Nursing Calf Deworming

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Introduction

Historically, the predominant health problem worldwide for ruminant animals has been the presence of internal parasites (Armour, 1980; Borgsteede and Burg, 1982). The continued use of anthelmintics, or dewormers, remains controversial among researchers because there is wide variation among results when these products are used on cattle with moderate to low levels of parasite infestation (Ward et al., 1991). It is clear, however, that with any level of infestation above moderate, dewormers provide almost immediate responses and improvement in animal health and performance.

Parasitic infection and disease receives relatively little attention in most areas. Likely, we are so accustomed to treating our cattle on a routine basis, hopefully at least annually, that clinical signs of disease are rarely observed. Immunity to parasites increases with age. Older animals like mature cows in particular, have the ability to ward off many parasitic challenges, or at least keep these invaders to a minimum. Parasites may, however, be silent rustlers of performance while existing in a sub-clinical fashion in your herd. While these infections may not be significant enough to manifest clinical signs, weaning weights may be improved when nursing calves are dewormed at branding, or approximately three months of age. In fact, deworming calves may be the most profitable task you can perform (Henderson, 2006).

If you think the effect of any given parasite stops simply with lower weight gains and an unthrifty appearance, you may be misinformed. Parasites can contribute to other conditions like anemia which can be significant because its affect on red blood cells and thus, oxygen transport. They may also effect the immune system's ability to respond to vaccines by producing lower-than-normal white-cell populations within the body.

Beef cattle are susceptible to various parasites. Here are a few species that are important. Check with your local veterinarian for an appropriate deworming program for your herd. Be sure that you are aware of liver flukes in your area and whether or not your herd is exposed to these, as well. Not all dewormers are labeled for the control of flukes, so check your products carefully and again, consult your veterinarian.

Gastrointestinal roundworms
Ostertagia ostertagi
Cooperia oncophora
Haemonchus placei
Trichostrongylus spp.
Strongyloides papillosus
Lungworms
Dictyocaulus viviparous
Eyeworms
Thelazia spp.
Grubs

Hypoderma bovis
Sucking Lice
Haematopinus eurysternus
Linognathus vituli
Mange Mites
Psoroptes bovis
Sarcoptes scabiei

Standard procedure for parasite control at most beef operations in the U.S. is to treat beef cows once or twice annually, and to deworm the calf at weaning only. Recent field trials have dismissed the dogma that calves did not have a sufficiently high level of parasitism to warrant treatment until weaning, or after (Wikse et al., 2005). Several recent studies have examined nursing calf deworming, but have focused primarily on heifer calf development and more long-term effects toward achievement of puberty at an earlier age, and other reproductive factors (Purvis et al., 1994; Mejía et al., 1999; and Whittier et al., 1999). None focused on improving calf performance or weaning weights exclusively. Industry-funded research has recently demonstrated higher weaning weights of calves treated with doramectin (Dectomax™, Pfizer Animal Health, New York) prior to weaning (Wikse et al, 2005). Their data indicated a 25 lb advantage in weaning weight resulting in additional profit per head ($17.65), as well as a nearly four-fold return on investment (ROI) over the cost of the deworming product alone.

Deworming Calves Still on the Cow

Spring born calves from three geographically different locations within the University of Florida /IFAS system were utilized to conduct a nursing calf deworming experiment: NFREC (MAR; n=177), Marianna, FL; Beef Research Unit (BRU; n=186), Gainesville, FL; and Boston Farm – Santa Fe River Ranch (SF; n=204), Santa Fe, FL. All included, a total of 567 calves were utilized. At least two breed types were available at each location, including Angus, Brangus, Brahman, and Romosinuano, as well as some graded combinations of these breeds (composites).

Although processing calendar dates varied by location, the project began after June 1, 2005 and depended on the projected weaning date determined by each unit manager. Treatments included a control group (CONT), which received no deworming compounds during the study, and a treatment group (DW) which was dewormed with injectable doramectin (1 mL per 110 lb BW, subcutaneous [SC]) 90 days prior to the projected weaning dates. Calves were blocked by site and randomly assigned to either CONT or DW; equal numbers were assigned to treatments as much as possible and necessary to balance the experimental design.

