

LIVESTOCK HANDLER TRAINING MANUALS

MODULE 3: SEASONAL PLANNING

Ticks and wireworm



Understanding and managing the most common parasites.

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Developed by Dr Danie Odendaal

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INTRODUCTION

This manual forms part of Afrivet's series on primary animal health care (PAHC) for small stock and has been developed to help the veterinarian, animal health technician, livestock owner and livestock handler to understand the methodology used when implementing PAHC and production management.

These manuals are ideally suited as practical training aids for training livestock handlers in the principles of planned production management, disease prevention and early disease identification.

The information contained in this manual is a summary of the material used by Afrivet Training Services for the formal training of animal health technicians, extension officers, livestock farmers and livestock handlers.

Developed by Dr Danie Odendaal

Weekly inspection of livestock for internal and external parasite infestations and the signs of production loss caused by parasites

Parasite infestation is a continuous event that increases in certain seasons and decreases in other seasons.

The disease development process is slower than in the case of infectious diseases, which need daily observation. For parasite control, animals must be specifically inspected on at least a weekly basis to determine the level of parasite infestation and production loss during the season when there is an increase in the parasite population.

The livestock handler needs to know the common parasites that cause production loss and death, and how they can be identified and treated on an on-going basis.

The challenges in the control of parasites

- Some parasites, like roundworms (wireworms) and ticks (blue ticks), are always present where there are livestock.
- The presence and effects of internal parasites are largely hidden, because the parasites are normally not visible.
- While the physical damage caused by external parasites is visible, there are also major hidden losses in production and general disease resistance.
- If an effective camp and grazing rotation system is not in place, there is very little management control over exposure to parasites.
- There are many different parasites that affect and cause damage to different body systems.
- Apart from a structured weekly inspection system, very little diagnostic support is available on the farm to estimate the level of infestation when dealing with internal parasites at farm level.
- On-going parasite infestation is one of the most important causes of low production and growth. There is normally a build-up of the parasite population during the wet season, which leads to a high number of deaths in cattle and small stock every year.
- Animals are more susceptible to parasites at specific ages or stages of production.
- There are many parasite control products available, but there is generally a lack of knowledge regarding which product to use and when to use it. The incorrect application of parasite control products can lead to further losses.
- Misconceptions about the cost of treatment are a limitation in parasite control.
- Parasite control remedies are generally poisonous products and can lead to residues and food safety risk, if not properly controlled/ managed.

The opportunities in the control of parasites

- If the livestock worker has a basic understanding of the life cycle of different parasites and the damage they cause, it can improve the control of parasites and limit losses.
- Livestock workers can develop the necessary skills to identify heavily infested animals that need immediate treatment.
- The effects of parasites can be minimised by strategic seasonal treatments or strategically treating animals at specific ages or stages of production.
- The cost of properly used parasite control remedies is far less than the loss of production that occurs without treatment.
- With only a few selected parasite control remedies, most of the internal and external parasite problems can be controlled effectively.
- The correct knowledge and skills in storing, mixing and applying parasite control products will prevent intoxication and residues in animal products.
- Better control or management of parasites leads to improved general resistance and more animals being available for market in a better condition.



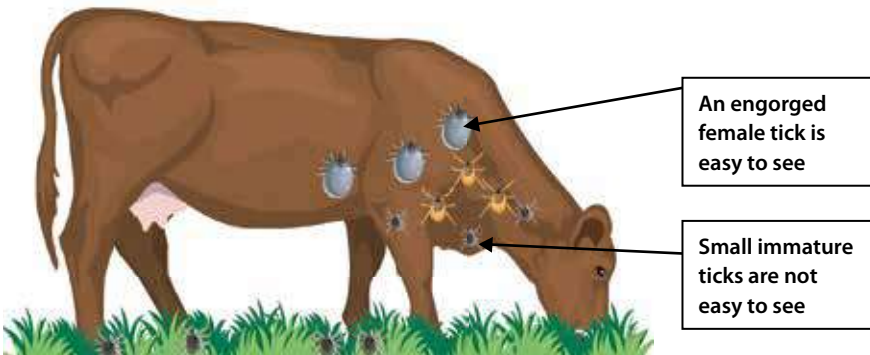
Diseases and production losses ca

1. In-	2. Poison-	3. Infec-	4. Parasites	5. Nutri-
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Parasites are broadly divided into two groups. Parasites that attach on the outside of the animal are called ecto- or external parasites.

External parasites

We will focus on blue ticks as a common external parasite that causes blood loss and lower production, and can transmit diseases in cattle.



Blue ticks



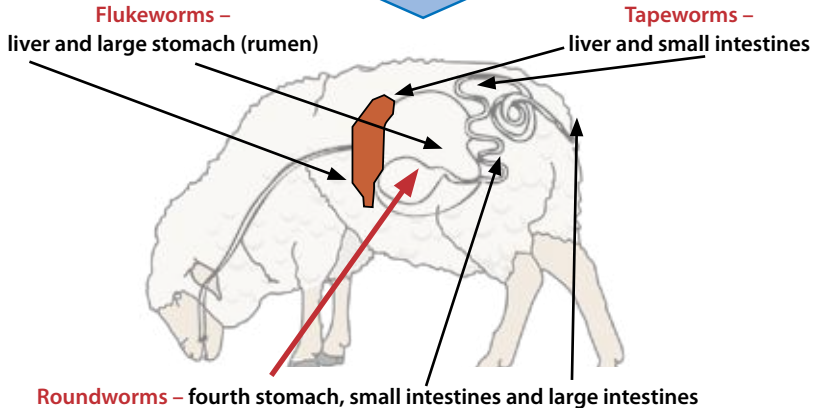
Blue ticks attach mostly to the upper backside of the hind legs, lower sides of the body, neck and neck fold of cattle. Each adult female blue tick will drink a large volume of blood when they engorge, before falling off to produce about 2 500 eggs.

can be triggered by five main causes

Parasites that attach, develop and feed on the inside of the animal are called endo- or internal parasites.

Internal parasites

We will focus on wireworm, found in the fourth stomach of sheep and goats, as a common internal parasite that causes blood loss and death during the wet season.



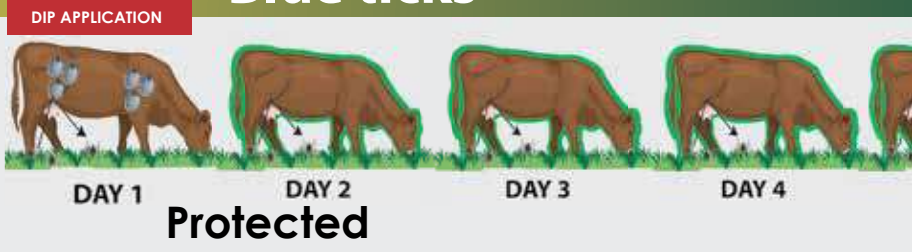
Adult wireworms attach in the fourth stomach and drink 0.05ml blood per worm per day.

If there are 1 000 worms, the animal will lose 50ml blood per day or 1.5litre per month.

Seasonal occurrence of I

The occurrence of parasites must always be understood in the context of a year-per environment that a parasite needs to reproduce, it will either produce more offspring

Blue ticks



Winter:

Blue tick eggs survive the winter to hatch during spring.

Spring:

Blue ticks feed on cattle and multiply.

Summer:

Next generation of blue ticks and multiply

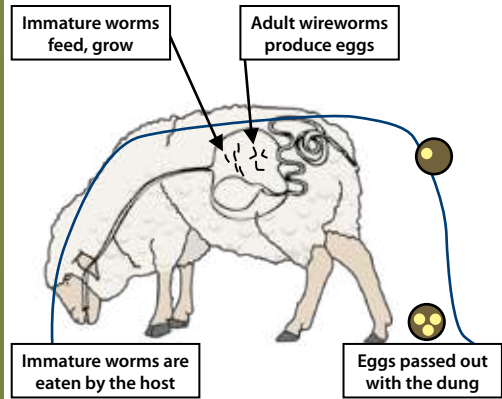
Wireworm

Winter:

Wireworms follow a different strategy to survive this unfavourable period. They survive inside small stock in an inactive form in the wall of the intestines.

Spring:

When conditions become favourable after the first good rain in spring, the inactive worms emerge, start feeding again, grow and become adult worms that produce a large number of eggs.



Summer and

During summer the worms in the adult sheep produce large numbers of eggs. These eggs continuously infect more sheep, especially lambs and calves. The worm population multiplies to reach its maximum level.

Blue ticks and wireworm

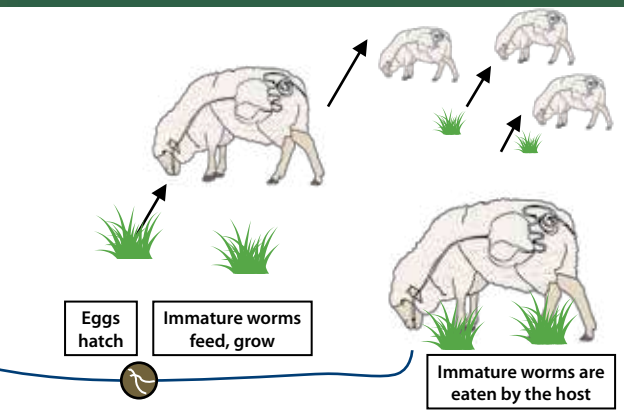
period that consists of a dry season and a wet season. Depending on the specific conditions, the population can increase rapidly under favourable conditions or less under unfavourable conditions.



Summer:
The population of blue ticks increases as they feed on the cow and move further up its body.

Autumn:
Blue tick population reaches a maximum and produces large numbers of eggs.

Following winter:
When it is too cold, eggs don't hatch but survive to hatch in the next spring.



Following winter:
When conditions become unfavourable again, the immature worms that are taken in with the grazing don't attach and feed to become adult worms. Instead, they curl up again in the intestinal wall and survive there until the start of the next rainy season, without affecting the animal.


Spring and autumn:
Large numbers of eggs that are excreted in the dung of the infected sheep. The eggs hatch and young sheep that have very little resistance to these worms die. This happens in autumn, when many animals become infected and die.

Blue ticks on cattle – the d

Week 1

Start of infection. The very small ticks (larvae) are not easy to see because they are as big as the head of a pin. The animal's coat (hair) still looks smooth.




 = Real size of larva

Week 2

The small ticks (nymphs) are still not easy to see because they are now as big as the head of a match. During closer inspection nymphs can be seen in areas where the hair is short, like on the neck fold (dewlap) and backside of the upper back legs.



 = Real size of nymph

Length of development = three weeks (21 days)

The tick larvae hatch from the eggs on the ground when the weather is hot enough. These larvae climb onto grass leaves and seed heads and wait for cattle to brush past when grazing. They then climb onto the cattle and attach by making small holes in the skin with their mouths. Then they start sucking blood from the small blood vessels in the skin and grow.

After one week, the larvae moult (change their skin) to become nymphs, which will attach again, suck blood and grow further. It must be taken into account that new infections with larvae will still take place continuously, adding to the total number of ticks on the cattle.

This part of the disease process is not easily visible.

Disease development process

Week 3

Flat adult ticks are still not clearly visible. **The first adult engorged blue tick females will become visible three weeks after having climbed on the cattle as small ticks (larvae).**

Hereafter large numbers of newly engorged blue ticks will be seen on a daily basis until animals are treated.



= Real size of an adult engorged female

Inspection after treatment with a dipping compound

If the treatment was successful, no engorged female blue ticks should be visible one week after treatment.



until engorged female blue ticks are visible.

After the second week, the nymphs will now moult to become adult ticks, which will attach and feed. At this stage the females are still flat and they will find a male to mate with. After mating at the end of the third week, the female ticks will quickly suck blood and become engorged overnight. The next day they will detach, fall off and produce up to 2 500 eggs.

Effective treatment

A dipping compound must kill all the ticks from very small to adult, present on the cattle at the time of treatment, and must further protect against new infections for up to one week after treatment.

