CHAPTER 3
Animal Health

OBJECTIVES

At the end of the chapter, students should be able to:

â—† explain the meaning of diseases.

â—† state the causal organisms of animal disease.

â—† state and discuss the factors that predispose animals to diseases and reaction of animals to disease.

â—† name some important diseases of livestock and their causal organisms.

â—† describe their mode of transmission, symptoms, e! ects/economic importance, preventive and control measures.

3.1 Introduction

Diseases affect animals and reduce their growth rate and development. Disease infection may lead to reduction in production and in extreme cases to death. Diseases are caused by pathogens such as fungi, bacteria, virus, protozoa and others. The knowledge of these diseases is important in order to device appropriate methods of combating them.

3.2 Meaning of Disease

Disease may be defined as a departure from normal state of health. It is also described as a state of ill-health caused by an alteration of the normal functioning of the body or organs of an animal due to attack by pathogens or effects of environmental disorders.

A disease may be contagious or infectious.

Contagious disease is one that easily spreads from one animal to another by contact, while **Infectious** disease spreads from the sick animal to another without direct contact. There are two types of diseases namely pathogenic and non-pathogenic.

Pathogenic diseases: These are caused by pathogenic organisms which produce disease in the body of the animal under natural or experimental conditions.

3.3 Causal Organisms of Animal Diseases

The casual organisms of animal diseases are classified as follows:

1. Bacteria
2. Virus
3. Fungi
4. Protozoa
5. Nematodes

Bacteria: They are diseases caused by single-celled organisms called bacteria. They cause diseases by secretion of toxins. The diseases are infectious and contagious. Bacterial diseases are trans mitted from place to place by air, water and animals particularly in the form of spores. Examples of bacterial diseases are: contagious abortion, anthrax, foot rot, tuberculosis and fowl pox.

Viral diseases: These are diseases caused by minute transmissible particles called viruses. They multiply only inside the living

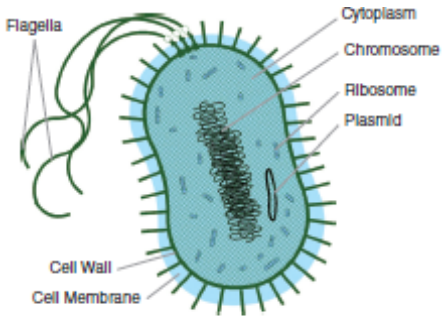

FIGURE 3.1 **Bacteria**

cells of a specific host. They are transmitted from animal to animal by vectors or by discharge from the body of animals by insect bites and by human beings. Examples of viral diseases are foot and mouth disease, Rinderpest, Newcastle and chronic respiratory disease.

Fungi: These are non-green plants and can survive without light. Their growth and multiplication are favoured by damp, moist and dark condition. They spread through body contact and through spore formation. Examples of fungi diseases are ringworm and aspergillosis.

Protozoan diseases: These are diseases caused by microscopic single-celled animals. They cause a lot of damage to livestock by rupturing certain parts of the body when they multiply. They are transmitted by insects, vector, other animals like rats and through contamination of food and water through the vectors. Examples are trypanosomiasis, amoebic dysentery and coccidiosis.

Nematode diseases: These are caused by some parasitic worms called nematodes. Some of these are transmitted through consumption of flesh in which the larvae of the parasitic nematode are encysted. Example of nematode disease is trichinosis caused by *Trichinella spiralis* in swine.

