

## Lesson B5–1

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# Managing Diseases and Parasites

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**Unit B.** Animal Science and the Industry

**Problem Area 5.** Maintaining Animal Health

**Lesson 1.** Managing Diseases and Parasites

### **New Mexico Content Standard:**

**Pathway Strand:** Animal Systems

**Standard:** V: Identify environmental factors that affect an animal's performance.

**Benchmark:** V-B. Create a program to develop an animal to its highest potential performance.

**Performance Standard:** 1. Identify factors that can be manipulated to control a given animal's performance. 2. Generate ways to increase an animal's performance.

**Student Learning Objectives.** Instruction in this lesson should result in students achieving the following objectives:

1. Discuss signs of good and bad animal health.
2. Identify diseases transmissible from animals to humans and humans to animals.
3. Describe common animal parasites and diseases.
4. List ways to prevent and treat diseases and parasites.

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

Ensminger, M. E., *The Stockman's Handbook*. Danville, Illinois: Interstate Publishers, Inc. 1992

Lee, Jasper S. *Introduction to Livestock and Companion Animals 2nd Edition*. Danville, Illinois: Interstate Publishers, Inc. 2000. (Textbook and Activity Manual Chapter 4)

Ensminger, M. E., *Animal Science*. Danville, Illinois: Interstate Publishers, Inc. 1991

**Recommended Resources.** One of the following resources should be selected to accompany the lesson:

Cooper, Elmer L., Burton, DeVere L., *Agriscience Fundamentals and Applications*. Albany, New York: Delmar. 2002

**Other Resources.** The following resources will be useful to students and teachers:

Internet keywords: parasite, disease, animal health, contagious animal disease, anthrax, and brucellosis.

## List of Equipment, Tools, Supplies, and Facilities

Writing surface  
Overhead projector  
Transparencies from attached masters  
Copies of student lab sheet

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

Biologics  
Contagious  
External parasites  
Internal parasites  
Intradermal  
Intramuscular  
Intraperitoneal  
Intraruminal  
Intravenous  
Natural immunity  
Non-contagious  
Sanitation  
Species immunity  
Subcutaneous

Vaccinating  
Ventilation  
Zoonoses

**Interest Approach.** Use an interest approach that will prepare the students for the lesson. Teachers often develop approaches for their unique class and student situations. A possible approach is included here.

*Ask students to talk about the last time they were sick or when they had chicken pox or other contagious diseases. Ask them how and why they got infected. Answers should include being around infected people or not being vaccinated. Relate how humans get sick to how cattle get sick when they are around other infected animals or when they don't get vaccinated.*

## Summary of Content and Teaching Strategies

**Objective 1:** Discuss signs of good and bad animal health.

**Anticipated Problem:** How do I know if my animal is sick or not.

- I. Being able to recognize when your animals need medical attention is important to the business. Many diseases and parasites are treatable if caught early enough. You may also keep the sickness from spreading if you act quickly at the first signs. You should make observing your animals a part of your daily routine.
  - A. Signs of good health include:
    1. Contented animals look free from all anxiety. Some animals have specific signs to look for and others will take a trained eye to recognize. Pigs will curl their tails when they are content and sheep will stay quiet.
    2. Normal feces and urine should be seen. This will vary with diet and type of species, but anything unusual for your particular animal should be noted.
    3. Body temperature, respiration, and pulse rate should be monitored because unusual highs and lows can be symptoms.
    4. Alertness can be judged by checking if an animal perks its ears when you draw near.
    5. The skin and coat of most animals should be oily and elastic like.
    6. The animal's eyes should be bright and their membranes pinkish.
    7. One of the easiest things to notice is when an animal goes off feed. All healthy animals should eat aggressively when fed and ruminants should be seen chewing their cud.
  - B. Signs of poor health include:
    1. When animals stray off by themselves and hold their head down it is a good sign that they are not well.

2. Lower production of milk is also not good.
3. A rough-looking dull hair coat or skin that stays up when pinched are signs of poor health.
4. Discolored feces or urine can be obvious signs of trouble.
5. Glassy eyes are sometimes a sign of poor health.
6. An animal that is difficult to get up and walks slowly may also indicate that something is wrong.

Use TM: B5–1A to discuss normal temperatures, pulse rates, and respiration rates of common animals.

