

Worm control affects heifer fertility on NSW North Coast

A summary of the 2022-23 NSW DPI Research Station demonstration trial

Introduction

- 400 cross bred weaner heifers were sourced from 8 commercial properties on the NSW North Coast.
- Heifers were treated for worms with either single or concurrent ingredients, as listed below.
- Worm Egg Counts (WEC), liveweight (LWT), pregnancy tests and other data were recorded.



Treatments

Heifers from each PIC were weaned, weighed and allocated to one of the two treatment groups:

1. ivermectin 1% injectable (dosed at 1ml per 50kg) at weaning, prejoining and precalving
2. moxidectin 10% injectable (dosed at 1ml per 100kg) + oxfendazole 45.3g/L (dosed at 1ml per 10kg) at weaning and prejoining; moxidectin 1% injectable (dosed at 1ml per 50kg) + oxfendazole 45.3g/L (dosed at 1ml per 10kg) precalving

Key outcomes

Heifers treated with moxidectin + oxfendazole:

- had much lower WEC when tested 2 weeks after treatment (Table 1).
- were 13-23kg heavier over the course of the trial (Table 2).
- had significantly higher pregnancy rates when tested 6 weeks after the end of joining (Table 2).

Table 1. The percentage reduction in WEC for 10 heifers from each of 8 properties treated with either injectable ivermectin or long acting moxidectin + oral oxfendazole at weaning, when tested 14 days after treatment (DAT)

| Drench efficacy 14 DAT | ivermectin (% control) | moxidectin + oxfendazole (% control) |
|---------------------------|---------------------------|--|
| Range (across 8 PICs) | 25-87 | 96-100 |
| Average | 59 | 99 |



Methods

Unweaned heifers were sourced directly from North Coast commercial beef producers in March 2022. Heifers were weaned, vaccinated, weighed and allocated to one of two treatment groups, ensuring that both the range and average LWT were similar for both treatments.

Heifers were weighed 7 times from the start of the trial up until 30d pre-calving. Faecal samples were collected 5 times, from up to 10 animals in each treatment group, to monitor worm egg counts and identify species.

Extreme wet conditions at Pearces Creek Research Station meant that heifers were agisted near Armidale from June to November 2022 where they grazed frosted, unimproved pasture that had been destocked for 12 months. Heifers were not treated or supplemented while on agistment.

The heifers were returned to Duck Creek Research Station on the 10/11/22. Shortly afterwards, the heifers were split into 2 even mobs and joined for 9 weeks, beginning 16/12/22. During this time they rotationally grazed forage millet and then tropical pastures (paspalum, setaria, carpet grass) oversown with ryegrass. Heifers were pregnancy tested 6 weeks after the end of joining, on 4/4/23. Empty heifers were subsequently sold.



Results

Heifers weighed 285kg at the start of the trial and were infested with a moderate, mixed infestation of predominantly *Haemonchus* and *Cooperia*. Both of these worm species were found to be resistant to ivermectin in heifers from all 8 properties. There was minimal difference in liveweight 35 days after treatment (DAT) but heifers treated with dual active ingredients were 23kg heavier 204 DAT, one month prior to joining (Table 2). They were also almost half a condition score higher at this time.

Table 2. Liveweight, average daily gain (ADG) and pregnancy rate of heifers in two worm treatment groups.

| Treatment | 27/4/22 (Day 0) | 17/11/2022 (Day 204) | ADG Day 0-204 | 14/02/2023 (Day 293) | ADG (Day 204 -293) | Pregnancy % (4/4/23) |
|-----------------------------|--------------------|-------------------------|------------------|-------------------------|-----------------------|-------------------------|
| ivermectin | 285 | 320 | 0.17 | 395 | 0.79 | 68 |
| moxidectin + oxfendazole | 285 | 343 | 0.29 | 408 | 0.73 | 86 |
| | | P<0.01 | P<0.01 | P<0.01 | P<0.01 | P<0.01 |

Despite some apparent compensatory growth of heifers treated with injectable ivermectin over the joining period, they had a significantly lower joining percentage (Table 2).

Discussion

Treating replacement heifers with concurrent drench treatments at weaning and pre-joining resulted in significantly higher weight gains, condition score and subsequent fertility. Heifers treated with ivermectin had more than double the number of 'empty' heifers although conception date was unaffected.

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