The Effect of Combined Treatment with an Avermectin Endectocide and Flukicide on Productivity of Replacement Heifers

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Introduction
Gastrointestinal nematodes, external parasites, and Fasciola hepatica (liver fluke) can all adversely affect productivity of cattle. (1-5) Previously, little to no work has been done to quantify the effect of treating yearling replacement beef heifers for both gastrointestinal nematodes and bovine liver fluke on weight gain, body condition scores, pregnancy rates, and subsequent weaning weights of first-born calves. An independent study was conducted in a fluke-endemic area of Louisiana to evaluate the impact of production losses caused by gastrointestinal roundworms and liver flukes.

The Bottom Line

- This recent study confirmed that gastrointestinal nematode infection can significantly ($P<0.05$) reduce growth and condition of replacement heifers.

- Moreover, in liver fluke-endemic regions of the United States, the study also showed that cumulative detrimental effects of gastrointestinal nematodes and liver flukes can significantly ($P<0.05$) reduce weight gain, body condition scores and pregnancy rates compared to untreated heifers.

- In areas of the United States where exposure to Fasciola hepatica exists, one should consider designing a parasite control program that controls both gastrointestinal nematodes and liver flukes. Additional benefits may be obtained if the product also provides external parasite control.

- This study showed that strategic treatment of replacement heifers with both a flukicide and an avermectin resulted in significantly ($P<0.05$) better weight gains and improved body condition scores at palpation compared to cattle treated with an avermectin only.
The group treated for liver flukes and roundworms was the only group in which the pregnancy rate was significantly ($P<0.05$) higher than the untreated control and that difference was 23%. 
The Trial
Three hundred eighty-four crossbred heifers were used over a four-year period (96 per year) in a study which was conducted in a grazing region of Louisiana known to be infested with both gastrointestinal nematodes and liver flukes. Allocation to treatment: 1) non-treated controls, 2) treated for internal parasites only with an avermectin endectocide, 3) treated for liver fluke only, or 4) treated with an avermectin and a fluke control product was conducted each year at weaning. Each year, 96 heifers were randomly allocated to three separate pastures, with equal numbers of heifers from the four treatment groups in each pasture. Heifers were re-treated with the appropriate treatment regimen at 56- to 84-day intervals throughout the study. On April 1st of each year, two fertile bulls were introduced into each pasture and maintained with the heifers for a period of 70 days. After they were palpated for pregnancy diagnosis in August, all heifers found to be pregnant were pooled together in one pasture throughout calving (from January to March) until weaning in October.

Results
The group treated for liver flukes and roundworms was the only group that had significantly ($P<0.05$) higher weight gain and condition scores compared to the other two treated groups as well as against the untreated control. It also was the only group in which pregnancy rate was significantly ($P<0.05$) higher than the untreated control. Data from weaning through pregnancy examination for the four years indicate heifers treated with both an avermectin endectocide and a fluke control product had significantly ($P<0.05$) higher weight gains, pregnancy rates, and body condition scores at palpation than controls (Table 1). These heifers also had significantly ($P<0.05$) better weight gains and higher body condition scores than heifers treated with an avermectin only. There was also a significant ($P<0.05$) weight gain and condition score benefit obtained by treating heifers with an avermectin and flukicide compared to treating only for liver flukes.

Improvements were seen in the adjusted weaning weights of calves from all treated groups compared to untreated controls; however, the differences were not significant.
Table 1. Performance measurements for groups of heifers over a 4-year period on different parasite control programs in an area of the United States known to be infested with gastrointestinal nematodes and liver flukes

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<tbody>
<tr>
<td>No Treatment</td>
<td>523</td>
<td>810(a)</td>
<td>5.0</td>
<td>54%</td>
<td>287(a)</td>
<td>496(d)</td>
</tr>
<tr>
<td>Avermectin Only</td>
<td>527</td>
<td>880(b)</td>
<td>5.4(b)</td>
<td>63%(a,b)</td>
<td>353(b)</td>
<td>530(e)</td>
</tr>
<tr>
<td>Flukicide Only</td>
<td>528</td>
<td>831(a)</td>
<td>5.3(b)</td>
<td>67%(a,b)</td>
<td>303(a)</td>
<td>512(d,e)</td>
</tr>
<tr>
<td>Avermectin &amp; Flukicide</td>
<td>528</td>
<td>903(b)</td>
<td>5.6(c)</td>
<td>77%(b)</td>
<td>375(c)</td>
<td>529(e)</td>
</tr>
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(abc) Means within the same column with different superscripts are significantly different (P<0.05)
(de) Means within the same column with different superscripts are different (0.05<P<0.10)

Conclusions
Gastrointestinal nematodes and liver flukes have been shown to affect the performance of all classes of cattle, but young growing animals, including replacement beef heifers, seem to be the most susceptible.(4) In areas where both types of parasites are known to be a threat, parasite control should be tailored to control both types of parasites, using locally developed strategies for optimal timing of treatments. This study showed that treatment with a liver fluke control product such as CURATREM® (clorsulon), in combination with an avermectin endectocide, such as IVOMEC® (ivermectin) 1% Injection, in a strategically designed program for replacement heifers, can provide excellent control of gastrointestinal nematodes and liver flukes, as well as provide productivity benefits. Although effects on reproduction have not been measured, positive benefits on weight gain alone have been seen in cattle treated with IVOMEC® Plus (ivermectin/clorsulon),(3) the only single-dose endectocide that can treat and control both gastrointestinal nematodes and adult liver flukes, as well as external parasites.

References


