

Unit C: Animal Health

Lesson 1: Managing Diseases and Parasites

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

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

Searching the internet for information on the following keywords: parasite, disease, animal health, contagious animal disease, anthrax, and brucellosis.

List of Equipment, Tools, Supplies, and Facilities:

Writing surface
PowerPoint Projector
PowerPoint Slides
Transparency Masters
Copies of student lab sheet
Syringes and needles – one set for every four students
Water for Syringes
Apricots – one for every four students

Terms: The following terms are presented in this lesson (shown in bold italics): **PowerPoint Slides 2 and 3.**

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 or other animals 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?

Ask students to make a list of things that they can do when they are healthy. This list might include things like run, walk, work, play outside, eat etc. Now, have students create a list of things that might indicate they are sick. Are these signs easily recognized in humans? How about animals?

- 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. **PowerPoint Slide 4.**
 - 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. Sheep will stay quiet and cattle will chew their cud. **PowerPoint Slide 5.**
 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. **PowerPoint Slide 6.**
 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. **PowerPoint Slide 7.**
 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. **PowerPoint Slide 8.**

Have students show what they know by writing down as many signs of good animal health without looking at their notes.

- 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. **PowerPoint Slide 9.**
 3. A rough-looking dull hair coat or skin that stays up when pinched is signs of poor health.
 4. Discolored feces or urine can be obvious signs of trouble. **PowerPoint Slide 10.**
 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. **PowerPoint Slide 11.**

Use TM: 1-1 and PowerPoint Slide 12 to discuss normal temperatures, pulse rates, and respiration rates of common animals. Also, if possible, have students observe both healthy and sick animals and record observations on what they see. If possible, have students take turns taking an animals temperature.

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?

Ask students who have a story to share about getting a family member sick, or a family member getting them sick. So, diseases can be passed from human to human. Ask students how many think that animals can give diseases to humans?

- 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. **PowerPoint Slide 13.**
 - 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 **PowerPoint Slide 14.**

Have students research one of these diseases and give a brief summary on their findings to the class. Research could include vaccinations, treatments, etc. Also discuss diseases that are prevalent in your area such as Sheep Pox or PPR.

- 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. **PowerPoint Slides 15, 16, and 17.**

Have students respond together when you ask them “What are the three diseases that humans can give animals?” They should respond together “Protozoa, Bacterial and Viral Infections.”

Objective 3: Describe common animal parasites and diseases.

Anticipated Problem: What are common animal parasites and diseases?

Ask students to share some of the animal health problems they have seen before. Has anyone ever helped to diagnose an animal disease? Discuss some of the common diseases in your area.

III. There are some common diseases and parasites with specific symptoms. **PowerPoint Slide 18.**

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: **PowerPoint Slides 19, 20, and 21.**

1. Animal losing fetus
2. Shaking
3. Coughing
4. Poor growth or decrease in production
5. Rough coat **PowerPoint Slide 22.**

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: **PowerPoint Slide 23.**

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 **PowerPoint Slide 24.**

Use TM: 1-2 and PowerPoint Slide 25 to show students the life cycle of a parasite. Discuss how the life cycle may be broken. What are ways that humans can break the life cycle? Can animals break the life cycle? Also, have students draw this lifecycle on their paper, or have it available to them.

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

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

Tell students to take 3 pieces of paper and fold them in half to create a “Medicine Manual.” This will be used to gather all of the important information about preventing and treating disease 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. **PowerPoint Slide 26.**

Ask students to think of some diseases that are not preventable. Are they more common or not as common in your area?

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. **PowerPoint Slide 27.**

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. **PowerPoint Slide 28.**
3. Sanitation management is important to preventing diseases and parasites. **Sanitation** is the act of cleaning or sterilizing an area. **PowerPoint Slide 29.**
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. **PowerPoint Slide 30.**
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. **PowerPoint Slide 31.**
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. **Refer back to the life cycle of a parasite.**

Why might moving animals from where they graze break the life cycle?

8. Always dispose of carcasses in a sanitary way. **PowerPoint Slide 32.**
- 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. **PowerPoint Slide 33.**
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. Meaning, can people still eat or drink the milk or meat after we have given the medicine. **PowerPoint Slide 34.**
 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 animal's skin. **Intradermal** means injected between layers of skin. Injections into an animal's rumen are called **intraruminal**. Injections given in the abdominal cavity are called **intrapertoneal**. **PowerPoint Slides 35 and 36. Have students draw each of these injections on a piece of paper. If syringes are available, have students practice giving these injections with water and an apricot. The skin of an apricot can represent the skin of an animal.**
 3. Taking your animal's 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. **PowerPoint Slide 37.**
 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. **PowerPoint Slides 38.**

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.

