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# Effects of Worming and Implanting Compared Among Backgrounded Steer Calves

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Beef cattle producers are often faced with the decision of whether or not to deworm their livestock. Internal parasite research conducted specifically under the conditions of Western North Dakota is very limited. Consequently, a portion of the ongoing research effort at this station has focused internal parasitism of beef cattle at various stages of production.

Investigations at this station have included studies with cows and calves wormed in the spring and calves wormed in mid-summer using conventional deworming methods and cooperative work with Pfizer and Company to test their Morantel® slow release bolus for calves.

The study reported here under backgrounding conditions is the next phase of production to be investigated. Backgrounding is a very important part of beef cattle production in North Dakota and therefore it is necessary to know the depth and magnitude of internal parasitism among calves being wintered in confinement. The objectives in all our internal parasite investigations are generally much the same. The first major objective is to determine the extent of internal parasitism and to document the effects of treatment on production. The second objective is to document the effects of treatment on production, costs of treatment and dollars returned to management. In addition to these objectives, the current investigation is designed to evaluate the effects of deworming and implanting in backgrounded steer calves. No documented research is available at this time. However, the potential exists for an additive effect on production when deworming and implanting are used together.

No attempt has been made to compare deworming products. Thiabendazole®, Tramisol® (Levamisol Hydrochloride), Rumatel® (morantel tartrate), and Safe-Guard® (fenbendazole) have been used. Based on fecal examination and worm species culturing, all of these products have been efficient dewormers in these trials.

To evaluate parasitism in this region, under the conditions of backgrounding, straight bred Hereford steers weighing 530 to 570 pounds and crossbred Angus X Hereford steers weighing 600 to 630 pounds were randomly assigned to one of the four following treatments:

1. Control.
2. Wormed with Safe-Guard® (fenbendazole).
3. Implanted with Compudose®.
4. Wormed with Safe-Guard® and implanted with Compudose®.

Animals wormed with Safe-Guard received 2.3 ml. of drug suspension per 100 lbs. of body weight. Lightweight Hereford steers were given from 12-13 ml. per head and heavier crossbred steers received 13.8 to 14.5 ml. per head. The anthelmentic was administered using a "no waste" dosing gun. Safe-Guard® wormer is the trade name given to the compound fenbendazole which is manufactured by American Hoechst corporation. Dr. Gil Myers, a parasitologist, representing American Hoechst Corporation has assisted in this investigation by providing financial support for fecal analysis and deworming product.

Those steers allotted to receive the estradiol based Compudose® growth implants were given a single 24 mg. implant, which was placed under the skin on the backside of the middle one-third of the ear.

Calves were weighed at 28 day intervals and one-half of the steers in each treatment were fecal sampled. Fecal samples were analyzed the first year of the study by Dr. Myron Andrews, DVM, and his technical staff at the Veterinary Diagnostic Laboratory, N.D.S.U., Fargo, North Dakota. During the second year of the study Dr. Myron Andrews retired and our fecal analysis was done by AEF Research, a private laboratory, located at Waunakee, Wisconsin.

Backgrounding rations used the first year were very simple and consisted of 42.5% chopped hay, 55% dry rolled barley, .5% dicalcium phosphate and 2% trace salt. In the second year of the study corn silage was used, and on a 90% dry matter basis the following ration was used: 42.2% dry rolled barley, 19.9% corn silage, .5% dicalcium phosphate, .5% trace mineral salt, 29.6% chopped hay, and 7.3% alfalfa.

Gains and economics have been summarized by breed of steer and by year in tables 1, 2, 3, and 4.

Summary: In the first year of the study the worming product Safe-Guard® and reduced worm egg shedding and cultured larvae to zero during the first half of the investigation. Shedding and numbers cultures began to increase during the last half of the study indicating that the arrested $4^{th}$ stage larvae if Ostertagia ostertagi was not affected by the drug fenbendazole. Culturing revealed five species of worms: Brown stomach worm (Ostertagia ostertagi), small stomach worms

(Cooperia punctata and C. oncorphora), small stomach worm (Trichostrongylus axei), and threadnecked intestinal worm (Nematoderies). Of these five species only the two species of small stomach worms and the brown stomach worm appeared in any numbers.

In 1985 egg shedding of Ostertagia ostertagi was substantially reduced when compared with the previous year. A possible explanation for this may be that the fourth stage larvae of this stomach worm had migrated to the intestinal mucosa by the time initial fecal samples were taken. Fecal analysis revealed that worms of the Cooperia genus were most common. The next most common was the large stomach worm (Haemonchus placei). Small numbers of the following were also identified; small stomach worm (Trichostrongylus axei), threadnecked intestinal worm (Nematodirus), tapeworm Moniezia) and the whipworm (Trichuris).