**Objective 2:** Identify diseases transmissible from animals to humans and humans to animals.

**Anticipated Problem:** What diseases can I give to or get from my animals?

- II. Many diseases are passed between animals and humans. They are usually transferred by way of meat, milk, or eggs. Some are transferred when close contact is made and others are due to insects carrying them from one to another.
  - A. **Zoonoses** are diseases that animals can transmit to humans. Some of the diseases include:
    1. Tuberculosis
    2. Anthrax
    3. Rabies
    4. Brucellosis (Bangs)
    5. Nine Mile Fever (Q Fever)
    6. Parasites like Ringworm
  - B. Three kinds of diseases are transferred from humans to animals. Protozoa, bacterial, and viral infections are the three. Protozoa infections like the animal parasite that causes amoebic dysentery can be shared. Bacterial infections like the streptococcus that causes scarlet fever in humans can be passed to an animal and then produce large problems when humans consume milk or other products. Viral infections are being researched closely for more shared ailments between humans and animals but we know that chimps can get common colds and dogs can get the mumps virus.

Use Table 6–1, *Ensminger, M. E., Animal Science. Danville, Illinois: Interstate Publishers, Inc. 1991, to study causes, symptoms, signs and control of zoonoses.*

**Objective 3:** Describe common animal parasites and diseases.

**Anticipated Problem:** What are common animal parasites and diseases?

III. There are some common diseases and parasites with specific symptoms.

- A. Diseases can be contagious or non-contagious. **Contagious** diseases are diseases that can be passed from one animal to another. **Non-contagious** diseases are diseases that cannot be transferred from one animal to another. It is important to determine what kind the disease is because contagious animals need to be separated from the other animals to prevent spreading the disease. Even if you think the disease is non-contagious, it is still beneficial to separate the sick animal from the others just in case. Contagious diseases are usually caused by bacteria or viruses. They spread from animal to animal by simple contact or shared facilities. Diseases that are not contagious, like scurvy, are sometimes caused by a vitamin or mineral deficiency. They may also be caused by ingestion of metal, poisonous plants or animals, or open wounds the animal may have. General symptoms specific to disease include:
1. Animal losing fetus
  2. Shaking
  3. Coughing
  4. Poor growth or decrease in production
  5. Rough coat
- B. Parasites can be internal or external. **Internal parasites** are ones that live inside the animal like flukes and roundworms. **External parasites** are ones that live outside the animal like fleas and flies. Symptoms of parasites may include:
1. Observing the parasite on an animal
  2. Diarrhea, worms in feces, or bloody feces
  3. Loss of weight
  4. Decreased production, growth, and reproduction

Use TM: B5–1B to discuss lifecycles of common parasites.

**Objective 4:** List ways to prevent and treat diseases and parasites.

**Anticipated Problem:** What are some ways to prevent and treat diseases and parasites?

- IV. Whenever possible prevention of disease should be done. When it is not possible to prevent a disease or parasite, treat it as soon as possible.
- A. There are several ways to prevent diseases and parasites.
1. **Natural immunity** is when immunity to a specific disease is inherited from parent to offspring. **Species immunity** is when a disease that affects one species does not affect other species.

2. **Vaccinating** is injecting a disease organism that has been modified into an animal to prevent the animal from getting the disease later. **Biologics** are the medical preparations made from microorganisms and their products, like vaccinations and serums.
  3. Sanitation management is important to preventing diseases and parasites. **Sanitation** is the act of cleaning or sterilizing an area.
  4. Ventilation is also important to manage. **Ventilation** is causing air to move through a building.
  5. Keep all housing facilities clean and use dry bedding.
  6. Disposal of manure is very important. If animals are made to live in their manure it will surely cause diseases to transfer rapidly because it is the optimal environment for diseases and parasites to thrive in. Sharing trailers and grooming equipment should also be managed so that diseases are not spread.
  7. Using the same pasture for the same species over and over could be dangerous. Try to rotate animals to break a parasitic life cycle.
  8. Always dispose of carcasses in a sanitary way.
- B. Since prevention does not always work, you should know how to treat your animals when they get sick. Above all, make sure you know what you are doing, and are qualified to treat your animal.
1. Drugs for treatment come in many forms like pills, powders, and liquids. Before giving any medication, be sure to check if there is a milk or meat hold associated with the drug.
  2. There are many ways to inject drugs. They are all named according to how they are injected. **Intravenous** means injected into the vein. **Intramuscular** means injected into a muscle. **Subcutaneous** means injected under the animals skin. **Intradermal** means injected between layers of skin. Injections into an animals rumen are called **intraruminal**. Injections given in the abdominal cavity are called **intra-peritoneal**.
  3. Taking your animals temperature is important to help diagnose if your animal is sick, and should be done rectally after you have tied a string to the thermometer. Shake down the mercury and carefully place the thermometer in the animal's rectum. Being forceful could make matters worse by injuring the animal. After at least two minutes, read the temperature.
  4. Checking respiration and pulse can be done without any expensive equipment. For respiration, simply watch how many times the animal breathes in 1 minute. For pulse you can often hold your ear against the animal and listen for the heartbeat.
  5. Always restrain animals properly to prevent hurting the animal or yourself.
  6. Certain ailments can be treated with little knowledge, but other problems require the expertise of a veterinarian. A good management practice is to know your own limitations.