PowerPoint Slide 39.

Use LS: 1-1 to help students understand what problems can be treated with or without a professional. Also, practice and application is key for this objective. If possible, have students practice listening to the heartbeat of animal or other prevention methods.

Review/Summary: Use the student learning objectives to summarize the lesson. Have students discuss signs of good and bad animal health. Ask students to identify diseases transmissible from animals to humans and humans to animals. In what ways can students describe common animal parasites and diseases? And finally, list ways to prevent and treat diseases and parasites

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

Test

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

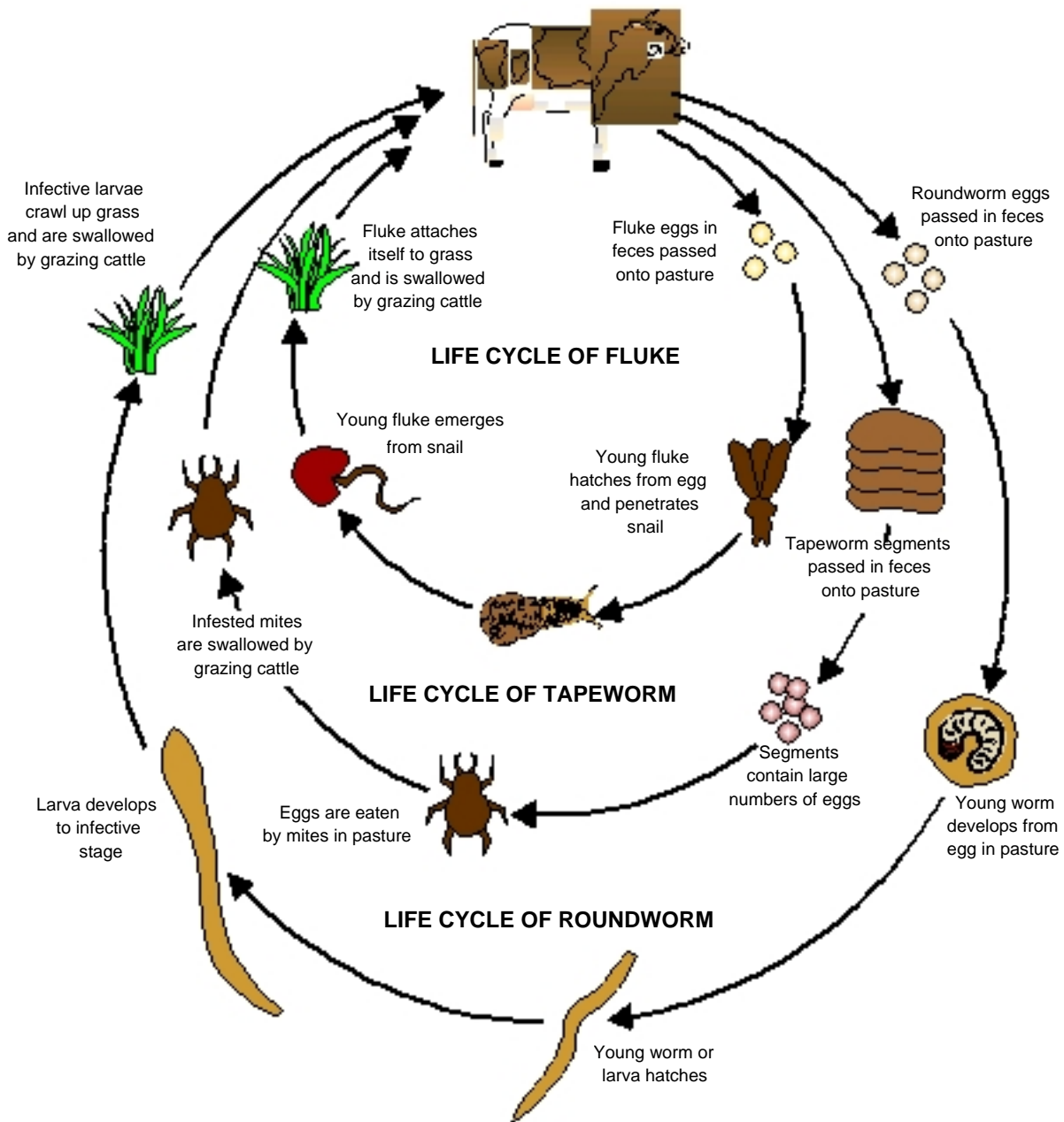
Instructions. Provide the word or words to complete the following statements.

- 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 _____.

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
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



Lab Sheet

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:

Horses:

Beef cattle:

Poultry:

House pets: