

# ERADICATION OF EXTERNAL PARASITES

## LEARNING OBJECTIVES

1. What is an ectoparasite?
2. Why is the control of ectoparasites so important?
3. Where should we seek advice if we think our pet has ectoparasites?
4. Does anyone have any previous experience of ectoparasites?

## ECHO MEANS OUTSIDE.

- Parasites are organisms that live on other animals.
- Ectoparasites are therefore parasites that live on the skin or hair of other animals.

## THERE ARE SIX COMMON TYPES OF ARTHROPODS AFFECTING LIVESTOCK.

1. Flies- most suck blood, deposit eggs in necrotic dead or dying tissue, cause annoyance and live where there is filth and waste matter.
2. Mosquitoes- they suck blood and transmit disease and are especially prevalent in areas where water is allowed to accumulate.
3. Ticks- they suck blood, carry disease, lay eggs in the hair of the animal and transmit parasites
4. Fleas- they suck blood, transmit disease and parasites and live in hair and bedding.
5. Lice- they are a small flat wingless insect, which scratching and eventually resulting in a general decline in overall health and appearance
6. Mites- they are very small insects that produce mange so eventually the skin becomes rough and wrinkled.

## WHY ARE EXTERNAL PARASITES IMPORTANT?

1. Some are just a nuisance to the animals.
2. Some cause skin and eye irritation and damage, which can lead to bacterial infection and fly maggot attack.
3. Some create large wounds.
4. Others suck blood, causing the animals to become weak.
5. Some can spread diseases between animals.
6. Some can cause disease through poisonous bites (toxins).
7. All of these leads decreased production and even death.

- Ectoparasites infect by two ways primarily by **removal of blood, damage to tissues** as well as by **stimulating immune response and inflammatory response**.
- Secondly **ectoparasites acts as vectors for pathogens** (babesiosis, ehrlichiosis, filariosis, louping ill, lyme disease and many more)

TRADITIONAL KNOWLEDGE  
MODERN RESEARCH

## **EXTERNAL PARASITES ARE RESPONSIBLE FOR ECONOMIC LOSSES TO CATTLE AND SHEEP PRODUCERS.**

### **1-DIRECT LOSSES**

1. Direct losses are a result of discomfort and damage caused by the parasites. Discomfort results in drops in milk production and retarded growth rates.
2. Ticks, blowflies, sheep keds and mites cause direct damage to hides and wool or damage resulting from rubbing and scratching due to pruritis.

### **2-INDIRECT LOSSES**

Indirect losses are due to diseases transmitted by ectoparasites.

1. Tick borne diseases - Babesiosis, Anaplasmosis, Dermatophilosis, Theileriosis and Heart Water.
2. Flies - transmit mastitis and keratoconjunctivitis, Trypanosomiasis and other diseases
3. Midges - transmit Bluetongue, African Horse Sickness and other diseases

### **WHAT IS THE ECONOMIC IMPACT?**

1. Losses can occur from these parasites due to irritation, blood loss, depressed appetite, and decreased rate of gain.
2. Mange can affect the mammary gland and interfere with milking.
3. Lactating animals will lose production depending on the level of infestation.

## Life cycles

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- Four major phases of life:
  - Egg
  - Larva
  - Pupa
  - Adult
- Lifecycles vary in timing and duration depending on species

### **CONTRIBUTING FACTORS FOR EXTERNAL PARASITES**

1. Intensive grazing in woodland areas (ticks)
2. Close confinement
3. hot weather conditions
4. Anything that puts cattle in frequent contact with other cattle
5. Overcrowding and poor hygiene
6. excessive humidity and darkness

### **CLINICAL SIGNS**

1. Rough hair coat Lack of appetite, poor rate of gain
2. Depression, lethargy and off-feed.
3. Constant rubbing against fences or equipment.

### **GENERAL MEASURES FOR PREVENTION AND CONTROL OF EXTERNAL PARASITES**

1. Hygienic animal accommodation should be constructed that it can be always kept clean
2. Frequent disposal of manure heaps, old rubbish and vegetations which attracts insects
3. Efficient animal management (grooming, clipping, washing)
4. Periodical spraying or dipping of animals with insecticides
5. Cracks and cervices inside stable should be sealed and closed
6. Pasture rotation.

