides/ansci/>.
 - ☐ “Internal Poultry Parasites.” MSUcares. Mississippi State University Extension Service. Accessed September 14, 2007, 2007 from http://msucares.com/poultry/management/poultry_parasites.html.
 - ☐ “Parasite Diseases-Internal.” Mississippi State University. Accessed September 14, 2007, from <http://www.msstate.edu/dept/poultry/disparas.htm>.
 - ☐ “Poultry Parasites.” Florida Cooperative Extension Service. Institute of Food and Agricultural Sciences. University of Florida Accessed September 14, 2007, from http://edis.ifas.ufl.edu/TOPIC_Poultry_Parasites.

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- ❑ "Treatments for Poultry Parasites." MSUcares. Mississippi State University Extension Service. Accessed September 14, 2007, from http://msucares.com/poultry/management/poultry_external_parasites.html.
2. Print
- ❑ Ensminger, M.E., *Poultry Science*. 3rd ed. Danville, IL: Interstate Publishers, Inc., 1992.
 - ❑ Gillespie, James R., *Modern Livestock and Poultry Production*, 5th ed. Albany: Delmar Publishers. 1997.
 - ❑ Moreng, Robert E. and John S. Avens. *Poultry Science and Production*. Prospect Heights, IL: Waverly Press, Inc. 1991.
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Interest Approach

Show students tapeworms, lice, or other parasites preserved in a jar. Discuss how these parasites can affect the health of poultry and how they can spread to other birds.

Communicate the Learning Objectives

1. Explain the requirements for maintaining a healthy poultry flock.
2. Describe how common viral diseases are prevented and controlled in poultry.
3. Describe how common bacterial diseases are prevented and controlled in poultry.
4. Describe how common internal and external parasites are prevented and controlled in poultry.
5. Explain the importance of biosecurity.

Instructor Directions	Content Outline
Objective 1 <i>Ask students why it is important to maintain a healthy poultry flock. Discuss where they think diseases come from and how they could manage their flocks to prevent contamination of diseases.</i>	Explain the requirements for maintaining a healthy poultry flock. <ol style="list-style-type: none">1. Good management requirements<ol style="list-style-type: none">a. Preventive maintenance reduces stress and prevents disease.b. Check daily for signs of disease.c. Observe changes in feed and water consumption.2. Strict sanitation guidelines<ol style="list-style-type: none">a. Thoroughly clean housing and equipment between new flocks.b. Isolate flocks used for different production purposes.c. Only caretaker of flock should enter housing area.d. Free of parasites, lice, mites, and rodents.e. Clean, fresh water and food kept easily accessible.f. Adequate ventilation to reduce moisture and buildup of noxious gas.g. Vaccination program to reduce disease outbreak.h. Dispose of dead birds according to the United States Environmental Protection Agency and Missouri Department of Natural Resources guidelines.

Objective 2

Ask students what types of viruses they get as humans. Discuss what a virus is and how we protect ourselves. Apply this to poultry.

Describe how common viral diseases are prevented and controlled in poultry.

Viral diseases are microorganisms that live in cells and spread the virus by duplication.

1. Passed through contaminated equipment, feed, clothing, air, and other animals.
2. Resistance to sanitation products makes them difficult to control and prevent.
3. Enter an animal's system through body openings (eye, mouth, vent, skin, nose, pores of an egg).

Common viral diseases

1. Marek's disease (also range paralysis or acute leukosis)
 - a. Affects many different birds but common in chickens.
 - b. Concentrated in the feather follicles and shed in the dander.
 - c. Internal lesions cause massive internal tumors and can result in death.
 - d. Symptoms include significant weight loss, diarrhea, and paralysis in the legs, wings, and neck.
 - e. Affects birds between the ages of 6 to 16 weeks.
 - f. Found worldwide and once transmitted there is no treatment.
 - g. Vaccinate day-old chicks at the hatchery.
2. Newcastle disease
 - a. Affects several species of birds including turkeys and chickens.
 - b. Highly contagious and can infect a whole flock in three to four days.
 - c. Symptoms in young birds include respiratory problems and nervous disorders.
 - d. Respiratory symptoms in adult chickens are more evident along with reduction in egg production and shell quality.
 - e. Symptoms in turkeys are usually mild and may be unnoticed unless nervous disorders develop.
 - f. Vaccinate for successful treatment.
3. Avian influenza
 - a. Affects the respiratory and nervous systems of both turkeys and chickens.

