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| Course | Agricultural Science I |
| Unit | Introduction to Swine Production |
| Lesson | Herd Health |
| Estimated Time | 50 minutes |

Student Outcome

Develop a herd health program.

Learning Objectives

1. Identify the major swine diseases.
2. Explain what techniques reduce the spread of disease.
3. Identify herd health programs used for each production system.
4. Explain the proper techniques for administration of medications.

Grade Level Expectations

Resources, Supplies & Equipment, and Supplemental Information

1. PowerPoint Slides
 - ☐ PPt 1 - Injection Sites
2. Activity Sheets
 - ☐ AS 1 - Swine Diseases
 - ☐ AS 2 - Swine Antibiotics
3. *Introduction to Swine Production (Student Reference)*. University of Missouri-Columbia: Instructional Materials Laboratory, 1997.
4. *Introduction to Swine Production Curriculum Enhancement*. University of Missouri-Columbia: Instructional Materials Laboratory, 2003.

Supplies & Equipment

- ☐ A variety of pig medications

Supplemental Information

1. Internet Sites
 - ☐ "Swine Publications – Feeding and Health." MU Extension. University of Missouri-Columbia. Accessed July 10, 2007, from <http://extension.missouri.edu/xplor/agguides/ansci/swine.htm>.
 - ☐ "Diseases of Swine." SwineFile.com. Accessed July 10, 2007, from <http://www.swinefile.com/Artdis.htm>.
 - ☐ "Swine Health." EDIS publication system. University of Florida Institute of Food and Agricultural Sciences. Accessed July 10, 2007, from http://edis.ifas.ufl.edu/TOPIC_Swine_Health.
 - ☐ Walker, Randy. "Swine Health Program." EDIS publication system. University of Florida Institute of Food and Agricultural Sciences. Accessed July 10, 2007, from <http://edis.ifas.ufl.edu/pdf/AA/AA08500.pdf>.

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- ❑ "Swine Health." SwineFile.com. Accessed July 10, 2007, from <http://www.swinefile.com/hrdhealth.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.
 - ❑ Gillespie, James R. *Modern Livestock and Poultry Production*. 5th ed. Albany: Delmar, 1997.
 - ❑ Lee, Jasper S., et al. *Introduction to Livestock and Poultry Production*. Danville, Ill.: Interstate Publishers, Inc., 1996.
 - ❑ *Pork Issues Handbook*. Des Moines: National Pork Producers Council, 2005/2006.
 - ❑ *Pork Quality Assurance Levels I, II, III*. Des Moines: National Pork Producers Council, 1996.
 - ❑ *Swine Care Handbook*. Des Moines: National Pork Producers Council, 1996.
 - ❑ Taylor, Robert E., and Bogart, Ralph. *Scientific Farm Animal Production*. 3rd ed. New York: Macmillan Publishing, 1988.
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Interest Approach


Describe the effects a serious outbreak of disease can have on a swine herd (e.g., PRRS can cause 50 to 100 percent of gestating sows and gilts to abort). Show students a variety of pig medications and ask several of them to report what the medications could be used for in a swine operation.




Communicate the Learning Objectives

1. Identify the major swine diseases.
2. Explain what techniques reduce the spread of disease.
3. Identify herd health programs used for each production system.
4. Explain the proper techniques for administration of medications.

| Instructor Directions | Content Outline |
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| Objective 1 <i>Have the class list the major swine diseases. Next, ask students if the diseases can be controlled. Have students complete AS 1.</i>  AS 1 - Swine Diseases | Identify the major swine diseases. Erysipelas <ol style="list-style-type: none">1. Symptoms - slow growth, lameness and red skin lesions2. Prevention - vaccinations at six to eight weeks of age Leptospirosis <ol style="list-style-type: none">1. Symptoms - abortions and birth of weak or dead pigs2. Prevention - vaccinations for males and females with females vaccinated two to three weeks before breeding Pneumonia <ol style="list-style-type: none">1. Symptoms - chronic coughing and reduction in growth and efficiency2. Prevention - vaccinations for some strains and good management practices (good sanitation, isolation of infected animals, and avoiding exposure to cool and drafty conditions) Porcine reproductive and respiratory syndrome (PRRS) - most profound health problem in swine herds <ol style="list-style-type: none">1. Symptoms - abortions, mummified pigs, stillbirths, and chronic respiratory problems2. Prevention - vaccinations and buying breeding stock free of the disease |

| Instructor Directions | Content Outline |
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| | <p>Pseudorabies</p> <ol style="list-style-type: none"> 1. Symptoms - high death rate in young pigs, paralysis, fever, abortions, and stillbirths 2. Prevention - purchase of breeding stock from disease-free herds and vaccinations <p>Rhinitis</p> <ol style="list-style-type: none"> 1. Symptoms - twisted snout from degeneration of the bones 2. Prevention - vaccinations of sows and baby pigs <p>Transmissible gastroenteritis (TGE)</p> <ol style="list-style-type: none"> 1. Symptoms - diarrhea and death rate close to 100 percent in young pigs 2. Prevention - vaccinations and proper sanitation |
| <p>Objective 2</p> <p><i>Ask students what techniques swine producers can use to help reduce the spread of disease. Record the responses. Discuss each method in detail with the class.</i></p> | <p>Explain what techniques reduce the spread of disease.</p> <p>Biosecurity - preventive measures designed to reduce exposure to disease by isolating diseased animals, keeping them from contaminating others</p> <ol style="list-style-type: none"> 1. Operations limit the number of outside visitors. 2. Visitors must shower in and put on clean clothes and shoes before entering the facilities. 3. Access to critical areas like the farrowing house and nursery is limited. 4. Certain people can only enter particular buildings. <p>Proper sanitation</p> <ol style="list-style-type: none"> 1. Animals entering the facilities are cleaned and washed. 2. Buildings are cleaned and disinfected after the pigs are moved out of them. <p>Purchase and use of disease-free breeding stock</p> <ol style="list-style-type: none"> 1. Only disease-free breeding stock from producers with strict health programs should be used; their herds may be validated as specific pathogen free (SPF) herds. 2. Blood tests are done before sale to check for disease. 3. All incoming breeding stock should go through an isolation and acclimation period lasting 45 to 60 days in which they are tested for diseases and exposed to cull animals from the facility. |

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| | <p>4. Using artificial insemination can reduce the spread of disease.</p> |
| <p>Objective 3</p> <p><i>Ask students what types of herd health programs are used in swine production. Point out that every producer has different health challenges. He or she should design a health program to fit his or her needs.</i></p> | <p>Identify herd health programs used for each production system.</p> <p>Farrow-to-finish producers - Involved in all phases of production; have the most extensive herd health program because they must prevent health problems in the breeding, farrowing, and growth phase</p> <ol style="list-style-type: none"> 1. Use blood tests to reveal health problems, and target those problems with vaccines. 2. Buy disease-free breeding stock. 3. Practice biosecurity. 4. Administer preventive antibiotics in feed. 5. Control external and internal parasites. <p>Feeder pig producers</p> <ol style="list-style-type: none"> 1. Purchase disease-free breeding stock. 2. Practice biosecurity. 3. Take blood samples to reveal health problems, and vaccinate against them. 4. Use preventive antibiotics in feed. 5. Control external and internal parasites. <p>Feeder pig finishers - Typically have the fewest problems with disease since they own the pigs for a short time, with no breeding, gestation, or farrowing</p> <ol style="list-style-type: none"> 1. Purchase vaccinated feeder pigs. 2. Use antibiotics in the feed. 3. Practice biosecurity measures. 4. Treat animals for parasites. |
| <p>Objective 4</p> <p><i>Ask students how medications and vaccines are administered to hogs. Record the three main methods. Use PPt 1 to illustrate proper injection sites. Have students complete AS 2.</i></p> <p> PPt 1 - Injection Sites</p> | <p>Explain the proper techniques for administration of medications.</p> <p>Subcutaneous injections (Sub-Q)</p> <ol style="list-style-type: none"> 1. Given between the skin and muscle 2. Given behind the front leg in the loose skin of the foreflank 3. Recommended because of the potential for carcass damage when injections are made into muscle tissue |

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| <p> AS 2 - Swine Antibiotics</p> | <p>Intramuscular injections (IM)</p> <ol style="list-style-type: none"> 1. Made into the muscle 2. Always given in the neck and never in the rump or ham because the meat from the neck area is of a lower value <p>Medicated feed - Contains small amounts of USDA-approved antibiotics that the pig consumes as it feeds; prevents disease and promotes growth</p> |
| <p>Application:</p> <p> AS 1 - Swine Diseases</p> <p> AS 2 - Swine Antibiotics</p> | <p>Answers to AS 1</p> <p>Erysipelas</p> <ol style="list-style-type: none"> 1. Symptoms - slow growth, lameness and skin lesions 2. Prevention - vaccinations at six to eight weeks of age <p>Leptospirosis</p> <ol style="list-style-type: none"> 1. Symptoms – abortions and birth of weak or dead pigs 2. Prevention - vaccinations for males and females with females vaccinated two to three weeks before breeding <p>Pneumonia</p> <ol style="list-style-type: none"> 1. Symptoms - chronic coughing and reduction in growth and efficiency 2. Prevention - vaccinations for some strains and good management practices (good sanitation, isolation of infected animals, and avoiding exposure to cool and drafty conditions) <p>Porcine reproductive and respiratory syndrome (PRRS)</p> <ol style="list-style-type: none"> 1. Symptoms - abortions, mummified pigs, stillbirths, and chronic respiratory problems 2. Prevention – vaccinations and buying breeding stock free of the disease <p>Pseudorabies</p> <ol style="list-style-type: none"> 1. Symptoms - high death rate in young pigs, paralysis, fever, abortions, and stillbirths 2. Prevention - purchase of breeding stock from disease-free herds and vaccinations <p>Rhinitis</p> <ol style="list-style-type: none"> 1. Symptoms - twisted snout from degeneration of bones 2. Prevention - vaccinations of sows and baby pigs <p>Transmissible gastroenteritis (TGE)</p> <ol style="list-style-type: none"> 1. Symptoms – diarrhea and death rate close to 100 percent in young pigs 2. Prevention – vaccinations and proper sanitation |

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| | <p>Answers to AS 2 Answers will vary.</p> <p>Other activities</p> <ol style="list-style-type: none"> 1. Have a veterinarian visit the class or take a field trip to a veterinary clinic to discuss swine herd health programs. 2. Have students research a swine disease in more detail and report on it to the class. |
| Closure/Summary | <p>Herd health and disease prevention are major concerns of swine producers. Several diseases can affect the swine herd. Biosecurity is an inexpensive method of preventing these diseases from spreading through a herd. Other ways to control the spread of disease are through proper sanitation and the use of disease-free breeding stock. A herd health program should include blood tests to reveal health problems; the results of the tests form the basis of a proper vaccination program. Subcutaneous injections should be used whenever possible.</p> |
| Evaluation: Quiz | <p>Answers</p> <ol style="list-style-type: none"> 1. a 2. c 3. b 4. d 5. d 6. These measures are designed to reduce exposure to disease by isolating diseased animals, keeping them from contaminating others. 7. Subcutaneous injections are recommended because of the potential for carcass damage when injections are made into muscle tissue. 8. Students may list any two of the following: purchase disease-free breeding stock, practice biosecurity, take blood samples to reveal health problems and vaccinate against them, use preventive antibiotics in feed, and control external and internal parasites. |