



LIVESTOCK HANDLER TRAINING MANUALS

MODULE 3: SEASONAL PLANNING

Flukes



The management of flukes through prevention and treatment.

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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

Recognising the signs of disease when high levels of infestation occur

Flukes are parasites that only occur on farms where the environmental conditions exist for their propagation and transmission.

When environmental conditions are optimal during years of high rainfall the level of infestation can increase dramatically causing severe production loss and deaths even in adult animals.

For effective parasite control, an additional weekly inspection must become part of the tasks done by the livestock handler during the danger period.

The livestock handler needs to understand the complex life cycle of flukes for better prevention of infestation or for timely treatment in the case of sudden outbreaks.

Challenges faced in controlling flukes

- Flukes occur on farms where the right environmental conditions exist for them to complete their complex life cycle, which includes a developmental phase in freshwater snails.
- These snails live in areas where there is slow-flowing water streams and water holes (vleis) or areas covered with a shallow layer of standing water during the wet season (pans).
- The presence and effects of low-grade infestation in the animals are largely hidden but under conditions where there is a very high infestation rate over a short period, signs of disease can be seen before animals are severely affected or killed owing to the effect of these parasites.
- The young and developing flukes cause significant damage to the organs in which they mature, leading to the malfunctioning of these organs or body systems.
- Young grazing animals and adult animals in bad condition are more susceptible to infestation by these flukes.
- There can be effective control of exposure to flukes if the life cycle is understood and preventative grazing management is followed to reduce exposure.
- Very specific parasite control products must be used to control the different fluke species at the different stages of infestation. The use of the wrong product may lead to further losses.

Opportunities for better fluke control



- The presence of flukes on a specific farm must first be confirmed by obtaining feedback from the abattoir or tests by the herd veterinarian.
- A basic understanding, by the livestock handler of the life cycle of different flukes and the damage they cause, can improve the control and limit losses.
- Livestock handlers can develop the skills needed to identify heavily infested animals that need immediate treatment to minimise production loss or deaths.
- A combined approach that includes reduction of exposure during the danger period and strategic or tactical treatment during specific seasons must be followed.
- The knowledge of the specific parasite control remedies used for the control of flukes is essential.



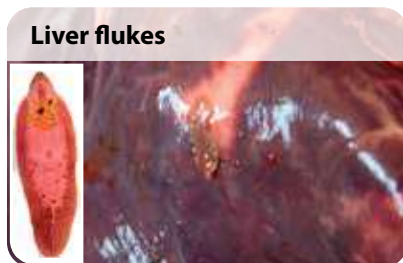
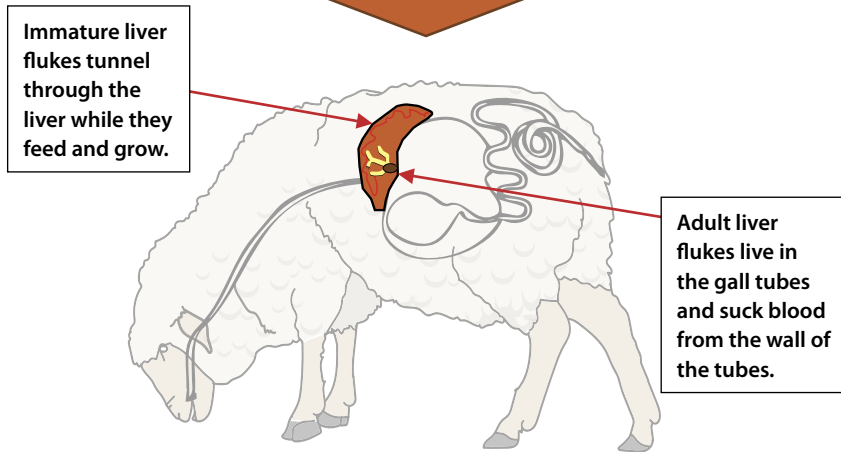
Diseases and production losses

In this module, we focus on a specific kind of internal parasite called flukes.

1. In-	2. Poison-	3. Infec-	4. Parasites	5. Nutri-
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Liver flukes

A parasite that occurs in the liver of cattle, sheep and goats causing damage to this vital organ.



The liver is damaged by the immature flukes that tunnel through the liver tissue. The adult flukes in the gall tubes cause a reaction from the body and the tubes become thickened and can be obstructed by the flukes.