Use LS: B5–1A to determine what ailments you can treat and which ones are best left to a professional.

**Review/Summary.** Use the student learning objectives to summarize the lesson. Have students explain the content associated with each objective. Student responses can be used to determine which objectives need to be reviewed or taught over using a different approach. Questions provided in the recommended textbooks may also be used to help review.

**Application.** Application can involve student activity with the provided labs.

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

## **Answers to Sample Test:**

### **Part One: Matching**

1 = f, 2 = c, 3 = g, 4 = h, 5 = e, 6 = b, 7 = a, 8 = d

### **Part Two: Completion**

1. Intradermal
2. Intraruminal
3. Intravenous
4. Subcutaneous
5. Intramuscular
6. Intraperitoneal

### **Part Three: Short Answer**

External: flies and fleas

Internal: roundworms and flukes

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# Test

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## Lesson B5–1: Managing Diseases and Parasites

### Part One: Matching

*Instructions.* Match the term with the correct response. Write the letter of the term by the definition.

- |                   |                     |                     |
|-------------------|---------------------|---------------------|
| a. Vaccinating    | d. Ventilation      | g. Zoonoses         |
| b. Biologics      | e. Contagious       | h. Natural immunity |
| c. Non-contagious | f. Species immunity |                     |

- \_\_\_\_\_ 1. When a disease that effects one species does not effect other species.
- \_\_\_\_\_ 2. Diseases that cannot be transferred from one animal to another.
- \_\_\_\_\_ 3. Diseases that animals can transmit to humans.
- \_\_\_\_\_ 4. When immunity to a specific disease is inherited from parent to offspring.
- \_\_\_\_\_ 5. Diseases that can be passed from one animal to another.
- \_\_\_\_\_ 6. The medical preparations made from microorganisms and their products, like vaccinations and serums.
- \_\_\_\_\_ 7. Injecting a disease organism that has been modified into an animal to prevent the animal from getting the disease later.
- \_\_\_\_\_ 8. Causing air to move through a building.

### Part Two: Completion

*Instructions.* Provide the word or words to complete the following statements.

1. \_\_\_\_\_ means injected between layers of skin.
2. Injections into an animals rumen are called \_\_\_\_\_.
3. \_\_\_\_\_ means injected into the vein.
4. \_\_\_\_\_ means injected under the animals skin.
5. \_\_\_\_\_ means injected into a muscle.
6. Injections given in the abdominal cavity are called \_\_\_\_\_.

