

# Deworming Beef Cows and Its Effect on Weaning Weight of Their Calves

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A two-year field study was carried out in North Dakota to determine what effect, if any, deworming of beef cows had on the weaning weights of their calves. The dewormer used was ivermectin, administered as recommended. Four herds, totaling 548 cows during the first year and 522 cows during the second year, were used. Each herd was randomly divided into four groups: Group A - dewormed during spring and fall; Group B - dewormed only in the fall; Group C - dewormed only in the spring; Group D - untreated control.

A total of 1,046 calves were weaned during the two-year period; their individual weaning weights were recorded, adjusted to 205 days of age and comparisons made for adjusted weaning weights of all groups in all herds. There was a significant advantage of 15.5 pounds in adjusted weaning weight of calves from dewormed cows over calves from cows in control groups.

## INTRODUCTION

Unless raised in total confinement, all cattle fall victim to internal parasites during some part of their life. North Dakota beef cows are no exception. A survey was carried out during 1981 and 1982 to determine the level of internal parasites in beef cows. Fecal samples were collected at two-week intervals at ten different locations and analyzed for worm eggs at the NDSU Veterinary Diagnostic Laboratory. This survey confirmed that (1) cows from all locations harbored worms at any time during the two-year period, and (2) the level of worm infestation, measured as "eggs per gram of feces" was consistently mild to moderate.

There are approximately 1,000,000 beef cows in North Dakota and they are not dewormed routinely. Ranchers know that cows do not die or look ill because they have some worms, and a common question is, "Does it pay to deworm beef cows in North Dakota?" An attempt was made to answer this question, at least in part.

A two-year study was carried out to determine what effect, if any, deworming of beef cows had on: (1) their pregnancy rates and (2) the weaning weights of their calves.

## Materials and Methods

This study lasted from May 1985 through November 1986 and involved four cow-calf beef operations located in

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Burleigh, Logan, Stutsman and Williams counties. Herd 1 had 106 Hereford and Hereford-Angus cross cows in 1985 and 108 in 1986; Herd 2 had 90 registered Simmental cows in 1985 and 81 in 1986; Herd 3 had 161 registered Angus cows in 1985 and 158 in 1986; Herd 4 had 191 Angus and various European crosses in 1985 and 175 in 1986. Each cow and her calf were individually identified with an ear tag.

Each herd was divided into four groups as follows:

Group A: Cows were dewormed in the spring and fall, each year.

Group B: Cows were dewormed each year only in the fall.

Group C: Cows were dewormed each year only in the spring, and

Group D: Untreated, control cows.

Calves born during the trial were not dewormed. The dewormer used was ivermectin (Merck's IVOMEC®) administered subcutaneously at the rate of 1 cc per 110 pound body weight. IVOMEC® is effective against worms as well as lice, mange and grubs, so each year during the fall, cows in groups C and D received a pour-on insecticide to provide control for lice and grubs.

Cows in groups A and C were pastured together each year during the grazing season (May-October) and were kept separate from cows in groups B and D. All cows were wintered together in dry lots from November through May.

Fecal samples from at least 20 percent of the cows in each herd were checked for worm eggs during the spring of 1985 immediately before treatment with IVOMEC®. The birthdate of each calf was recorded.

In the fall of each year, cows were palpated rectally to determine if they were pregnant or not. Calves were weighed individually and their weaning weights recorded. Each calf's weaning weight was adjusted to 205 days of age. Comparisons were made for pregnancy rates and adjusted weaning weights rates of all groups in all herds.

## Results

### FECAL SAMPLES

Examination of fecal samples revealed the presence of worm eggs in cows from all four herds. The level of positive samples varied: 40 percent in Herd 1, 13 percent in Herd 2, 30 percent in Herd 3 and 8 percent in Herd 4.