	<ul style="list-style-type: none"> b. Symptoms include coughing, wheezing, gasping for air, diarrhea, and nervous problems. c. Laying hens may produce fewer or misshapen eggs. d. Death rate is low. e. No vaccine but antibiotics are helpful. <p>4. Fowl pox</p> <ul style="list-style-type: none"> a. Affects chickens, turkeys, and other birds. b. Infection spread by mosquitos and direct and indirect contact among fowl. c. Symptoms include scabbing around the comb, wattles, ear lobes, and eyes. d. Yellow sores found in mouth and respiratory tract. e. Younger birds will grow slowly. f. Laying hens will produce fewer eggs. g. No treatment but can be prevented by vaccination. <p>5. Infectious bronchitis</p> <ul style="list-style-type: none"> a. Only chickens are susceptible. b. Spread through the air and contact with clothing, crates, and equipment. c. Symptoms confined to respiratory system. d. Death rates high in chicks less than three weeks old. e. Laying hens have drop in egg production and produce soft-shelled eggs. f. Vaccinate laying hens. g. No effective treatment except ideal environmental conditions. <p>6. Laryngotracheitis</p> <ul style="list-style-type: none"> a. Mainly affects older chickens. b. Symptoms include coughing, sneezing, gasping, and weepy eyes. c. Death rate is high. d. Laying hens have reduction in egg production and soft-shelled eggs. e. Vaccination is available. f. No effective drug treatment.
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Objective 3

Explain bacteria and how infection can be spread. Compare it to humans and how bacteria can be spread easily by contact and through the air. Discuss how this process can occur in poultry.

Describe how common bacterial diseases are prevented and controlled in poultry.

Bacterial diseases are caused by single-celled, microscopic organisms.


1. Requires certain environmental temperature, moisture, and nutrition to multiply.
2. Some bacteria beneficial for proper food digestion.
3. Easily transmitted by air, contaminated feed, clothing, equipment, soil, and other diseased animals.
4. Vaccines prevent hazardous bacteria from multiplying.
5. Sanitary environment must be maintained.

Common bacterial diseases

1. Pullorum disease
 - a. Affects both chickens and turkeys. Other fowl can be infected.
 - b. Hen passes bacteria to chicks via the egg.
 - c. Spread by contaminated chicks from one to another.
 - d. Outbreaks occur in chicks less than three weeks old.
 - e. Symptoms include ruffled feathers, labored breathing, huddling together for warmth, and white diarrhea.
 - f. High losses in production due to death of chicks and contamination by survivors to unaffected birds.
 - g. Perform blood tests and cull birds with bacteria.
 - h. Treat with antibiotics and maintain sanitary facilities.
2. Colibacillosis (coliform infections)
 - a. Caused by strains of *Escherichia coli* organism.
 - b. E. coli bacteria common in intestinal tracts and common in the birds' environment.
 - c. Infections range in severity from mild to severe.
 - d. Result in respiratory disease, blood disease, intestinal infection, or combination of any or all conditions.
 - e. Symptoms include fever, ruffled feathers, diarrhea, and labored breathing.
 - f. Death may occur suddenly in severe cases and spread through flock quickly.

	<ul style="list-style-type: none"> g. Isolate infected birds quickly. h. Sanitation and management practices reduce organisms. <ol style="list-style-type: none"> 3. Fowl cholera <ul style="list-style-type: none"> a. Most hazardous infectious disease of turkeys but also infects chickens and other birds. b. Enters tissues of the mouth and upper respiratory tract. c. Other animals can be carriers of the disease. d. Symptoms include loss of appetite, rapid weight loss, lameness, swollen wattles, difficult breathing, yellowish or green diarrhea, and purple-colored comb. e. Medicine exists but is not always successful; recovered birds are carriers. f. Rigid sanitation program must be followed. 4. Infectious coryza <ul style="list-style-type: none"> a. Respiratory disease that affects many older chickens. b. Outbreaks usually occur from introduction of infected or carrier birds into a flock. c. Symptoms include swollen face around eyes and wattles, nasal discharge, and sneezing. d. Results in decreased feed and water consumption and reduced egg production. e. Antibiotics are helpful but culling is best way to combat disease. d. Cleaning and disinfecting will eliminate the disease.
<p>Objective 4</p> <p><i>Discuss the differences between internal and external parasites. Show samples of parasites for students to examine and identify their traits.</i></p>	<p>Describe how common internal and external parasites are prevented and controlled in poultry.</p> <p>Parasites are organisms that live in or on other animals (hosts) and consume nutrients from the host needed to maintain health.</p> <ol style="list-style-type: none"> 1. May eventually cause death of host. 2. Can survive in hot/ humid conditions or cold and dry conditions. 3. Transmitted through contaminated feed, equipment, clothing, and other animals. <p>External parasites</p> <ol style="list-style-type: none"> 1. Can cause weight loss and reduce egg production.