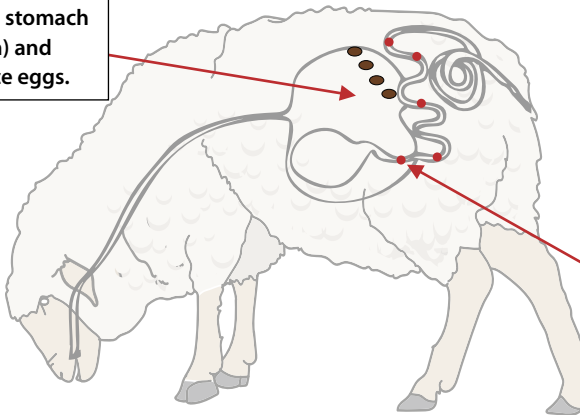
s triggered by five main causes

Both these endoparasites cause major continued losses and deaths annually in South Africa. Control can only be improved by a better understanding of these parasites.

Stomach (conical) flukes

The adult flukes are found in the big stomach (rumen) but the damage is caused by the young flukes in the small intestine of cattle, sheep and goats.

Adult stomach flukes live in the big stomach (rumen) and produce eggs.



Immature stomach flukes live and feed from the wall of the small intestine.

Stomach (conical) flukes



The lining (wall) of the small intestine is severely damaged by the immature flukes, which cause wounds, causing blood components to seep into the intestine, causing foul-smelling, watery diarrhoea.

Life cycle of flukes

Freshwater snails are active during late summer and autumn.

Liver fluke



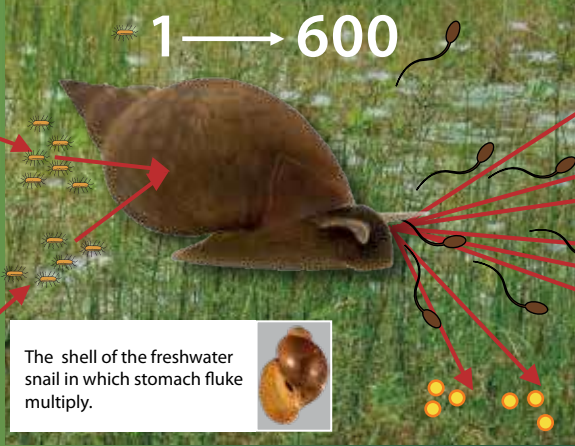
The shell of the freshwater snail in which liver fluke multiply.



Stomach fluke



The shell of the freshwater snail in which stomach fluke multiply.



Winter

Adult liver and stomach flukes inside livestock produce eggs that are excreted with the dung. Eggs in the dung hatch with an increase in temperature.

Spring

At this stage of the parasite it is washed out of the dung by rainwater into areas with standing water. Freshwater snails become infected by this stage of the flukes. These flukes will now multiply inside the freshwater snail.

Summer

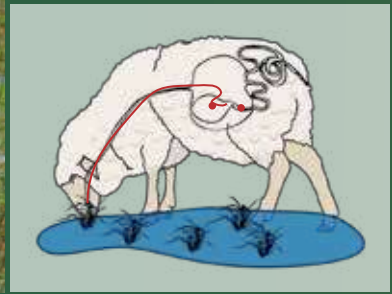
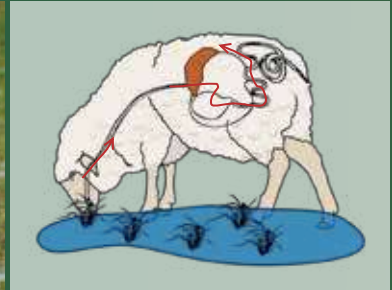
During... again.
At this... will att...
This is...



Safer period to graze wetlands.

in the environment

the spring, summer and early autumn.



her and autumn

high rainfall, the flukes that have multiplied inside the freshwater snails are released into the water

stage, the flukes can swim. The small flukes swim until they reach a plant that grows in the water. They attach to the plant and form a protective capsule around it.

the stage that is infective for livestock and in this form, the flukes can survive for a few months.



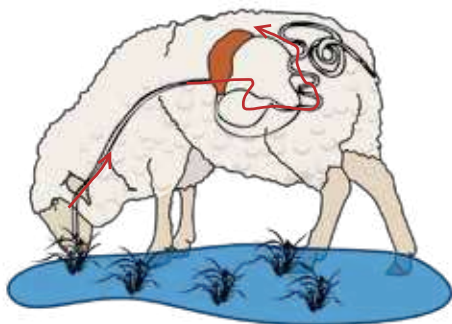
Danger period to graze wetlands on infected farms.

Liver fluke in animals – the d

Start of infestation

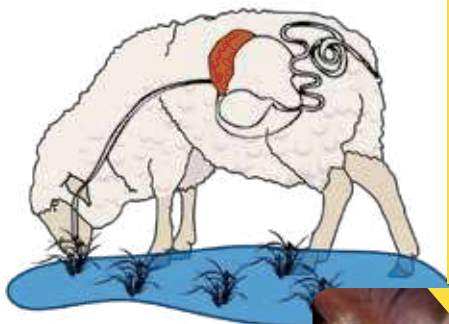
The signs of disease will depend on the number of infective flukes (high, medium or low) ingested by the animal.

The signs that will be seen with a medium to high infection are described here.



Week 1-8

Animals show rapid weight loss, weakness, signs of blood loss and even sudden death if the infestation rate is extremely high.



First signs of disease



Development of liver fluke inside

When the animals graze in wet areas they take in the immature flukes which are attached to plants.

Inside the animal, these immature flukes move through the wall of the small intestine, migrate to the liver and penetrate the liver.

The immature flukes will then start to eat liver tissue, forming small tunnels in the process.

Immature flukes feed on the liver for the next six to eight weeks while growing, causing severe damage to the liver.

Liver damage depends on the number of immature flukes feeding on the liver tissue.

By week eight, they become adult flukes that enter the small bile ducts (tubes) and migrate to the larger bile ducts.

Disease development process

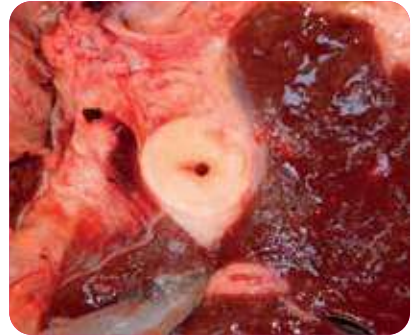
>12 Weeks

Affected sheep can fall behind when herded or develop bottle jaw – a sign of slow blood and protein loss. Continued weight loss, especially during the period when the grazing is poor.



Examination of dead sheep

When a veterinarian cuts open the dead sheep he/she will look for signs of liver damage (thickened gall tubes) and flukes in the gall



cattle, sheep and goats

The adult flukes attach to the wall of the bile ducts and feed by drinking blood. After a month, each adult starts to produce eggs (20 000 per day) which go with the bile into the intestine and out with the dung.

The thin walls of the bile ducts now become thickened and white and the whole liver can become hard (fibrotic) owing to the body's reaction to this infestation.

Diagnosis of infestation in the live animals

To confirm infestation in the live animal, dung must be collected and sent to the veterinarian for tests to determine if there is a liver fluke infestation. The newest tests can identify the infestation early (from four weeks after infestation), which will be at the time when the first signs of disease are observed in the case of a very severe infestation.



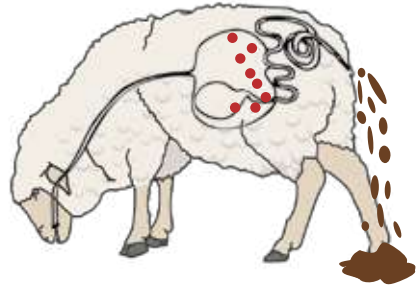
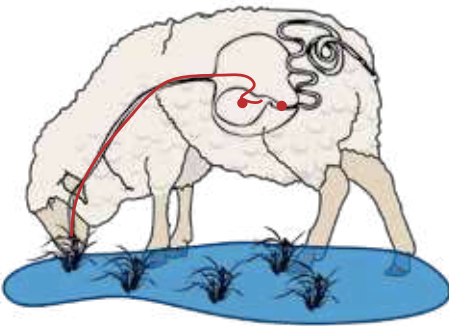
Stomach (conical) fluke in animals

Start of infestation

No signs of disease can be observed and the animal will look healthy and will eat and produce normally.

Week 1-8

The first signs of disease are that the animals stop eating, develop severe foul-smelling and watery diarrhoea and lose condition rapidly. Many animals can die when there is a severe infestation.



Development of stomach flukes inside

When the animals graze in wet areas they ingest the immature flukes attached to plants.

Inside the animal, these immature flukes go to the small intestine where they lose the protective capsule that was protecting them in the environment.

They now attach to the wall of the small intestine with very strong suckers to drink blood.