### PREGNANCY RATES

A total of 1,070 cows were involved during the two years of this study. The percentages of pregnant cows per herd, per group, per year were as follows:

Group	Treatment given	Herd 1		Herd 2		Herd 3		Herd 4	
		1985	1986	1985	1986	1985	1986	1985	1986
A	Spring & Fall	92.3	95.6	100.0	92.0	97.0	94.6	88.8	100.0
B	Fall only	96.4	92.6	89.5	95.2	93.5	94.1	98.0	95.4
C	Spring only	100.0	90.0	91.6	90.9	98.0	97.7	90.9	97.6
D	Untreated controls	96.3	89.3	81.8	92.3	93.3	93.0	98.0	91.6

The overall pregnancy rate in cows treated with IVOMEC® (groups A, B & C) was 94.6 percent; overall pregnancy rate in non-treated cows (group D) was 92 percent (Figure 1). The slight differences in conception rates among various groups were not statistically significant.

#### WEANING WEIGHTS

A total of 1,046 calves were weaned during the two-year period, 524 in 1985 and 522 in 1986. The average adjusted weaning weights (lb) per group, per herd, per year were as follows:

Group	Cows Deworming	Herd 1		Herd 2		Herd 3		Herd 4	
		1985	1986	1985	1986	1985	1986	1985	1986
A	Fall, Spring	506	456	643	621	635	595	584	560
B	Fall only	539	465	656	624	631	573	569	541
C	Spring only	491	447	681	617	629	614	590	543
D	Untreated	500	452	660	620	564	572	572	539

Yearly average adjusted weaning weights per herd per treatment are illustrated and compared to the combined average for both years (Figure 2 and 3).

Average adjusted weaning weights data were analyzed as a "4 (herd)  $\times$  2 (year)  $\times$  4 (treatment) factorial" with all possible two-way interactions allowed. The error term was the three-way interaction. This statistical analysis indicated that the average adjusted weaning weight of calves from dewormed cows (groups A, B & C) was 15.5 lb. higher ( $p=0.02$ ) than that of the control group. Average adjusted weaning weights were statistically similar ( $p=.96$ ) for all treated groups (A, B and C). There was no significant interaction ( $p=.52$ ) between year and treatment.

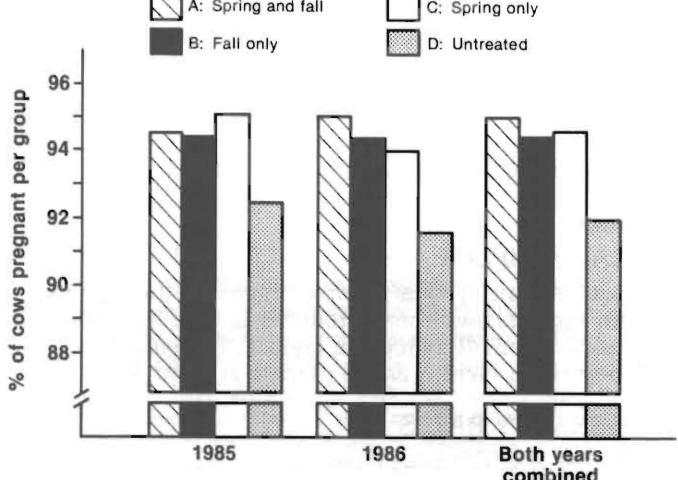


Figure 1

## CONCLUSIONS

### FECAL SAMPLES

Results from this study corroborated the existence of sub-clinical infestation of beef cows by internal parasites. On a national scale, this type (sub-clinical) of worm burden has been considered responsible for up to 75 percent of monetary losses attributed to beef cattle parasites. Even low worm numbers tend to undermine the profitability of cow-calf operations.

### PREGNANCY RATES

Various researchers have documented a positive relationship between deworming and pregnancy rates in beef cows. In this study pregnancy rates were not significantly changed following deworming of cows. These four herds were well managed and cows were in good to excellent body condition at breeding time.