**Part Three: Short Answer**

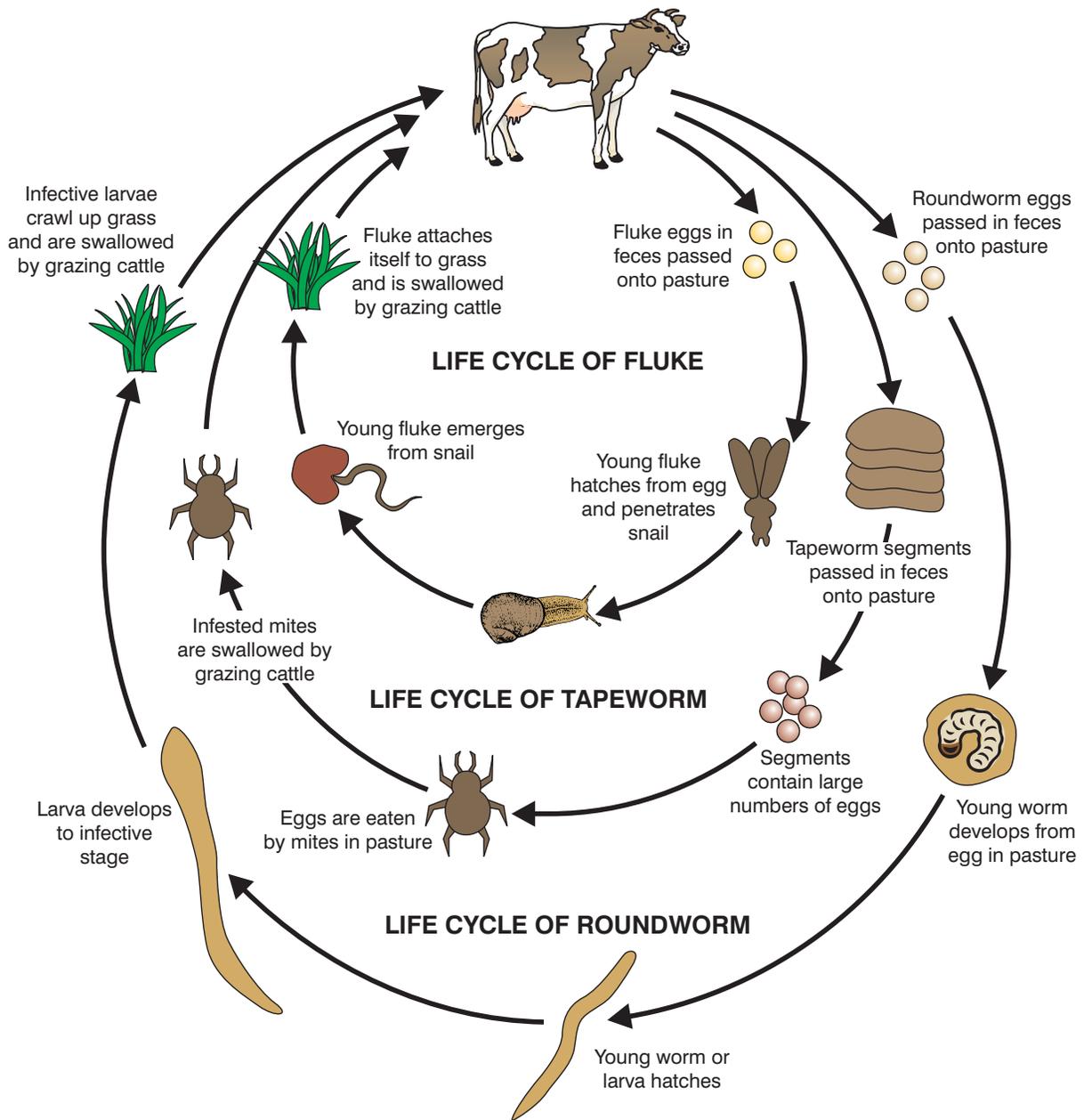
*Instructions.* Provide information to answer the following questions.

1. What are two examples of external parasites?
  
2. What are two examples internal parasites?

# NORMAL VITAL SIGNS OF FARM ANIMALS

| Animal  | Normal Rectal Temperature |             | Normal Pulse Rate | Normal Respiration Rate |
|---------|---------------------------|-------------|-------------------|-------------------------|
|         | Average                   | Range       |                   |                         |
|         | (degrees F)               | (degrees F) | (rate/min.)       | (rate/min.)             |
| Cattle  | 101.5                     | 100.4–102.8 | 60–70             | 10–30                   |
| Sheep   | 102.3                     | 100.9–103.8 | 70–80             | 12–20                   |
| Goats   | 103.8                     | 101.7–105.3 | 70–80             | 12–20                   |
| Swine   | 102.6                     | 102.0–103.6 | 60–80             | 8–13                    |
| Horses  | 100.5                     | 99.0–100.8  | 32–44             | 8–16                    |
| Poultry | 106.0                     | 105.0–107.0 | 200–400           | 15–36                   |

# THE LIFE CYCLE OF COMMON ANIMAL PARASITES



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# Lab Sheet

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## Comparison of Animal Treatment by Owners or by Veterinarians

**Purpose:**

Compare treatment by owners to treatment by veterinarians.

**Procedure:**

Gather information to fill in the following information:

Treatment that  
can be done  
by owner

vs.

Treatment that  
should be done  
by vet

Sheep:

Dairy:

Swine:

Horses:

Beef cattle:

Poultry:

House pets: