**WHAT IS THE REAL COST OF LIVER FLUKE?**

Successful fluke control can be challenging because it’s not enough to just remove fluke from cattle, you also need to consider the fluke population present in the environment.

**EFFECTIVE CONTROL OF FLUKE IN CATTLE**

The Virbac FlukeKill program offers best practice integrated fluke management while considering other threats to health and productivity. The program is designed to deliver the highest productivity outcomes and best pasture management, as well as provide a fluke resistance management plan.

**THE RIGHT PRODUCT AT THE RIGHT TIME**

Fluke have a complex life cycle with several stages of growth both on pasture and inside cattle. This means that strategic treatments at the right time can break the reproductive cycle and reduce the presence of fluke on pasture.

**LIVER FLUKE CYCLE**

Fluke are a common parasitic infection in cattle and can cause significant economic losses. Understanding the life cycle of fluke is crucial for effective control.

1. **Adult female fluke eggs which are passed out in faeces.**
2. The eggs hatch and become larval (miracidium) stage.
3. Larvae (miracidia) are released from eggs and enter freshwater snails (intermediate hosts).
4. The parasites reproduce within the snail, becoming cercariae.
5. The cercariae are released into the water where they can infect the definitive host (cattle).
6. The parasites then move into the bile ducts, excreting eggs as they migrate.
7. The parasites mature further and release eggs.
8. The eggs are then passed out in faeces, completing the life cycle.

**REFERENCES:**

6. Šimůnek, M., Šimůnek, L., Klimes, P. (2007). Effect of the presence of Fasciola hepatica on the growth and weight gain by up to 8-9%.

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**FLUKEKILL RESISTANCE MANAGEMENT PROGRAM**

**USE THE MOST EFFECTIVE PRODUCT**

A more potent chemical treatment means less fluke survive to breed resistance and less pasture contamination.

**ROTATE TO A DIFFERENT ACTIVE**

Resistance can develop when one chemical is used for an extended period of time. Rotating to a different active such as Nitroxime or Nitrofluke Injection can help combat or prevent resistance.

**MONITOR THE EFFECTIVENESS OF TREATMENT**

Often by the time you’ve found fluke resistance, the damage is already done. Monitor your treatment through regular testing.

**LATE WINTER/SUMMER**

Optimal time for an autumn treatment is August/September. This is important to remove remaining fluke and stop contamination with fluke eggs.

**SUGGESTED TREATMENTS**

- Use Nitromec/NitroFluke Injection or Flukazole C Plus Selenium

**REFERENCES:**

1. Šimůnek, M., Šimůnek, L., Klimes, P. (2007). Effect of the presence of Fasciola hepatica on the growth and weight gain by up to 8-9%.
2. Šimůnek, M., Šimůnek, L., Klimes, P. (2007). Effect of the presence of Fasciola hepatica on the growth and weight gain by up to 8-9%.
3. Šimůnek, M., Šimůnek, L., Klimes, P. (2007). Effect of the presence of Fasciola hepatica on the growth and weight gain by up to 8-9%.
5. Šimůnek, M., Šimůnek, L., Klimes, P. (2007). Effect of the presence of Fasciola hepatica on the growth and weight gain by up to 8-9%.
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**THE GOLD STANDARD LIVER FLUKE CONTROL**

**CONTROL 2 WEEK OLD FLUKE**

**RESISTANCE MANAGEMENT PROGRAMS**

**COMPLETE FLUKE MANAGEMENT PROGRAMS**

**RESISTANCE MANAGEMENT PROGRAMS**

**COMPLETE FLUKE MANAGEMENT PROGRAMS**

**LIVER FLUKE CONTROL**

**FLUKEKILL RESISTANCE MANAGEMENT PROGRAM**

**THE NUMBER OF KEY ELEMENTS IN AN EFFECTIVE MANAGEMENT PROGRAM**

- **Monitor your treatment effectiveness**
- **Rotate to a different active**
- **Use the most effective product**
- **Use Nitromec/NitroFluke Injection or Flukazole C Plus Selenium**

**REFERENCES:**

6. Šimůnek, M., Šimůnek, L., Klimes, P. (2007). Effect of the presence of Fasciola hepatica on the growth and weight gain by up to 8-9%.
7. Šimůnek, M., Šimůnek, L., Klimes, P. (2007). Effect of the presence of Fasciola hepatica on the growth and weight gain by up to 8-9%.
8. Šimůnek, M., Šimůnek, L., Klimes, P. (2007). Effect of the presence of Fasciola hepatica on the growth and weight gain by up to 8-9%.

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**LIVER FLUKE CONTROL**

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- **Rotate to a different active**
- **Use the most effective product**
- **Use Nitromec/NitroFluke Injection or Flukazole C Plus Selenium**

**REFERENCES:**

**CONTROL 2 WEEK OLD FLUKE**

**MIGRATING FLUKE**
The damage is done sooner than you think

It isn’t enough to kill adult fluke. Migrating fluke begin causing irreparable damage from the first week they are ingested.

- At 1 week old, liver fluke are already causing damage to cattle’s liver.
- At 4 weeks old, much of the damage is already done.
- At 8-12 weeks liver flukes are fully grown adults and have migrated through the liver into the bile duct.

**POUR ON SAVES TIME, BUT AT WHAT COST?**

To control 2 week old fluke, triclabendazole needs to reach a high concentration in the liver. The concentration of the active in the blood is 8 times higher in an oral drench than in a pour on.

**PERCENTAGE REDUCTION OF 2 WEEK OLD FLUKE**

<table>
<thead>
<tr>
<th>Active ingredients</th>
<th>Liver migration</th>
<th>Bile duct entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triclabendazole</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Oxfendazole</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Albendazole</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Oxyclozanide</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Nitroxynil + Clorsulon (NitroFluke)</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Nitroxynil + Clorsulon + Ivermectin (Nitromec)</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Triclabendazole + Oxfendazole</td>
<td>+</td>
<td>-</td>
</tr>
</tbody>
</table>

Product synergy refers to the combination of two products achieving a greater efficacy than either of those two products used alone. The synergistic effect of the actives in Flukazole C, Nitromec Injection as well as NitroFluke Injection means they are the only fluke treatments available that provide effective control of 2 week old fluke.

**TREATING 2 WEEK OLD FLUKE PAYS**

**WEIGHT GAIN (KGS) OVER 20 WEEKS**

<table>
<thead>
<tr>
<th>Treated at 1-2 weeks</th>
<th>Treated at 4-6 weeks</th>
<th>Treated at 8-12 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

**DAIRY CATTLE**

- Lactating cow
- Dry cow
- ORAL - 2-4 WEEK OLD FLUKE
- 21 DAYS TCI

**BEES CATTLE**

- Does control down to two weeks
- INJECT - 2 WEEK OLD FLUKE
- Keeping stock at least 210 days
- POUR ON - 6 WEEK OLD FLUKE
- INJECT - 12 WEEK OLD FLUKE
- Keeping stock at least 56 days
- ORAL - 4 WEEK OLD FLUKE
- Keeping stock at least 56 days
- INJECT - 2 WEEK OLD FLUKE
- Keeping stock at least 160 days


**Liver migration**

<table>
<thead>
<tr>
<th>2</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>14</th>
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</thead>
<tbody>
<tr>
<td>+</td>
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<td>-</td>
<td>-</td>
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</table>

**Bile duct entry**

<table>
<thead>
<tr>
<th>21</th>
<th>24</th>
<th>27</th>
<th>30</th>
<th>33</th>
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<tbody>
<tr>
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<td>+</td>
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<td>+</td>
<td>+</td>
<td>+</td>
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<td>+</td>
</tr>
</tbody>
</table>

**ADDITIONAL INFORMATION**

If a triclabendazole drench was used as your last fluke treatment it is recommended that nitroxynil and clorsulon based drench such as NitroFluke Injection or Nitromec Injection be used even if resistance is not suspected.

*Can be used with Cydectin LA for broad spectrum worm control including Ostertagia.
WHP = Withholding Period
TCI = Treatment to Calving Interval
ES = Export Slaughter Interval

**REFERENCES:**