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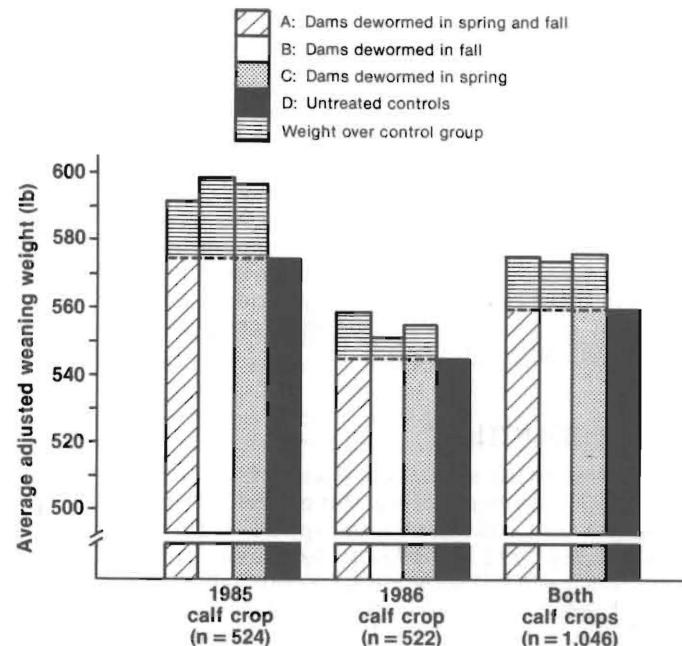


Figure 2

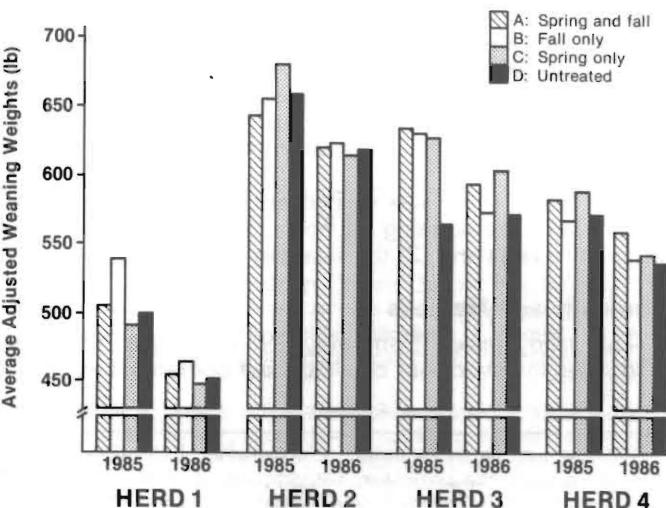


Figure 3

The 70 percent D/A ranch would benefit the most with the debt reduction option. The \$95,265 cost of debt reduction option would improve the D/A ratio to 25 percent and increase the net worth by \$82,220 over the baseline or 86 cents per dollar of cost of the option. The interest reduction option does the least to improve the cash flow situation.

In conclusion, the renegotiation of debt with lenders would be useful strategy before considering a partial liquidation even for the 70 percent D/A ranch with a significant cash problem. Since forced sale and repossession costs are often greater than 20 percent of asset value, it is probably best for lenders to be willing to renegotiate debt if a viable economic unit would result.

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A positive correlation between pregnancy rates and body condition at breeding has been confirmed and it may explain why pregnancy rates were high in all groups, including controls (group D).

## WEANING WEIGHTS

Cows dewormed with IVOMEC® - regardless of treatment schedule - weaned calves a mean of 15.5 pounds heavier than the control group. This statistically significant advantage was consistent for both years of the study indicating that in these herds, under similar conditions, this difference of 15.5 pounds may be anticipated to be approximately the same from year to year. Deworming cows influenced their calves' weaning weight but timing (spring vs. fall) and frequency (once vs. twice) of deworming did not. Under conditions in this study, progeny from dewormed cows were consistently heavier than calves in control groups; however, when or how often cows were dewormed did not significantly affect this difference.

Calves from all groups in all herds were lighter during the second year (1986), with no significant genetic changes occurring within herds. This difference was likely due to environmental changes; 1985 was characterized by drought throughout North Dakota but 1986 had above average rainfall during the entire grazing season. This excessive rainfall resulted in fast-growing, lush forages and may have decreased the nutritional value of the forage.

The advantage in average weaning weights of calves from dewormed cows over calves in control group cannot be attributable only to forage intake by the calves. Previous reports have documented increased milk yields in dairy and beef cows following deworming. In this study, increased weaning weights may be explained in part by an increase of milk production in the dewormed cows.

## ACKNOWLEDGEMENTS

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