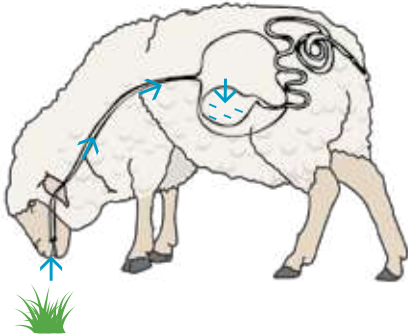
This part of the disease process is easily visible by weekly inspection of the cattle early in the morning.



Wireworm in sheep – the disease

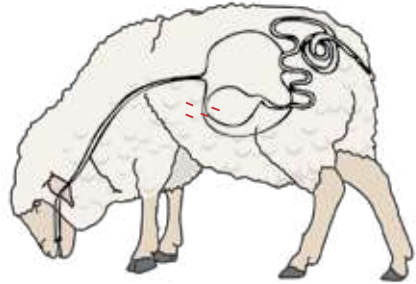
Week 1

Start of infection. No signs of disease can be observed and the animal looks healthy and eats and produces normally.



Week 2

Usually, no signs of disease can be observed, as wireworm doesn't usually affect the desire for food like some other worms.



**Development of wireworm
– three weeks (21 days)**

**Treatment window for
signs of blood loss –**

Wireworm eggs in the dung (on the pasture) hatch when the average daily temperature is above 15°C and the rainfall higher than 50mm. The small worms then feed and develop in the dung until it is ready to infect sheep. The small worms creep out of the dung onto the wet pasture and **are then taken in by the grazing sheep.**

After infection, the small worms attach to the wall of the fourth stomach called the abomasum and they start growing. **During this growth phase they suck a lot of blood on a continuous basis,** which produces the nutrition needed for their fast growth. Every drop of blood lost in this way will decrease the animal's production.

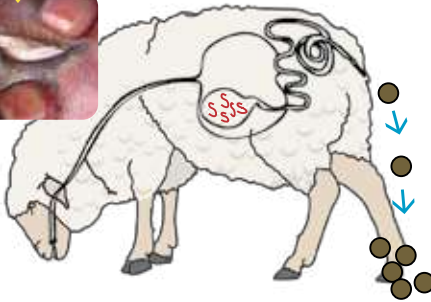
This part of the disease process is not easily visible.

Disease development process

First signs of disease

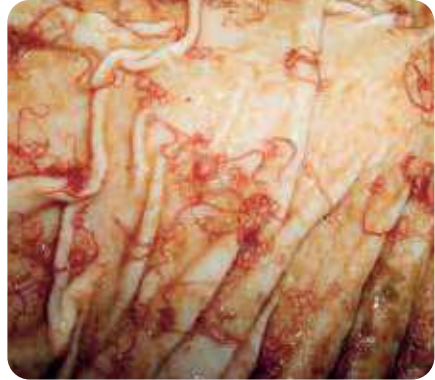
Week 3

Individual sheep can fall behind when herded, or develop bottle jaw, which is a sign of slow blood loss. If the infection is advanced, the animal suddenly shows weakness and dies shortly afterwards, without showing other signs of disease.



Examination of the dead sheep

When a veterinarian cuts open the dead sheep, he/she will look for signs of blood loss and masses of adult worms in the fourth stomach.



sheep that show pale inner eyelid

Sheep can die because of blood loss

The adult worms reach maturity from three weeks after they have infected the animal. They will now mate and produce a large number of eggs on a continuous basis. The eggs mix with the dung, which then becomes the dung pellets excreted by the sheep onto the grazing. If it is warm and wet, the eggs will hatch and start the next cycle of producing infective small worms on the grazing.

Fresh dung pellets can also be collected from sheep and sent to the veterinarian for examination and determination of the number of worm eggs. This gives an indication of the number of worms in the sheep and is also used to determine if treatment is necessary.

This part of the disease process can only be identified by weekly inspection of the inside lining of the eyelid of animals.



Prevention of parasites

There are four basic approaches to disease prevention regarding parasite control.