# 1) CONTROL OF TICKS

## Ticks

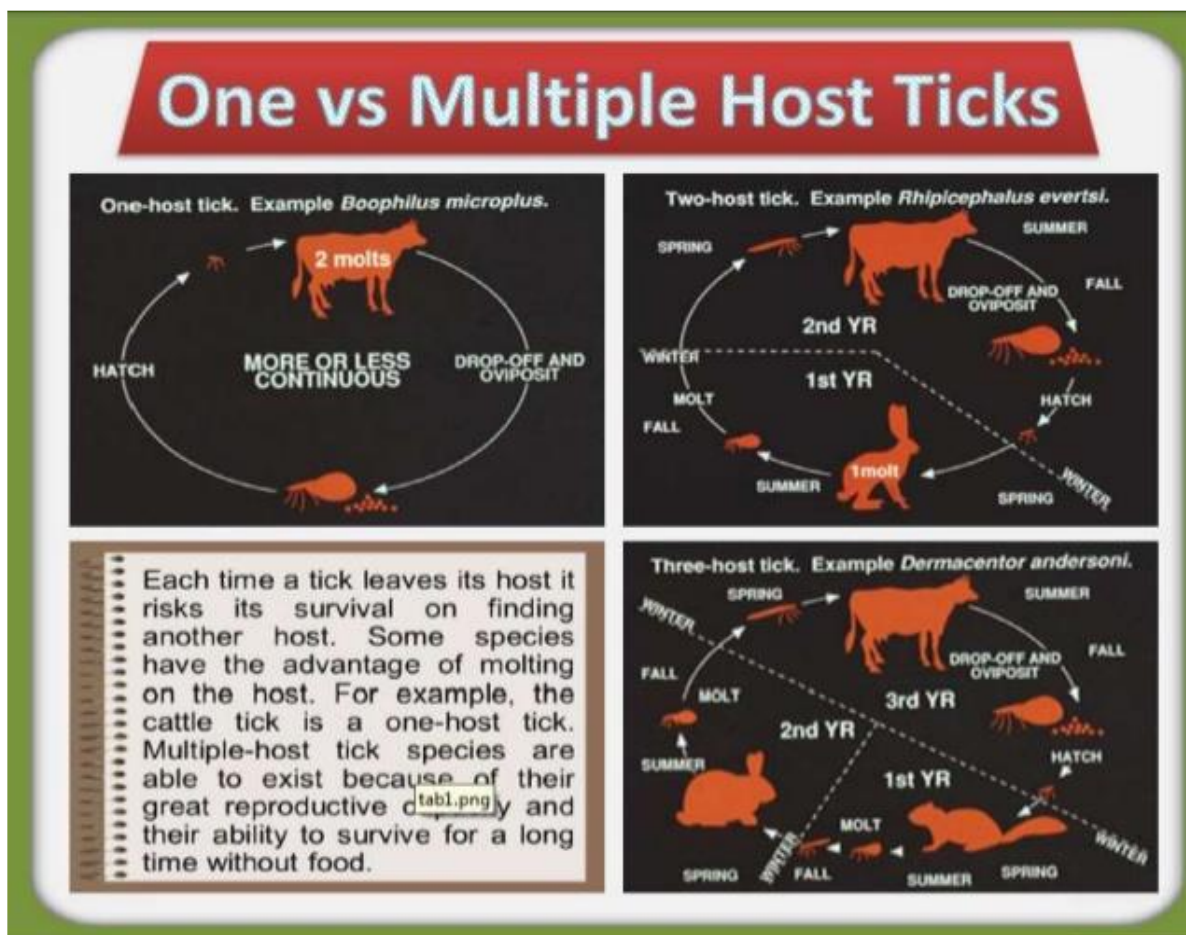
- All spp. Feed on the blood from a host.
- Larval and adult ticks feed, engorging themselves on blood then drop off in to the environment.
- Female ticks then lay eggs in a moist location and then die.



- **TICKS ARE RESPONSIBLE FOR MAJOR ECONOMIC LOSSES** amongst livestock in the world and have adverse effect on livestock host in several ways and parasitize a wide range of vertebrate hosts, and transmit a wider variety of pathogenic agents than any other group of arthropods
- **THE LIFE-CYCLE OF TICKS CONSISTS OF FOUR STAGES**; egg, larva, nymph and adult.
  - The larva and nymph have to take a blood meal from a host before they are able to moult to the next stage.
  - Some species pass their entire life on the one host, others pass different stages of the cycle on successive host, and others are parasitic only at certain stages. Adult ticks require blood for reproduction.
  - They are able to survive for up to two years without feeding. Once they attach to a host they feed for about a week before mating.
  - The female then lays eggs. One-host ticks are more easily controlled than those which pass part of their life cycles away from the host.

**TABLE 1 SINGLE AND MULTIPLE HOST TICKS**

ONE-HOST TICKS	➤ Boophilus spp. and Otobius megnini
TWO-HOST TICKS	➤ Rhipicephalus evertsi and Rhipicephalus bursa
THREE-HOST TICKS	➤ Ixodes spp., Rhipicephalus spp. (except R. evertsi and R. bursa) Haemaphysalis spp., Amblyomma spp., Hyalomma spp., Ornithodoros spp. and Dermacentor spp.



**DAMAGE CAUSED BY TICKS**

- TICK-BITE PARALYSIS** .Acute ascending flaccid motor paralysis caused by the injection of a toxin by certain ticks while feeding. Examples are paralysis caused by the feeding of *Dermacentorandersoni*, sweating sickness caused by *Hyalomma truncatum* and tick toxicosis caused by *Rhipicephalus* species.
- PHYSICAL DAMAGE** .Ticks cause damage to hides and loss of production, anemia and death when they are present in large numbers. Ticks are attached to the body for a blood meal and may cause severe irritation to livestock. Included are "tick worry", irritation, restlessness and weight loss due to massive infestation of ticks

(3) **VECTOR OF PATHOGENS** .The major losses, however, caused by ticks are due to their ability to transmit protozoan, rickettsial and viral diseases of livestock, which are of great economic importance world-wide. Tick-borne protozoan diseases (e.g. Theileriosis and Babesiosis) and rickettsial diseases (e.g. Anaplasmosis) and cowdriosis and tick-associated dermatophilosis are major health and management problems of livestock in many developing countries

### **SERIOUS EFFECT OF TICK INFESTATION:**

1. Ticks adversely affect the economic performance of cattle through blood loss, discomfort; hide damage and weakness.
2. Some ticks have long mouthparts and can cause severe skin damage, which can lead to fly strike and bacterial infection.
3. Ticks can also spread diseases such as piroplasmosis (cattle fever), anaplasmosis, and babesia. Ticks are usually most active during the warmer and wetter parts of the year.

### **CONTROL OF TICK:**

**1 -ON THE PASTURE:** either by taking animals away from the pasture, so the females on the ground will die from starvation after longevity period (40-45 days in summer and 100 days in winter) or indirectly in which the pasture is divided into two parts and allowing the animals to one division (thus acting as collectors of ticks) then treat them by spraying or dipping at 10 days intervals.

**2- IN THE STABLE:** It includes:

1. Removal of bedding and other waste materials and burned.
2. Clean then disinfestations of the stable thoroughly by application of contact poison insecticides.
3. Special attention should be paid to cracks in the walls.

**3- ON THE ANIMALS: EITHER BY:**

**A) SHORT TERM REMEDIATION OF TICKS REQUIRES:-**

- Chemical control of all life stages on the animal while leaving residual acaricide on the hair coat to prevent reinfestation for several days.
- Effective treatments include dipping, spraying and use of certain ear tags.
- Meanwhile Pour-ons, dusts, and backrubs may aid in controlling some species.

**B) LONG-TERM REDUCTION** of tick populations in pastures include



### Cultural or habitat management:

- These methods include pasture burning and long-term pasture rest and rotation.
- No acaricides are approved for application to pasture and range for tick control, but waste land and recreational areas may be treated

### Insecticidal formulations used against ticks



Application method	Insecticide formulation
Dipping, washing or spray-on	malathion (5%), dichlorvos (0.1%), carbaryl (1%), dioxathion (0.1%), naled (0.2%), coumaphos (1%)
Insecticidal powder (dust)	carbaryl (5%), coumaphos (0.5%), malathion (3–5%), trichlorphon (1%)
Residual spray on floors, etc.	oil solutions or emulsions of DDT (5%), lindane (0.5%), propoxur (1%), bendiocarb (0.25–0.48%), pirimiphos methyl (1%), diazinon (0.5%), malathion (2%), carbaryl (5%), chlorpyrifos (0.5%)
Ultra-low-volume fogging (area spraying)	organophosphorus insecticides, carbamate compounds and pyrethroids
Flea and tick collars for dogs and cats	dichlorvos (20%), propoxur (10%), propetamphos (10%), permethrin (11%)

**TREATMENT OF TICK DAMAGE:** Clean the wound then treat it with an insecticidal-disinfectant combination to heal the wound and to keep flies away also systemic antibiotics may be needed.

### **HOW YOU DEAL WITH RESISTANCE OF TICKS TO INSECTICIDES:**

1. Increase concentration and frequency of insecticide applications
2. Change the insecticide to one of the proven effectiveness and has different chemical action.
3. General hygienic measures including pasture rotation.