	<ol style="list-style-type: none"> 2. High mortality can occur in young poults in severe cases. 3. Most serious categories of external parasites are lice and mites. <ol style="list-style-type: none"> a. Lice - flat, wingless, fast-moving insect that bites or sucks their prey; symptoms are frequent picking, pale head and legs, and loss of weight. b. Mites - blood-sucking insects that transmit diseases and cause scabbing; symptoms include reduced egg production, slow growth, damaged feathers, and possible death. c. Periodic inspections of birds will help prevent mites and lice. d. Effective treatment administered via dusts and sprays. <p>Internal parasites</p> <ol style="list-style-type: none"> 1. Worms are most common and primarily affect birds raised on the range. 2. Varieties are tapeworm, large roundworm, and gapeworm. 3. Live in the intestines and linings. 4. Cause slow growth and lower production. 5. Specific treatments for each type of worm. 6. Check flock periodically for presence of worms. 7. Rotate flocks on the range and maintain strict sanitary environment.
<p>Objective 5</p> <p><i>Explain what biosecurity is and why it is so important to maintain the health of the flock. Discuss ways that the poultry facility can reduce flock contamination from outside sources.</i></p>	<p>Explain the importance of biosecurity.</p> <ol style="list-style-type: none"> 1. Biosecurity involves practices designed to prevent the introduction of diseases or parasites into the poultry operation. 2. Reduce risk of outside sources of biological organisms, such as viruses, bacteria, and parasites from contaminating the flock. 3. Major components are isolation, traffic control, and sanitation. <ol style="list-style-type: none"> a. Isolation separates the birds by age group. <ol style="list-style-type: none"> 1. All-in, all-out system brings birds in at same time and age. 2. Birds marketed at same time with thorough cleaning, sanitization before next flock brought in.

	<ol style="list-style-type: none"> 3. Keeps out unwanted animals that carry disease. b. Traffic control includes both traffic onto and within the farm. <ol style="list-style-type: none"> 1. Only authorized personnel should be allowed in or around facilities. 2. Vehicle traffic kept to minimum with necessary traffic cleaned and sanitized as needed. c. Sanitation disinfects materials and equipment and ensures cleanliness of personnel.
Application  AS 1 – Symptoms, Treatment, and Prevention of Disease	<p>Answers to AS 1</p> <ol style="list-style-type: none"> 1. Internal lesions, significant weight loss, diarrhea, and paralysis in legs, wings, and neck 2. No treatment 3. Vaccinate day-old chicks at the hatchery 4. Newcastle disease 5. Viral 6. No treatment 7. Vaccination 8. Viral 9. Coughing, wheezing, gasping for air, diarrhea, and nervous problems 10. Good management 11. Fowl pox 12. Viral 13. Viral 14. Respiratory system including difficulty breathing, gasping, sneezing, and watery nasal discharge 15. No treatment 16. Ideal environmental conditions. 17. Pullorum disease 18. Ruffled feathers, labored breathing, chilled appearance, and white diarrhea 19. Antibiotics and sanitary facilities 20. Bacterial 21. Fever, ruffled feathers, diarrhea, and labored breathing 22. Good sanitation and management practices 23. Fowl cholera 24. Bacterial 25. Sanitation program 26. Bacterial

	<p>27. Swollen face around eyes and wattles, nasal discharge, and sneezing</p> <p>28. Good management and sanitation</p> <p>29. Viral</p> <p>30. Coughing, sneezing, gasping, and weepy eyes</p> <p>Other activities</p> <ol style="list-style-type: none"> 1. Have students research poultry diseases and parasites and create a disease and parasite identification chart. 2. Research vaccination treatments for viruses and bacterial infestations. Familiarize students with the information contained on the container labels.
Closure/Summary	<p>Poultry health is extremely dependent on the maintenance of ideal environmental conditions. Sanitation and disinfection practices are of utmost importance in the reduction and prevention of disease and parasite contamination. Effective biosecurity measures must be observed by everyone involved in the production process.</p>
Evaluation: Quiz	<p>Answers</p> <ol style="list-style-type: none"> 1. Daily 2. Isolated 3. Visitors 4. Viral 5. Bacterial 6. a 7. b 8. a 9. b 10. a 11. Answers will vary but may include: good management, sanitation, cleaning, disinfecting, and vaccination 12. Internal - lice or mites; External - tapeworm, large roundworm, and gapeworm 13. Isolation, traffic control, and sanitation