Deworming only, among backgrounded feeder calves, did not improve average daily gains or feed efficiency, and when compared to the control steers those steers dewormed only returned less net dollars. When compared to the control steers the dewormed Hereford steers netted $1.85 less per head and the dewormed crossbred Angus X Hereford steers netted $5.23 less return over feed.

Implanting with the growth implant Compudose® resulted in .35 pound per day faster gains and 2.4% better feed conversion than control steers. This increase in performance resulted in a substantial increase in net dollars returned over feed. When compared to the control steers, crossbred Angus X Hereford steers netted a return over feed of $7.29 more and the Hereford steers netted a return over feed of $16.07 more per head.

By contrast to deworming only, implanting and deworming combined did have an additive effect on steer performance. When compared to control steers, average daily gains for Hereford steers were .5 and for the crossbred steers .42 pounds per day faster. These rates of gain were not significantly better than rates of gain for steers implanted only. However, feed efficiency was significantly better where the combination was used when compared to all other treatments. When compared to the controls, Hereford steers administered the combination were 10.9% more efficient and the crossbred steers were 10.9% more efficient. Significant improvement in rate of gain and feed efficiency resulted in substantially higher returns over feed costs. Herford steers netted $20.26 more, and crossbred steers netted $12.89 more than the control steers.

**Table 1. Summary of Hereford steers backgrounded to compare worming with Safe-Guard®, implanting with Compudose® and the two products combined, 1985.**

| Hereford | Control | Safe-Guard® | Compudose® | Safe-Guard® Compudose® |
|---|---|---|---|---|
| No. Head | 6 | 6 | 6 | 6 |
| Days Fed | 113 | 113 | 113 | 113 |
| Initial Wt., lbs. | 563 | 573 | 571 | 561 |
| Final Wt., lbs. | 850 | 872 | 908 | 911 |
| Gain, lbs. | 287 | 299 | 337 | 350 |
| ADG, lbs. | 2.54 | 2.65 | 2.98 | 3.09 |
| | | | | |
| Feed/Day, lbs.[1] | 20.91 | 21.80 | 21.77 | 22.1 |
| Feed/lb. Gain, lbs.[1] | 8.23 | 8.23 | 7.31 | 7.15 |
| % of Feed Efficiency Improvement | - - | -0- | 11.2 | 13.1 |

| | | | | |
|---|---|---|---|---|
| Feed Cost/CWT, $ | 36.50 | 36.57 | 32.31 | 31.77 |
| | | | | |
| Avg. Selling Price, Cwt., $ | 56.29 | 56.29 | 56.29 | 56.29 |
| Avg. Value/Head, $ | 478.47 | 491.02 | 511.11 | 512.80 |
| Feed Cost/Steer, $ | 104.77 | 109.34 | 108.88 | 111.19 |
| Implant Cost/Steer,$ | - - | - - | 2.00 | 2.00 |
| Worming Cost/Steer, $ | - - | 1.30 | - - | 1.30 |
| Return Over Expenses, $ | 373.77 | 380.38 | 400.23 | 398.31 |
| | | | | |
| Difference Compared to Control, $ | | +6.61 | +26.46 | +24.54 |

[1]Rations used contained corn silage; values shown for "Feed/Day" and "Feed/lb. Gain" have been adjusted to a 90% dry matter basis.

**Table 2. Summary of Angus X Hereford steers backgrounded to compare worming with Safe-Guard®, implanting with Compudose® and the two products combined, 1985.**

| Angus X Hereford Steers | Control | Safe-Guard® | Compudose® | Safe-Guard® Compudose® |
|---|---|---|---|---|
| No. Head | 6 | 6 | 6 | 6 |
| Days Fed | 113 | 113 | 113 | 113 |
| Initial Wt., lbs. | 632 | 625 | 636 | 626 |

| | | | | |
|---|---|---|---|---|
| Final Wt., lbs. | 898 | 884 | 956 | 937 |
| Gain, lbs. | 266 | 259 | 320 | 311 |
| ADG, lbs. | 2.35 | 2.29 | 2.83 | 2.75 |
| | | | | |
| Feed/Day, lbs.[1] | 21.42 | 20.3 | 23.46 | 22.21 |
| Feed/lb. Gain, lbs.[1] | 9.11 | 8.88 | 8.29 | 8.08 |
| % of Feed Efficiency Improvement | - - | 2.5 | 9.0 | 11.3 |
| Feed Cost/Cwt. Gain, $ | 40.19 | 39.20 | 36.66 | 35.84 |
| | | | | |
| Avg. Selling Price/Cwt., $ | 56.29 | 56.29 | 56.29 | 56.29 |
| Avg. Value/Head, $ | 505.48 | 497.60 | 538.13 | 527.44 |
| Feed Cost/Steer, $ | 106.92 | 101.54 | 117.31 | 111.47 |
| Implant Cost/Steer,$ | - - | - - | 2.00 | 2.00 |
| Worming Cost/Steer, $ | - - | 1.30 | - - | 1.30 |
| Return Over Expenses, $ | 398.56 | 394.76 | 418.82 | 412.67 |
| | | | | |
| Difference Compared to Control, $ | - - | -3.80 | +2026 | +14.11 |

[1]Rations used contained corn silage; values shown for "Feed/Day" and "Feed/lb. Gain" have been adjusted to a 90% dry matter basis.

**Table 3. Two Year Average of Hereford Steers backgrounded to compare worming with Safe-Guard® (fenbendazole), implanting with Compudose® and the two products combined, 1985.**

| Hereford | Control | Safe-Guard® | Compudose® | Safe-Guard® Compudose® |
|---|---|---|---|---|
| No. Head | 12 | 12 | 12 | 12 |
| Days Fed | 116 | 116 | 116 | 116 |
| Initial Wt., lbs. | 553.5 | 552.5 | 547 | 551 |
| Final Wt., lbs. | 833.5 | 834 | 878 | 889.5 |
| Gain, lbs. | 280 | 281.5 | 331 | 338.5 |
| ADG, lbs. | 2.41 | 2.43 | 2.85 | 2.91 |
| | | | | |
| Feed/Day, lbs.[1] | 19.9 | 20.0 | 21.39 | 21.56 |
| Feed/lb. Gain, lbs.[1] | 8.26 | 8.23 | 7.51 | 7.41 |
| Feed Efficiency Improvement, % | - - | .36 | 9.1 | 10.3 |
| Feed Cost/Cwt. gain, $ | 34.85 | 34.99 | 31.69 | 31.31 |
| | | | | |
| Avg. Selling Price, Cwt., $ | 57.11 | 57.11 | 57.11 | 57.11 |
| Avg. Value/Head, $ | 476.01 | 476.29 | 501.42 | 507.99 |

| | | | | |
|---|---|---|---|---|
| Feed Cost/Steer, $ | 97.67 | 98.50 | 104.91 | 105.99 |
| Implant Cost/Steer,$ | - - | - - | 2.10 | 2.10 |
| Worming Cost/Steer, $ | - - | 1.30 | - - | 1.30 |
| Return Over Expenses, $ | 378.34 | 376.49 | 394.41 | 398.60 |
| | | | | |
| Difference Compared to Control, $ | | -1.85 | +16.07 | +20.26 |

**Table 4. Two Year Average of Crossbred Angus X Hereford steers backgrounded to compare worming with Safe-Guard® (fenbendazole), implanting with Compudose® and the two products combined, 1985.**

| Angus X Hereford | Control | Safe-Guard® | Compudose® | Safe-Guard® Compudose® |
|---|---|---|---|---|
| No. Head | 12 | 12 | 12 | 11[1] |
| Days Fed | 116 | 116 | 116 | 116 |
| Initial Wt., lbs. | 619 | 614 | 618 | 609 |
| Final Wt., lbs. | 886 | 885 | 925 | 925 |
| Gain, lbs. | 267 | 271 | 307 | 316 |
| ADG, lbs. | 2.30 | 2.34 | 2.65 | 2.72 |
| | | | | |
| Feed/Day, lbs. | 21.06 | 21.75 | 23.68 | 22.20 |

| | | | | |
|---|---|---|---|---|
| Feed/lb. Gain, lbs. | 9.16 | 9.29 | 8.94 | 8.16 |
| Feed Efficiency Improvement, % | - - | +1.42 | -2.40 | -10.9 |
| Feed Cost/Cwt., $ | 38.64 | 39.30 | 37.80 | 34.54 |
| | | | | |
| Avg. Selling Price, Cwt., $ | 505.99 | 505.42 | 528.27 | 528.27 |
| Avg. Value/Head, $ | 57.11 | 57.11 | 57.11 | 57.11 |
| Feed Cost/Steer, $ | 103.16 | 106.52 | 116.05 | 109.15 |
| Implant Cost/Steer,$ | - - | - - | 2.10 | 2.10 |
| Worming Cost/Steer, $ | - - | 1.30 | - - | 1.30 |
| Return Over Expenses, $ | 402.83 | 397.60 | 410.12 | 415.72 |
| | | | | |
| Difference Compared to Control, $ | - - | -5.23 | +7.29 | +12.89 |
| [1]Steer died of heart failure. | | | | |

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