TABLE 3.1 Continued

NAME OF THE DISEASE	ANIMALS AFFECTED	CAUSAL ORGANISM	MODE OF TRANSMISSION	SYMPTOMS	PREVENTION AND CONTROL
Foot and mouth disease	Cattle, sheep, goat and pigs	Virus	Through infected materials – urine, milk, meat, excretion of infected animal	Painful blisters on the membrane of the mouth on the skin between and around hoofs, on teats and udder	Vaccination can be done after the strain – e.g., virus – has been identified. Isolation. Bury and burn the contaminated material
Rinderpest	Cattle, goat and sheep	Virus	Contamination of water feeds by excrements from infected animals, direct contact	High fever, dull, rough looking coat, diarrhoea, sores in the mouth. A thick discharge from nostrils and tears from eyes. Pus mixed with blood, faeces stinks bad, death	Vaccination, isolation. Avoid migration of animals from one country to the other
Newcastle	Poultry	Virus	Direct contact, water and contaminated food with droppings	Yellowish droppings, comb turns purple, coughing, sneezing, discharge from eyes and nostrils, bird appears nervous, respiratory noise	Slaughter all infected and in-contact birds. Disinfect pens by vaccination. Consult a veterinary officer
Chronic respiratory disease	Poultry	Virus	Direct contact, food and water contaminated with nasal discharge, overcrowding, improper ventilation	Difficulty in breathing, discharge from nostrils and mouth, loss of appetite, choking noise, sometimes death	Vaccination, isolation of infected birds, good sanitation, bury dead animals
Aspergillosis	Poultry, pigs and cattle	Fungi	Through contaminated feed (mouldy feed), contaminated incubators and mouldy litters, inhalation of aspergillosis spores from the poultry house	Loss of appetite, respiratory disorder, high temperature, loss of weight, laboured breathing, whistling noise and off-feed	Avoid the use of mouldy feed and litter. Good sanitation and hygiene spray with fungicides to prevent the growth of fungi spores

NAME OF THE DISEASE	ANIMALS AFFECTED	CAUSAL ORGANISM	MODE OF TRANSMISSION	SYMPTOMS	PREVENTION AND CONTROL
Ring worm infection	Pigs, cattle, sheep, goat and rabbit	Fungi	Contact with infected animal, from wood work, brushes, feeders, and drinkers	Lesion on the skin irritation, loss of weight, loss of appetite	Disinfect the pens and equipment, dress infected part every 3–4 days with a mixture of sulphur, Vaseline and iodine solution
Coccidiosis	Poultry and rabbit; cattle, sheep and goat	Protozoa	Through faeces of infected birds, litter, contaminated feed and water with the droppings	Bloody faeces, loss of appetite, dullness and unthriftiness, loss of hair in rabbit (alopecia), ruffled feather, emaciation	Good sanitation, changing of litter materials. Disinfecting the house, use drugs like amprolium , nitrofurazone or sulphaquinoxaline in water
Trypanosomiasis	Cattle, sheep, goat and pig	Protozoa	By blood sucking fly – (Tsetse fly)	Rise in temperature, dull in appearance, anaemia, keratitis and blindness affects the central nervous system, leading to paralysis	Destruction of wild animals that harbour the protozoa. Clear the bush, protect the animal against insect bites by using insecticides. Treat infected animal with trypanosomide and antimosan. Isolate infected animal, vaccination.
Red water fever (Piroplasmosis)	Cattle, sheep, goat and pig	Protozoa	Bite by blue tick	Rise in temperature, loss of appetite, diarrhoea, pale red colour urine, emaciation and death	Use of insecticides to kill the blue tick, inject animals with babesan or trypan blue
Trichinosis	Swine	Nematode	Eating encysted larva of *Trichinella* in flesh	Abdominal pains, nausea, vomiting, watery stool	Good sanitation and management. Use of thiabendazole

3.4 Factors That Predispose Animals to Diseases and Reaction of Animals

A number of factors have been indentified that can predispose animals to diseases which are as follows:

â—† **Poor feeding/nutrition:** When not provided with adequate feeding, the animals will suffer disease infections.

â—† **Poor sanitary condition:** Poor sanitary conditions such as improper disposal of animal waste and bushy vegetation around the farm could predispose the animals to disease infection.

â—† **Poor housing:** Animals should be provided with good housing fitted with all the necessary facilities. When animals are overcrowded with poor ventilation, it can lead to disease condition.

â—† **Health status:** Animals that are infected or diseased should not be used for stocking since they will contaminate the healthy ones.

â—† **Management:** Poor management such as non-administration of vaccines and drugs at appropriate period could predispose the animals to disease.

â—† **Unfavourable climate condition:** Harsh climatic conditions such as high temperature, rainfall and high humidity can predispose the animals to diseases.

â—† **Select healthy** and virile animals with good vigour.

