PROCEEDINGS

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SUMMARY OF REPRODUCTIVE IMPROVEMENTS IN BEEF COWS FOLLOWING PARASITE CONTROL USING FENBENDAZOLE

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INTRODUCTION

Gastrointestinal nematode infections are recognized as a major source of lost productivity in farm animals. In cattle, losses in liveweight gain, feed efficiency and milk production are well documented (AAVP 1983). Relatively little has been published on the effects of nematode parasitism on reproductive performance. Available literature documents slower gains in heifers and as a result, delayed puberty (Hansen). In the Southeastern U.S., beef cows in poor condition due to parasitism and poor nutrition are commonly observed during the winter months. Parasitologists have speculated that this seasonal stress may affect the extent and length of anestrus (AAVP 1983). Recent reports document improvements in reproductive performance following implementation of internal parasite control programs (Vatthauer et.al. 1986, Holste et. al. 1986, Pate et. al. 1988, Studemann et. al. in press).

A total of seven studies were designed to evaluate a strategic parasite control program on the on the productivity of cow/calf herds. In each study, reproductive performance of cows was evaluated.

MATERIALS AND METHODS

These studies were carried out over a 4 year period on a total of 5 different research locations. A total of 1,320 beef cows and their calves were involved.

Table 1 lists study location and description. In each study a split pasture design was used to compare groups receiving no anthelmintic treatment (control) to groups receiving a specific treatment program. Pasture replicates were designed to insure test pastures were of comparable forage composition and age of maturity. The pastures were permanent pastures having been used in previous years for cattle grazing studies according to standard management at each research facility.

Table 1. Experimental Variables in 7 Studies

Study	Location/Year	Cattle Breed	Type of Research Facility
1	Minnesota 1984	Shorthorn	State Expt. Sta.
2	Minnesota 1985	Shorthorn	State Expt. Sta.
3	Minnesota 1986	Shorthorn	State Expt. Sta.
4	Florida 1986	Brangus	State Expt. Sta.
5	Florida 1986	Brahman Crossbred	Commercial Ranch
6	Florida 1988	Brahman Crossbred	State Expt. Sta.
7	Georgia 1987	Angus	U.S.D.A. Expt. Sta.

Table 2 lists the number of pastures and cows by study. The control program consisted of treatment of cows at trial initiation prior to the breeding season. In addition, calves were treated once they weighed 250-300 pounds (3-4 months of age). At this time, cows were retreated in all studies except #7. Panacur® (fenbendazole) suspension 10% at a rate of 5 mg/kg body weight was administered orally to the treated cattle. By timing treatments to prevent pasture contamination, this program achieves optimal control and production improvement with a minimal cost. (Myers 1988).

Table 2. Experimental Design of 7 Studies

	No. of Pastures		No. of Cows	
Study	Control	Treated	Control	Treated
1	1	1	35	35
2	1	1	34	34
3	1	1	30	30
4	3	3	60	60
5	1	2	157	565
6	2	5	50	150
7	4	4	40	40
TOTALS	13	17	406	914

In each study, a controlled breeding system was employed. Specifically, bulls were placed with groups of 25-35 cows for the breeding season. The bulls had been evaluated for reproductive soundness, immunized for reproductive diseases common to the area and diagnosed free of Trichomoniasis. Pregnancy data was obtained by rectal palpation at time of routine herd evaluation or by counting calves born the following spring (actual calving rate). Worm eggs per gram (EPG) were obtained by examining fecal samples using the Wisconsin sugar flotation method (Cox and Todd 1962).

RESULTS

Breeding data and pregnancy results are listed in table 3. The percent response ranged from 4 to 22.5% improvement in herd pregnancy rates in the 7 studies. An average 10.3% improvement in herd pregnancy rates was measured across all 7 studies.

Table 3. Breeding Data and Pregnancy Results - Summary of 7 Studies

Study	Breeding Season, Days	Percent Pregnant Control	Percent Pregnant Treated	Percent Response & Level of Significance
1	73	85.7	97.1	11.4
2	73	79.4	91.1	11.7
3	65	92.8	96.1	3.3
4	90	85.0	93.2	8.2
5	90	82.0	91.5	9.5
6	90	86.0	91.6	5.6
7	65	67.5	90	22.5P=,03
Average		82.6	93.0	10.3

A 5 study summary is provided in table 4. Unequal pasture and cow numbers in studies 5 and 6 indicated a separate summary was needed to eliminate possible bias due to experimental design. This summary shows an 11.5% improvement following implementation of the parasite control program.

Table 4. Breeding Data and Pregnancy Results - Summary of 5 Studies

	Herd Pregnancy Rates	
	Control	Treated
Study	No.Preg/Total (%)	No.Preg/Total(%)
1	30/35 (85.7)	34/35 (97.1)
2	27/34 (79.4)	31/34 (91.1)
3	26/28 (92.8)	25/26 (96.1)
4	51/60 (85.0)	56/60 (93.2)
7	27/40 (67.5)	36/40 (90.0)
Average	161/197 (82.0)	182/195 (93.5)
% Improvement		11.5% (P .05*)

* = Wilcoxon rank sum test

Cow parasite infection levels (herd average) generally did not exceed 10 EPG during these studies. Infection levels of 10 EPG are frequently found in apparently healthy, mature beef cows grazing permanent pastures. This is typical of subclinical parasitism in beef cows in the United States. These data show prebreeding treatment lessens the adverse affects of parasitism at a critical time in the beef production cycle. As a result, pregnancy rates were improved in herds where chronic subclinical parasitism was present. In addition, these results clearly document that subclinical parasitism can limit reproductive performance in beef cow herds.

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