The immature flukes suck a piece of the lining of the intestinal wall into their body opening, which causes damage to and holes in the lining of the intestine. This causes blood components to leak into the intestine.

The damage depends on the number of immature flukes, which will become adults after 6–8 weeks.

- the disease development process

>12 Weeks

The adult stomach flukes cause no harm to the animal and no signs of disease are apparent.



Examination of dead sheep

When a veterinarian cuts the dead sheep open, he/she will look for the presence of immature flukes in the small intestine and signs of damage of the lining of the small intestine.



cattle, sheep and goats

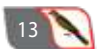
The adult flukes migrate to the big stomach (rumen) where they will attach without causing damage to the animal.

After four weeks, they will start to produce eggs that will pass out with the dung onto the grazing.

Under the right conditions, these eggs will hatch to infest the freshwater snails again.

Diagnosis of infestation in the live animals

To confirm infestation with immature stomach flukes in the live animal, at least a dessertspoon full of the watery dung must be collected when the first signs of diarrhoea are observed. This must be sent to a veterinarian for microscopic tests to determine if there is an immature stomach fluke infestation.



Prevention of fluke investation

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

1. Increase general resistance



2. Increase specific resistance



3. Decrease exposure



The most important approach to reduce the losses caused by flukes is to avoid livestock from grazing in wet areas when there can be high numbers of the infective stage of parasites on plants in the water. In the summer rainfall areas this is especially during the summer, autumn and even the early winter if it was a very wet year.

The second approach to reduce exposure is to treat livestock at the end of winter strategically to kill the adult flukes that produce a high number of eggs daily. In this way, the freshwater snail infection is decreased during spring leading to a reduced number of infective flukes on the grazing during summer and autumn.

4. Avoid exposure



The safer time to graze vlei areas on infected farms is during the one to two months before the rainy season when other grazing is scarce.

The important functions of the livestock handler

- Understand and avoid livestock from grazing in waterlogged areas during summer, autumn and early winter to decrease their exposure to the infective stage of the flukes, which attach to the plants in or on the edges of these wet areas.
- Look out for freshwater snails in drinking troughs and clean the troughs if they contain any snails because the flukes can also complete their life cycle in these water sources.

Treatment of liver flukes

There are specific internal parasite control products available to control flukes on infected farms.

Products to treat against liver flukes

- *Treatment against the immature flukes that tunnel through the liver.*

Only a few products are effective against immature flukes. The only product currently available that can treat these flukes when they migrate through the liver contain the active ingredient triclabendazole.

ECOFLUKE

INTERNAL PARASITE REMEDIES

DOSE

Triclabendazole 10 % m/v

Liver fluke remedy against immature and adult liver fluke and giant liver fluke in cattle, sheep and goats.



Withdrawal period:

Meat: 28 Days

Milk: 14 Days

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

RSA Reg. No. G3383 (Act 36/1947)
Namibia S0 V04/18.1.1/537



Packaging available

5 L



6 ml / 50 kg



1 ml / 10 kg

Consult with the herd veterinarian or Afrivet agent about the best choice from the complete range of Afrivet products available for treating flukes.

The important functions of the livestock handler

- Observe and report the first signs of severe fluke infestation for immediate identification of the cause and treatment.
- Liver fluke – weakness, rapid weight loss, pale inner eyelid and sudden deaths.
- Stomach fluke – all the above signs plus the animals stop eating but still drink water and develop severe watery and foul-smelling diarrhoea.



Treatment of stomach (conical) flukes

There are specific internal parasite control products available to control flukes on infected farms.

Products to treat against conical (stomach) flukes

- *Treatment against immature flukes that severely damage the lining and function of the small intestine.*

Only a few products are effective against immature flukes. When animals are affected by immature flukes, they need treatment with an effective product immediately to prevent further losses or deaths.

ECOLINT SUPER INTERNAL PARASITE REMEDIES DOSE

Reg. No. G3065 (Act 36/1947)

Contains Resorantel 25% m/v

A tapeworm remedy for cattle, sheep, goats and ostriches a conical fluke remedy for cattle, sheep and goats



Withdrawal period:

Meat: 2 Days

Milk: 2 Days

Registration holder: ECO Animal Health Southern-Africa (Pty) Ltd.



Packaging available

5 L, 1L

Consult with the herd veterinarian or Afrivet agent about the best choice from the complete range of Afrivet products available for treating conical (stomach) fluke.

Marketed by: Afrivet Business Management (Pty) Ltd |
Co. Reg. No.: 2000/011263/07

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