

Cooperia spp. Infection of Weaner Dairy Calves - A Case Study

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The apparent ineffective control of gastrointestinal helminths of weaner calves on a dairy farm at Pomona north of Brisbane was investigated in November 2006. After weaning, calves scoured profusely and lost significant weight despite fortnightly drenching. The farm was a well-managed commercial enterprise located in the >1000mm annual rainfall subtropical zone and used Macrocytic Lactone drenches. Calves were fed a milk replacer with straw *ad libitum* for 12 weeks in raised wire meshed pens over a concrete floor adjacent to the dairy, they were not treated with anthelmintic as they were considered worm free. When calves reached 100 kg liveweight they were set-stocked in a small dairy yard (0.5ha) of kikuyu pasture \geq 3000kg/haDM. They were also fed a mixed grain ration in raised troughs at 1.5 kg/day.hd.

drench resistance test was conducted on 30 calves (100 to 190 kg). They were stratified by age (months) and then randomly allocated to either an un-drenched control (C) or drenched group Cydectin® pour-on (Cy). Faecal samples were obtained per rectum from individual animals at days 0 and 7 post drenching. Calf liveweight (W) and condition scores (CS) were also recorded. Faecal worm egg counts (EC—eggs per gram) and larval cultures (LC—%) were conducted according to Roberts and O’Sullivan (1950). Resistance was determined from pre and post EC results using Q-FECRT (Lyndal-Murphy *et al.*, 2006). As EC would be expected to follow a negative binomial distribution (Pepper *et al.*, 2003), the data was analysed by fitting a generalised linear model assuming the error distribution to be a negative binomial distribution with a log ratio link function with fixed effects, age of calf (\leq and $>$ 5 months) and drench (C v Cy) (post drench data only). Prior to drenching there was a significantly higher helminth burden and lower W in the \leq 5 months group but no significant difference in CS. Seven days after drenching there was a significant interaction between age and drenching treatment for EC (Table 1). Controls in both age groups had significantly higher EC than the drenched with no difference between drenched \leq 5 months and control $>$ 5 months. Drenching with Cydectin® pour-on reduced the overall EC by 76% (-10–95%) for \leq 5 months calves and 97% (34–99.9%) for the $>$ 5 month age group. Liveweight and condition score changes were not different between treatments ($P>0.05$). The LC was a mixed culture of *C. punctata* and *C. pectinata* totalling 96% C and 95% Cy while the remainder comprised *Ostertagia sp.* *Cooperia spp.* reduction was 78% (-2–95%) for \leq 5 months and 87% (39–99.9%) for \geq 5 months.

Table 1. Faecal egg counts (eggs per gram \pm s.e.), liveweight (kg \pm s.e.) and condition score (1–5 \pm s.e.) at pre-drenching (day 0) and post-drenching (day 7)

Age	EC 0	EC C7	EC Cy7	W 0	CS 0	W 7	CS 7
\leq 5month	4845 \pm 1461	8767 \pm 8388	343 \pm 248	139 \pm 7.7	4.3 \pm 0.20	139 \pm 8.2	4.0 \pm 0.15
$>$ 5month	346 \pm 78.6	175 \pm 101	8 \pm 5	170 \pm 5.8	4.6 \pm 0.15	176 \pm 6.1	4.3 \pm 0.11

Undeveloped immunity in the \leq 5 months age group, combined with reduced drench efficacy and a heavy and continuous infective larval challenge from the pasture resulted in acute disease. Considering the pre-patent period for *Cooperia spp.* is 12–14 days a 3 paddock rotation was developed with each paddock being grazed for 14 days and spelled for 28 days. Calves older than 6 months were removed. Rotation with other drench actives was effective and controlled severe scouring within 2 days. This combined with regular worm egg counts and effective drenching on introduction to a spelled paddock has maintained low worm burdens on this farm.

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