Fluke costs more than $100 million

The FlukeKill programme increases production.

Designed by Dr Joe Boray
World Authority on Liver Fluke

"Virbac Australia wishes to thank Dr Joe Boray for assisting in developing Australia’s first effective, sustainable and economic programme to control liver fluke, FlukeKill, designed for Australian producers using Australian manufactured products."
**Fluke kills profit**

**In beef**

*Lower growth rates. Lower feed conversion*

A heavy infection can cost up to 28.5% in reduced weight gain. Liver fluke ([Fasciola hepatica]) can affect weight gains in young growing cattle – having a direct effect on your income. Fluke also cause reduced milk production, lower birth weights, lower weaning weights and reduced fertility and can result in death in young animals that are severely parasitised.

**Important**

Adult cattle may tolerate a fluke burden without it resulting in death, however fluke will severely affect productivity.

The graph below charts the reduction in body weight expressed as weight loss in grams per week on calves in differing severity of liver fluke infection.

**Reduction of body weight in calves infected with liver fluke**

<table>
<thead>
<tr>
<th>Flukes in Liver</th>
<th>Reduction in Body Weight (grams per week)</th>
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</thead>
<tbody>
<tr>
<td>30-80 flukes</td>
<td>0</td>
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<tr>
<td>200 flukes</td>
<td>1400</td>
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**In dairy**

*Reduced production*

A heavy infection can cost around $75 in lost milk production per cow per year. The effect of liver fluke ([Fasciola hepatica]) on milk production is well documented. In high risk fluke areas fluke is a significant threat to milk production. Liver fluke infections have been shown to reduce conception rates in heifers by 50%.

The graph below charts the reduction in milk production in cows infected with liver fluke. Liver fluke infections may result in a losses of milk production of around $90 per cow, per lactation.

**Reduction of milk production in cows infected with liver fluke**

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**Fluke control can be challenging**

One beast can carry an infection of up to 300 mature flukes. Each fluke can lay up to 50,000 eggs. These eggs hatch to first stage fluke. These miracidia multiply inside the snail up to a factor of 4,000.

**Lifecycle of liver fluke**

1. Adult flukes in the bile ducts produce eggs, which are passed out in manure and hatch when separated from faecal material in wet areas.
2. The first larvae or miracidia released invade the lymnaeid snails living in wet areas.
3. The miracidia develop and multiply as sporocyst, rediae and cercariae.
4. The tadpole-like cercariae leave the snails.
5. The cercariae attach to vegetation, forming metacercariae. This is the infective stage of the fluke.
6. Cattle ingest the metacercariae. The young flukes hatch from the metacercariae in the small intestine and then penetrate the intestinal wall. The flukes are chemically attracted to the liver and begin their migration.
7. The young flukes penetrate the liver capsule and migrate through the liver tissue for six to eight weeks before entering the bile ducts to become adult flukes.

Nationally, an estimated six million cattle graze on pastures where liver fluke is endemic, according to the NSW Department of Agriculture. Cattle producers spend approximately $18 million a year on fluke drenches alone and together with lost production, costs in excess of $100 million a year.
FlukeKill kills fluke

Best treatment. Best timing.
The FlukeKill programme uses the best available treatments with strategic timing to reduce the production losses caused by fluke.

Best cost-effective control
Only the FlukeKill programme offers sound economic control of not only fluke, but also all internal and external parasites, to maximise your income opportunities.

Only two treatments
The critical timing for treating fluke is autumn and spring, and if your cattle have a heavy infection, a third treatment is recommended in mid-summer.

April/May treatment
The autumn treatment is required to control immature and resident mature fluke.
Use Flukazone C plus Selenium.

Late Aug/Sept treatment
The late winter/early spring treatment is necessary to clean up any remaining fluke and to stop egg contamination on pasture over spring.
Use Virbamec Plus.
In case of regions in a higher altitude where the season is later, treatments should be delayed accordingly (i.e. May and September).

The best tools for the job
All treatments from summer through to mid-winter should always be Flukazone C plus Selenium. This gives the best control possible of immature fluke.

All treatments from late winter to early summer should always be Virbamec Plus. The majority of fluke are mature, therefore an adulticide is all that is required. This is also a critical timing for effective round worm control.

When to treat dairy cows
The dry off treatment is critical in a dairy operation. Flukazone C plus Selenium cannot be used on lactating dairy cows but should be used routinely at dry off.

Spring treatment is normally during lactation so use Virbamec Plus as it has a nil milk withholding period. In the case of a late or winter dry off, use Flukazone C plus Selenium at dry off and follow up with a mid-lactation treatment 16 weeks later with Virbamec Plus.

Fluke and the environment
Cattle are very prone to liver fluke infections. During late summer and autumn, the most likely time for infection, pastures dry off and grazing stock will tend to chase green pick in wet areas. In these wet and cool environments, such as swamps, springs, creeks, gullies and irrigation channels, liver fluke thrive. The fluke and their intermediate host (snails) are regulated by temperature and rainfall and require a wet environment to complete their lifecycle.

An autumn treatment with Flukazone C plus Selenium is highly effective against immature fluke. This is essential to remove fluke burdens picked up during the summer and autumn months. Once the average daily temperature drops to 10°C or after the first few frosts of the season, development of flukes in snails slows down and the opportunity for cattle to pick up new infection starts to diminish.

With little in the way of new infection to challenge the animals during winter, by the end of the winter season most of the flukes left in the animal are mature flukes. It is necessary to remove these mature flukes to prevent pasture contamination during spring. This is an essential preventative treatment that helps break the life cycle. As the flukes are mostly mature at this time, an adulticide treatment such as Virbamec Plus will yield excellent results.

The FlukeKill programme
Effective, sustainable and economical parasite control is only two treatments away.

1. Curative
Optimal time for an autumn treatment is April/May. The autumn treatment is necessary to control both immature and adult fluke.
Use Flukazone C plus Selenium

2. Preventative
Optimal time for a spring treatment is late August/September. The late winter/early spring treatment is important to remove all remaining fluke & stop pasture contamination of fluke eggs.
Use Virbamec Plus

3. Optional
The third mid summer treatment is necessary for heavily infected properties.
Use Flukazone C plus Selenium
The FlukeKill products

Flukazole C plus Selenium
Proven patented technology from Virbac. Flukazole C plus Selenium is a unique formulation combining triclabendazole and oxfendazole.
- Flukazole C plus Selenium is the only product to carry an APVMA label claim specifically for the control of 2-week old fluke.
- Flukazole C plus Selenium has always demonstrated efficacy of 99% or greater against any age of fluke that has been tested.
- Flukazole C plus Selenium has been comparatively trialed against both competitor oral fluke drenches and also pour-on fluke drenches.

Comparative efficacy of oral flukicides on 2 and 4 week old stages

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<thead>
<tr>
<th>Flukazole C + Selenium</th>
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<td>% reduction</td>
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Comparative efficacy of cattle flukicides. Flukazole C + Selenium versus pour-on treatment

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Virbamec Plus
Virbamec Plus is an injectable combination of ivermectin and clorsulon. It offers the proven endectocide ivermectin for internal and external parasite control with the highly effective flukicide clorsulon.
- Virbamec Plus is highly effective against adult fluke.
- Virbamec Plus is ideal for use in rotation with Flukazole C plus Selenium.
- Virbamec Plus may be used in lactating dairy cows.
- Virbamec Plus has a shorter meat withhold and ESI than most commonly used flukicides.

Response in milk yield following treatment with an adulticide fluke product [schematic diagram]

| Treated dairy cows produced 8% higher milk yield |

Now available: The FlukeKill pack

Oral drenching has never been easier!
Both autumn and spring treatments in one pack.
Pack contains:
- 15 Litres of Flukazole C plus Selenium
- 3 Litres of Virbamec Plus
- Bonus NJ Phillips Powermaster for effortless drenching

1 FlukeKill pack will treat 250 head once in autumn and once in spring.

NJ Phillips Powermaster
- Configured for LP gas
- All attachments included
  - just connect to gas bottle
- Includes Hi-flow floating hook

FlukeKill pack only available while stocks last.
The FlukeKill Programme increases production.

Want more information?
Call 1800 009 847 or talk to your local Virbac Animal Health representative.

REFERENCES:
5. Dr Joseph C. Boray, NSW Agriculture Agfact A0.9.57, second edition 1999.
6. APVMA registered products as at November 2006.

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www.virbac.com.au

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