Effect of two anthelmintic agents on parasitic load, body condition and reproductive performances of beef cows

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An appropriate parasite-control program in the cow herd can protect against economic losses by preventing substantial production losses. The objective of the study was to compare the effect of two anthelmintic agents, pour-on and extended-release injectable parasiticides, on parasite load, body condition and reproductive performances of beef cows. The hypothesis was beef cows that receive extended-release injectable parasiticide will have reduced parasite load, improved body condition, and better reproductive performance over their pour on counterparts.

Four weeks prior to the beginning of the breeding season, beef cows (n=966) from six locations were assigned a body condition score (BCS). Within locations cows were randomly assigned to CON and TRT groups. Cows in CON group received pour-on (CON; Ivermectin) and cows in TRT group received extended-release injectable parasiticides (TRT; Eprinomectin). Fecal samples were collected from all cows prior to treatment. All cows were synchronized with CIDR + CO-Synch protocol and inseminated once. Two weeks later cows were grouped with clean-up bulls (at 1:40 cow to bull ratio) for the reminder of the 85 d breeding season. Fecal samples were collected again at 60 d after AI (90 d after the treatment) at the time of pregnancy diagnosis by ultrasonography. The cows were re-examined for pregnancy 30 days after the end of the breeding season. Fecal eggs were counted within two days of sampling by two clinicians using McMaster method and fecal egg per gram (EPG) was calculated. For both treatment groups, the cows were categorized as responders (R) and non-responders (NR) based on reduction in fecal EPG from pre- to post-treatment (R=100% reduction in EPG). Further BCS was assigned to all cows at the fall pregnancy diagnosis to determine BCS difference (BCSD); lost (LO) vs maintained or gained (MG) categories) between pretreatment and at fall pregnancy diagnosis.

The mean EPG for responders in CON and TRT groups were -42.8 and -85.7. The mean EPG for non-responders in CON and TRT group were 132.8 and 32.9. The percentages of non-responders were significantly different between CON and TRT groups (22.6 vs. 7.7%, respectively; P=0.05; Chi-Square test). The outcome measured were BCSD, AI pregnancy (AIPR) and breeding season pregnancy rates (BSPR; PROC GLIMMIX of SAS). The mean AIPR between TRT (66.1%; 328/496) and CON group (61.3%; 288/470) were not different (P=0.12). There was an interaction between treatment groups and response categories for the AIPR. The AIPR were 63.2 (230/363), 54.7 (58/106), 66.8 (306/458) and 57.9% (22/38) for CON-R, CON-NR, TRT-R, and TRT-NR, respectively (P<0.05). The BSPR of CON and TRT groups were 90.2 and 93.1%, respectively (P=0.1). The BSPR were not different among response categories (P>0.1), but were significantly different among BCSD categories. A greater percentage of cows lost BCS in CON than in TRT group, and a greater percentage of cows maintained or gained BCS in TRT than in CON group, 8.7 (440/497) vs. 57.9% (22/38) respectively (P=0.0001). Among cows in MG category, the BSPR was different between CON and TRT group, 87.1 (311/357) vs 94.1% (414/440), respectively (P<0.001). Among cows in LO category, there was no difference in BSPR between CON and TRT group, 83.2 (94/113) vs 85.7 (48/56), respectively (P=0.1).

In conclusion, eprinomectin was better than ivermectin in reducing parasite load and improving BC. The AIPR was greater for cows that responded to eprinomectin than cows that did not respond to ivermectin. Among cows that maintained or gained BCS, the BSPR was greater for the cows that received eprinomectin than cows that received ivermectin.

Keywords: Beef cows, paraciticide, body condition, pregnancy rate