THE EFFECTS OF A COOPERIA PUNCTATA INFECTION ON CATTLE PRODUCTIVITY?

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Cooperia spp. have become the most prevalent parasite in US cow/calf operations as observed in the NAHMS Beef Cow/Calf survey in 2008. This is at least in part due to the widespread use of endectocides that have minimal activity against these parasites. The effects of Cooperia spp. on cattle productivity are largely unknown, and this study was conducted to assess such effects. Two hundred calves (average weight 95 lb) were acquired from northwestern Arkansas and northeastern Oklahoma and were vaccinated and dewormed upon arrival. Animals were preconditioned for approximately one month and fed a standard growing ration throughout the study. At 4 weeks, all calves were dewormed a second time, re-vaccinated, moved to pens equipped with GrowSafe® system feed bunks and given an additional week to acclimate. Calves were randomly divided into two groups (n = 80) and each group was further divided into two replicate pens (n = 40). On day 0 and 14, two pens were orally inoculated with a gavage of 1X105 and 0.825X105 Cooperia punctata infective larvae, respectively, with the control pens receiving a similar volume of tap water. Data collected included biweekly fecal egg counts, daily individual feed consumption and weight gain over the 60 day test period. The presence of Cooperia punctata (>99% of the worms recovered) was confirmed by necropsy on days 35 and 60 post infection (PI) in a subset of animals. Egg counts were positive by day 14 PI and remained at levels similar to values seen in field studies. The sham-treated group gained weight 7.4% more rapidly (p = 0.02) than inoculated animals (3.24 lb vs 3.0 lb ADG, respectively). The inoculated animals also consumed 1.5 lb (DMI) less compared to sham treatment (p = 0.02). Data suggested that C. punctata has a deleterious affect on both appetite and nutrient uptake or utilization. Mesenteric lymph nodes were increased in size and the small intestinal mucosa was thickened with an increased amount of mucus. The most prominent histological changes in the small intestine involved mild to moderate numbers of intraepithelial lymphocytes (IEL) and globule leukocytes as well as aggregates of eosinophils within the lower lamina propria. Treatment of one group (n = 40) of infected calves with an endectocide did not remove the parasites (FECRT = 8.8%), while treatment of the other group with a benzimidazole was effective (FECRT = 98.1%).