3.5 Economic Importance of Diseases

The general economic importance of diseases is as follows:

Disease infection causes:

â—† Poor and retarded growth of animals.

â—† Displayed maturity reduce productivity.

â—† Mortality of immature and adult animals.

â—† Poor feed utilization, leading to malnutrition and death.

â—† Low yield and poor quality product. When the animals are diseased as the case in poultry the birds lay few and small size eggs.
â—† Diseased animal carcasses produce poor meat.
â—† Poor income to the farmer. When the farmer wants to sell them, they will not look attractive and thus cannot yield reasonable income.

3.6 Methods of Preventing Diseases

Vaccination: Animals should be vaccinated against diseases at the right time. This will enable the animals acquire immunity against certain diseases.

â—† **Good sanitation:** Good sanitary measures should be adhered to by keeping the surroundings clean and cleaning the sheds and pens. Drinkers and feeders should be cleaned on daily basis.
â—† **Quarantine:** New stocks or breeds should be isolated for some time from animals in the farm. This will enable the farmer to observe that the new stocks possess disease or not.
â—† **Good and adequate feeding:** Animals should be properly fed and provided with balanced diet to enable them perform better.
â—† **Rotational grazing:** Animals should be moved from one grazing ground to the other. This helps to eliminate building up of pests.
â—† **Deworming:** Farm animals should be given worm expellant such as piperazine; this will enable animals to perform at their maximum potential.
â—† **Dipping:** This involves using chemicals to eliminate most ectoparasites such as lice and ticks.

â—† **Avoid overcrowding:** Adequate housing and spaces should be provided. When animals are overcrowded it can result in so many vices like cannibalism and spread of diseases.

ACTIVITY

Visit a nearby poultry farm. Study the housing and the birds. Record your observation on the housing condition, faecal discharges and managements, activities of the birds and size of eggs. Comment on the disease prevention practice of the farm.

SUMMARY

â—† Diseases may be defined as a departure from normal state of health, which disturbs the performance of an animal.
â—† Disease causing organisms are bacteria, viruses, fungi, nematodes and protozoa.
â—† Factors that predispose animals to diseases are poor feeding, poor sanitary conduction, poor housing, health status of the animal and unfavourable climatic conditions.

REVISION QUESTIONS

ESSAYS

1. (a) Define the term disease.
(b) Enumerate four economic importance of animal diseases.
(c) List three factors which determine the degree of resistance of an animal to a disease. **(WASSCE JUNE 2002)**

2. (a) Name the causative agent of each of the following livestock diseases:
(i) Foot and mouth
(ii) Brucellosis
(iii) Ringworm
(b) Name three animals that can be affected by each of the above-mentioned diseases.
(c) State three symptoms of foot and mouth disease and three symptoms of ringworm infection.

A C3. Discuss each of Rinderpest and Newcastle disease under the following headings:
(a) Host organism

(b) Causal organism
(c) Mode of transmission
(d) Symptoms **(WASSCE June 2003)**

4. (a) List four factors that predispose to diseases and reaction of the animals.
(b) Describe any nematode disease under causal organisms and prevention and control.

OBJECTIVE QUESTIONS

1. The following are disease causing organisms except
(a) virus. (b) fungi.
(c) predators. (d) protozoa.

2. Voiding of blood stained droppings by birds is a symptom of
(a) fowl cholera. (b) coccidiosis.
(c) new Castle disease. (d) fowl typhoid.

3. Which of the following pairs of diseases can be contacted through inhalation?
(a) Brucellosis and Aspergillosis (b) Coccidiosis and Anthrax
(c) Newcastle and Tuberculosis (d) Anthrax and Tuberculosis

4. The mode of infection of rinderpest in cattle is through
(a) feeding. (b) drinking.
(c) a vector. (d) inhalation.

5. Which of the following diseases is caused by bacteria?
(a) Rinderpest (b) Bloat
(c) Brucellosis (d) Foot and mouth diseases

6. The causative organism of trypanosomiasis is a/an
(a) virus. (b) bacterium.
(c) insect. (d) protozoan.

Answers to Objective Questions

Answers to Objective Questions

1. c 2. b 3. d
4. c 5. c 6. d