On day 0 and at weaning, all calves were individually weighed in order to get an accurate body weight on all calves, as well as obtaining an appropriate dosing rate for DW. Calves were returned to their dams after weighing on day 0 and those pairs were taken to designated pastures for grazing. Cow-calf pairs within each unit and among treatment groups were grazed on similar forage types and received similar nutrition at all times in order to avoid bias based on forage or nutrition limitations. Treatment groups were intermingled as necessary depending on pasture conditions and overall grazing logistics. Dams were body condition scored (BCS) on day 0 of the study and at weaning to determine if any change in calf growth rate caused by the treatments may have had an indirect effect on the physical condition of the dam. Calf weights and dam BCS were also obtained at a midpoint during the study.

Pasture forage allowance was measured as cow-calf pairs were introduced to new grazing sites and when they were removed in order to estimate forage consumption during grazing.

Results

Performance data from this study are presented in Table 1 and Table 2. Across all locations, DW calves gained more total weight and ADG was greater among DW calves compared with CONT calves. On average in this experiment, deworming cost approximately $1.57 per head. DW calves returned $9.57 per head more net revenue ([lb total wt. gain x $1.28/lb BW average sale price of calves] - $1.57/hd deworming cost) when considering only the cost of the deworming product. Labor costs should be considered.

Implications

Under these experimental conditions, these data indicated both an animal performance advantage and a positive ROI. Given these results and the only modest economic improvement, economies of scale may limit the acceptance of this process to larger operations. The cost:benefit ratio may not be as significant for the average producer, especially if it means putting the herd through the chute an additional time. Labor costs, if calculated at two dollars per head, could consume nearly twenty percent of the increased revenue. Dollar value gains in the range of $15-$25 would likely make this more widely attractive. Of course this equation has various components that affect the outcome directly: calf prices, calf quality, animal performance as affected by rainfall and/or forage availability, labor and processing, etc. Some economists, however, may advise serious consideration of any procedure that adds as little as one dollar to the bottom line of any enterprise.

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Table 1. Animal performance results by location[1]

Item	Site 1[2]	Site 2[2]	Site 3[2]	Total
d0 BW, lb	390.9 ± 94	403.3 ± 67	381.3 ± 60	391.5 ± 75
d90 BW, lb	534.2 ± 92	525.7 ± 66	495.5 ± 67	517.5 ± 77
ADG, lb/d	1.6 ± 0.4	1.4 ± 0.3	1.3 ± 0.3	1.4 ± 0.4
Gain, lb	143.2 ± 35	122.5 ± 31	114.2 ± 28	125.9 ± 33
Gain Pd1, lb[3]	83.9 ± 31	81.2 ± 20	78.8 ± 18	81.2 ± 23.6
Gain Pd2, lb[3]	58.7 ± 15	41.2 ± 20	35.4 ± 19	44.5 ± 20.3
d0 BCS	5.1 ± 0.7	4.8 ± 0.7	5.0 ± 0.8	5.0 ± 0.7
d90 BCS	4.9 ± 0.6	4.7 ± 0.8	4.8 ± 0.7	4.8 ± 0.7

[1]Data in this table represent raw means.
[2]Site 1, n=177; Site 2, n=186; Site 3, n=204.
[3]Gain Pd1 and Gain Pd2 are representative of performance from d0 to a midpoint, and from the midpoint to d90, respectively.

Table 2. Comparison of treated vs non-treated performance results[1]

Item	Control	Dewormed	S.E.	P>F	Diff[2]
ADG, lb/d	1.36[b]	1.46[a]	0.09	0.0007	+ 0.10
Gain, lb	122.3[b]	131.0[a]	8.8	0.0007	+ 8.7
Gain Pd1, lb	78.3[b]	84.3[a]	1.9	0.002	+ 6.0
Gain Pd2, lb	43.7	46.5	7.1	0.06	+ 2.8
d0 BCS[4]	5.0	5.0	0.04	0.99	---
d90 BCS[4]	4.7	4.8	0.04	0.33	---
BCS change d0 to d90	-0.21	-0.15	0.04	0.31	---

[ab]Means within a row with different superscript differ with *P* < 0.05.
[1]LS Means.
[2]Positive difference (+) indicates a difference in performance in favor of deworming.
[3]Gain Pd1 and Gain Pd2 are representative of performance from d0 to a midpoint, and from the midpoint to d90, respectively.
[4]d0 BCS and d90 BCS = BCS obtained on dam on day 0 and day 90, respectively.

Notes: