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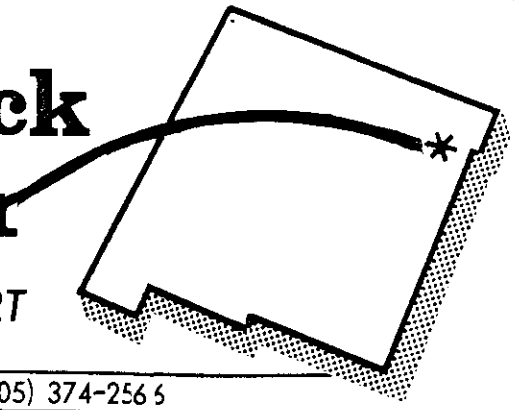
Clayton Livestock Research Center



PROGRESS REPORT

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Progress Report No. 62 (August, 1989)

EFFECTS OF COMPUDOSE AND BOVINE RESPIRATORY SYNCYTIAL VIRUS VACCINATION ON PERFORMANCE OF STOCKER CATTLE GRAZING WINTER WHEAT PASTURE

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The implication of bovine respiratory syncytial virus (BRSV) as a contributing factor in the etiology of bovine respiratory disease (BRD) has led to the development of several vaccines available for commercial use. While the exact role of BRSV in the development of BRD remains obscure, a BRSV - related syndrome termed "late-severe BRSV infection" has been described.[1] This condition has been characterized by the reappearance of BRD symptoms in calves that have been in the feedlot for over 28 days and has been related to BRSV infection. Little data exists concerning the effects of BRSV vaccination for stocker cattle grazing winter wheat pasture. Therefore, a 91-day trial was conducted at the Clayton Livestock Research Center to evaluate the effects of BRSV vaccination and anabolic implants on performance of stocker cattle grazing winter wheat pasture.

On November 16, 1988, 142 steer calves (avg wt 370 lbs) were either implanted with Compudose® and(or) administered BRSV vaccine (Bovi Shield®, Norden Laboratories, Inc.) according to the following scheme of treatments: no implant, no vaccine (Group 1, control); no implant, BRSV vaccination (Group 2); implanted, no BRSV vaccine (Group 3); and implanted and vaccinated for BRSV (Group 4). Cattle were placed on a 120-acre winter wheat pasture and rotationally grazed at 28-day intervals between two 60-acre paddocks.

All calves used in the study had been purchased from an order buyer in south Texas and used in a 28-day receiving trial before starting the present trial. Calves were processed the day after arrival, with common processing procedures including: branding, ear-tagging, castrating and dehorning if required, administration of 7-way clostridial bacteria and IBR-PI_3 vaccine, and injection of ivermectin and vitamin A. Morbid calves were treated with a common medication regimen. At the start of the trial, all calves were apparently healthy and not suffering from overt symptoms of BRD. Calves receiving BRSV vaccination on day 1, were revaccinated on day 28. All calves were weighed individually on day 1, 28, 56 and 91 of the trial.

During the first 28 days, (Table 1) calves receiving BRSV vaccination (Group 2 and 4), exhibited increased ($P<.01$) average daily gain (ADG) compared with non-vaccinated calves (Group 1 and 3). Calves receiving both Compudose and BRSV vaccine had significantly greater ADG compared with calves receiving Compudose only and a numerically, although non-significantly, greater ADG compared with calves receiving only BRSV vaccine; thus suggesting an additive effect on ADG from both Compudose and BRSV vaccination. In the following 28 day period, the weight gain response observed during the first 28 days for vaccinated calves was absent; however implanted calves

gained more weight (P<.01) than non-implanted calves. During the third period, ADG among all groups did not differ (P>.10).

Cumulative ADG for both 56 and 91 days demonstrated an increased (P<.01) ADG for implanted compared with non-implanted calves. While the growth response from Compudose in stocker cattle has been well documented, the reason for the increased ADG attributable to BRSV vaccination observed during the first 28 days of the trial is not known. It has been suggested that the occurrence of "late severe BRSV infection" may be caused by a BRSV antigen - induced hypersensitivity response that may be related to nutritional stressors that accompany rapid and drastic dietary alterations (i.e. dramatic changes in ruminal pH). In this trial, it may be speculated that, although no clinical signs of BRD were observed, vaccinating calves for BRSV before placing cattle on wheat pasture may have reduced a possible BRSV - related infection or adverse immune response that may have been induced by the dietary change of going from the feedlot to wheat pasture. While this is conjecture, the results of this study suggest implanting and vaccinating calves for BRSV destined for a winter wheat grazing program may improve performance particularly during the first month on pasture. (ERRATA: In CLRC Progress Report No. 58, Naxcel administered to morbid calves at .5 mg/lb, rather than 5 mg/lb).

[1] Brown, N. 1988. Large Anim. Vet. 43 (3):11. Sibbel, R. 1988. Large Anim. Vet. 43 (5):39.

TABLE 1. EFFECTS OF COMPUDOSE AND BRSV VACCINATION ON PERFORMANCE OF STOCKER CATTLE GRAZING WINTER WHEAT PASTURE

Item	Control	No Implant, BRSV	Implant, No BRSV	Implant & BRSV	SE[a]
Number of calves	36	36	34	36	
Initial wt., lbs[b]	382	364	363	373	6.5
91-DAY WT., Lbs[b]	476	460	469	483	9.0
Average Daily Gain, lb/d					
1-28d	1.30[c]	1.58[d,e]	1.43[c,d]	1.75[e]	.11
29-56d	1.25[c]	1.06[c]	1.50[d]	1.50[d]	.11
57-91d	.65	.65	.67	.55	.09
1-56d	1.28[c]	1.32[c,d]	1.46[d,e]	1.62[e]	.08
1-91d	1.04[c]	1.06[c,d]	1.16[d,e]	1.21[e]	.06

[a] Standard error of least squares means, n =34.
[b] Implant x vaccination interaction (P<.10).
[c,d,e] Row means with different superscripts differ (P<.01).

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