1. Increase general resistance

All animals will be infected equally by internal and external parasites. Animals in a good condition show more resilience, meaning they can withstand the negative effect on the body created by the feeding parasites more effectively.

2. Increase specific resistance

Individual animals will have more or less resistance to parasites and therefore a great deal of emphasis is now placed on identifying and culling animals that have weak resistance to parasites. This is done as part of the weekly inspection of individual animals, to determine the visible effect of the parasites on the animals.

The first-ever vaccine against wireworm is available in South Africa. This is a unique tool to increase the specific resistance to wireworm.

3. Decrease exposure

Effective control of parasites during the start of the wet season would prevent an explosion in the number of parasites later during this season. Specifically decreasing the exposure of very susceptible animals like lambs to wireworm infection, is a management action that must be planned and executed on every sheep farm.

4. Avoid exposure

Follow strict biosecurity policy for testing new animals. These diseases must not be introduced onto a farm.

The important functions of the livestock handler

- Structured weekly inspection of the animals to determine the level of infestation and the effect that the parasites are having on production.
- Good record-keeping and weekly reporting of the status of individual animals as well as the group of animals. This would enable the manager to make a decision about the necessary treatment against the parasites.

Treatment for parasites

There are three types of animal healthcare remedies available at farm level for the control of parasites.

- 1. Products to treat against internal parasites**
- 2. Products to treat against external parasites**
- 3. Combination products to treat against internal and external parasites**

All of these products are chemical compounds that must be used responsibly and at the correct dosage by informed users. They can be harmful to both the user and the animal applied to. Correct storage and application methods must always be employed to maintain the efficacy of the products and to prevent any negative side effects in the animal.

The important functions of the livestock handler

- To have a sound knowledge of the parasite control products used on the farm.
- To ensure that parasite control products are stored correctly.
- To apply the different types of parasite control products correctly and to maintain the equipment and facilities used for application of these products.
- To do structured weekly inspections in order to follow up and evaluate the effectiveness of treatment given to control parasites.



ERADITICK 250

TREATMENT OF EXTERNAL PARASITES
WITH PLUNGE DIP/SPRAY

Reg No. G4047 (Act 36/1947)

Amitraz 25 % m/v

Controls ticks and kills lice and mange mites on cattle. Controls ticks, controls sheep scab mites and kill itch mites and mange mites on sheep and goats. Has a detaching effect on ticks. OXPECKER COMPATIBLE.



Spray: 1 L / 1 000 L water

Boost with 100 ml / 200 head after 400 head sprayed

Plunge (total replenishment): 1 L / 5 000 L water

Plunge (lime stabilised): 1 L / 1 000 L water



Plunge (fresh fill):
1 L / 750 L water



Plunge (fresh fill):
1 L / 750 L water

Withdrawal period:

Meat: 7 Days

Milk: None

Registration holder: ECO Animal Health Southern-Africa (Pty) Ltd Co. Reg. No. 1992/000835/07



Packaging available

500 ml, 1 L, 5 L, 10 L

ERADIWORM + TAPE

INTERNAL PARASITE REMEDIES
DOSE

Reg No: G4244 (Wet 36/1947)

Levamisole HCl 37,5 mg/ml / Praziquantel 18,8 mg/ml

Roundworm and Milktapeworm remedy for cattle, sheep, goats and ostriches.

Withdrawal period:

Meat: 7 Days

Milk: None



Registration holder: ECO Animal Health Southern-Africa (Pty) Ltd. Mpy. Reg. No. 1992/000835/07



Packaging available

200 ml, 1 L, 5 L, 10 L

 10 ml/50 kg  2 ml/10 kg  1 ml/1 kg

WIREVAX

WORM VACCINES

RSA Reg. No. G4200 (Act 36/1947)

Haemonchus contortus antigen 5 µg/ml

A vaccine to aid in the control of wireworm infestations in sheep.



Withdrawal period:

Meat: None

Milk: None

Administration:

SC



Packaging available

250 ml



Registration holder: Afrivet Business Management (Pty) Ltd. Co Reg 2000/011263/07