Effects of Weaning Date and Deworming on Post Weaning Performance of Beef Heifers Grazing Native Range

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Story in Brief

The objective of this study was to determine the effects of late summer endectocide treatment and weaning date on performance of yearling fall-born heifers grazing native range and receiving a protein supplement. Twenty-seven predominantly Angus heifers that were previously weaned at 210 d of age in April (Treatment=APRIL) or at 300 d of age in July (Treatment=JULY) were randomly assigned to two levels of endectocide treatment post-weaning: (1) Heifers receiving endectocide application (1% ivermectin and 10% clorsulon in a sterile solution) at the onset of the study (d=0) and reapplication on d-28 (Treatment=TREATED), and (2) Heifers that did not receive endectocide application (Treatment=CONTROL). All heifers received protein supplementation equivalent to 1 lb/head per day of cottonseed meal and grazed native range as a contemporary group throughout the 84-d trial. Deworming and weaning treatments did not interact. JULY heifers were 52 lb heavier than APRIL heifers at the initiation of the study and at the conclusion of the 84-d trial. Weight gain of TREATED and CONTROL heifers was similar.

Keywords: Beef Heifers, Performance, Grazing, Protein, Deworming, Weaning

Introduction

Development of fall-born replacement heifers requires that heifers continue to gain weight during the late-summer and early-fall when quality of native forage is declining. To ensure adequate weight gain, heifers are frequently provided a protein supplement. Previous research demonstrates that growing cattle treated with an endectocide treatment in mid- to late-summer grow faster than untreated cattle (Purvis et al., 1996; Smith and Claywell, 1996). Additionally, Oklahoma producers increasingly wean their fall-born calves later in the summer. It is not known whether increased weight gain achieved by later weaning is maintained through the fall and winter months when heifers are retained as herd replacements. This experiment was designed to evaluate the effect of late-summer endectocide treatment and prior weaning management of yearling beef heifers grazing native range and receiving a protein supplement.

Materials and Methods

Cattle and Treatments. This experiment was conducted at the OSU Range Cow Research Center, North Range Unit located 15 mi west of Stillwater, OK, using predominantly Angus fall-born heifers. Sixteen heifers that were previously weaned at an average of 210 d of age in April (Treatment=APRIL) and 11 heifers that were previously weaned at an average of 300 d of age in July (Treatment=JULY) were randomly assigned within weaning treatment. Endectocide treatments included: 1) no endectocide treatment (Treatment=CONTROL), and 2) an injection of 1% ivermectin and 10% clorsulon in a sterile solution at the onset of the study (d=0) and reapplication on d 28 (Treatment=TREATED). These cattle are progeny of the OSU Range Cow Research herd and are relatively uniform in age and biological type.

Management and Weighing Procedures. Initial weights were recorded on August 4, 2005, and heifers randomly assigned to receive endectocide treatment were subcutaneously injected with an anthelmintic at a dosage of 1 mL / 110 lb (50 kg) body weight. Weights were recorded at 28-d intervals through d 84. TREATED heifers received a second dosage of anthelmintic on d 28.

All heifers grazed as a contemporary group throughout this trial and forage was abundant at all times. Heifers were supplemented with 2.33 lb of a 41% crude protein (as-fed) cottonseed meal supplement on Mondays, Wednesdays, and Fridays in individual feeding stanchions. This feeding rate equates to 1 lb/hd per day.

At the conclusion of the trial all heifers were treated with an anthelmintic to ensure a low worm burden going into the breeding season.

To evaluate the long-term effect of weaning treatment on heifer growth, additional weights and body condition scores were recorded on December 21 and February 1.

Statistical Analysis

Data were analyzed using the MIXED model procedure of SAS. The model included terms for weaning treatment, endectocide treatment, birth date, birth weight, and treatment interaction. Data presented in tables are least square means.

Results and Discussion

There was no significant interaction between weaning and endectocide treatments. Therefore, the data for main effects were pooled and shown in Table 1. Endectocide treatment had no significant influence on performance of beef heifers during the study period. The lack of growth response to endectocide treatment indicates that parasite load was minimal during the study period. This is somewhat surprising because performance of fall-born steers and heifers was improved during the same time period by endectocide treatment the previous 2 yr (Lalman, et al., 2004). These experiments were conducted using similar cattle grazing the same pastures as those used in the current experiment.

Table 1. Effects of late summer deworming on yearling heifer performance and interaction with timing of weaning

Item	CONROL	TREATED	SE	P value
No. of Heifers	n=14	n=13	---	---
Aug 4 Wt., d=0	629	630	17.3	.97
Sept 1 Wt., d=28	684	687	17.3	.91
Sept 29 Wt., d=56	707	709	16.2	.91
Oct 27 Wt., d=84	705	712	14.9	.77
Dec 21 Wt. d=139	737	723	16.2	.55

Feb 1 Wt., d=181	760	746	16.9	.55
Period 1 ADG (d-0 to d-28)	2.0	2.0	.10	.65
Period 2 ADG (d-28 to d-56)	.76	.82	.12	.71
Period 3 ADG (d-56 to d-84)	-.04	.11	.09	.25
Cum. ADG (d-0 to d-84)	.90	.99	.04	.15
Period 4 ADG (d-84 to d-139)	.48	.39	.10	.32
Cum. Post-Trial ADG (d-84 to d-181)	.50	.44	.05	.36
Dec. 21 BCS	5.15	5.06	.06	.30
Feb.1 BCS	5.48	5.46	.10	.87

Heifers weaned in July were 52 lb heavier than APRIL heifers at the initiation of the trial and maintained much of this advantage throughout the 84-d trial (Table 2). However, ADG did not differ between treatments and averaged .95 ±.05 lb/d. JULY heifers tended (P=.1) to weigh more than APRIL heifers in December and February (35 and 37 lb, respectively), although ADG did not differ between treatments for this period. Similarly, BCS did not differ between treatments at either date measured.

Table 2. Effects of timing of weaning on yearling heifer performance.

Item	APRIL	JULY	SE	P value
No. of Heifers	n=16	n=11	---	---
Aug 4 Wt., d=0	603	655	17.4	.04
Sept 1 Wt., d=28	663	709	17.4	.06
Sept 29 Wt., d=56	686	729	16.3	.06
Oct 27 Wt., d=84	688	730	14.9	.05
Dec 21 Wt., d=139	715	750	15.1	.10
Feb 1 Wt., d=181	737	774	16.0	.11
Period 1 ADG (d-0 to d-28)	2.13	1.90	.10	.11
Period 2 ADG (d-28 to d-56)	.81	.76	.12	.79

Period 3 ADG (d-56 to d-84)	.06	.02	.09	.77
Cum. ADG (d-0 to d-84)	1.00	.89	.05	.08
Period 4 ADG (d-84 to d-139)	.49	.37	.08	.26
Period 5 ADG (d-139 to d-181)	.53	.55	.10	.91
Cum. Post-Trial ADG (d-84 to d-181)	.51	.44	.05	.34
Dec. 21 BCS	5.08	5.13	.07	.57
Feb. 1 BCS	5.47	5.47	.10	.99

Response to endectocide treatment at the Range Cow Research Center is apparently inconsistent based on the results of this experiment and those previously reported (Lalman et al., 2004). Additional weight gain achieved by later weaning in a fall calving system is largely maintained through the fall and winter.

Literature Cited

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