THE INFLUENCE OF BODY CONDITION SCORE ON WINTER WEIGHT AND CONDITION LOSSES BY SPRING CALVING COWS

J.J. Wagner[1], K.S. Lusby[2] and J. Rakestraw[1]

Story in Brief

The effect of condition score (CS) on winter weight and condition change was studied using 64 Hereford and Angus cows bred to calve in the spring of 1984. Cows ranged in CS from 4 to 7 units at the start of the trial, grazed together in two common pastures of native tallgrass range and were individually fed 3 lb/head/day of soybean meal from mid-November until calving and 4 lb/head/day of soybean meal from calving through May. During winter, cows lost a mean of 93.4 lb and .94 units CS. Fat cows tended to lose more weight ($P<.10$) and lost more condition ($P<.001$) than thin cows (24.22 lb and 1.06 units per unit CS). The utility of manipulating body condition during winter under Oklahoma range conditions appears limited.

(Key Words: Body Condition Score, Weight:Height Ratio, Urea Water Space, Carcass Composition, Beef Cows.)

Introduction

The cost of maintaining the cow herd is often the major expense limiting the efficiency of beef production. Up to 91% of the total energy consumed by a cow may be partitioned toward maintenance. Even a small savings in maintenance may dramatically improve net returns per cow.

The influence of body condition on maintenance energy requirements is poorly understood. Previous research indicated that fat cows of the same lean body mass had lower maintenance costs than thin cows. These authors concluded that a cow must be kept in fat condition for 10 years in order to realize a savings in maintenance costs.

The objective of this research was to study the effect of body condition on winter weight and condition loss by spring calving Hereford cows.

Materials and Methods

Sixty-four Hereford and Angus cows (904 lb, CS = 5.5 units), bred to calve in the spring of 1984 were stratified by breed, weight, CS and expected calving date and assigned to three feeding regimes in August of 1983. From August through mid-November, 22 cows were group fed 2.2 lb/head/day of soybean meal, 21 were group fed .9 lb/head/day of soybean meal, and the remaining cows were fed no supplemental protein. By November, CS ranged from 4 to 7 units. All cows were individually fed 3.16 lb/head/day of soybean meal from mid-November until calving (March) and 4.0 lb/head/day of soybean meal from calving through May.

From August through mid-November, each group of cows grazed similar

[1]Graduate Assistant [2]Associate Professor

pastures (220 acres) of native tallgrass range in North Central Oklahoma. From mid-November through May all cows grazed together in two common pastures (440 acres). The predominant forage species were little bluestem (Andropogan scoparius), big bluestem (Andropogan gerardii), switchgrass (Panicum virgatum) and Indian grass (Sorghastrum nutans). Large round bales of prairie hay were offered ad libitum on days when snow or ice covered native grass. Cows were weighed and assigned CS after an overnight withdrawal of feed and water initially, and at 28 day intervals throughout the trial.

Results and Discussion

The effects of cow condition on winter (November 15, 1983 to May 25, 1984) weight and condition change were analyzed by regressing winter weight (Table 1) and condition (Table 2) change on cow breed, December cow weight and CS, calving date, calf birth weight and calf sex. Cow breed, December weight, calf sex and calf birth weight did not significantly influence winter weight loss (93.4 lb) by spring calving cows. Cows calving early in the season lost more weight ($P<.015$) than cows calving late in the season (1.28 lb/day). Cows which were fat when entering the winter tended to lose more weight ($P<.10$) during the winter than cows entering the winter thin (24.22 lb/unit CS). Winter CS losses by spring calving cows (.94 units) were not influenced by cow breed or calving date. Cows nursing bull or steer calves tended to lose .394 or .312 units more condition ($P<.10$) than cows nursing heifer calves. Cows that gave birth to heavier calves tended to lose more condition ($P<.10$) than those giving birth to lighter calves (.015 units CS per pound birth weight). Cows with more condition in December lost significantly more condition ($P<.001$) than thinner conditioned cows (1.062 units per unit CS).

Table 1. Regressions of winter (November 15, 1983 to May 25, 1984) weight change on cow breed, December cow weight, December condition, calving date, calf birth weight and calf sex.

Variable		Regression Coefficient	P[a]	Standard Error
Intercept		29.71	.765	98.175
Breed of cow:	Angus	3.77	.873	23.548
	Hereford	0.00		
Sex of calf:	bull	-18.45	.373	20.535
	steer	-21.71	.407	25.965
	heifer	0.00		
December weight, lb		-0.11	.617	.229
December CS[b], units		-24.22	.099	14.443
Calving date, days		1.28	.015	.511
Calf birth weight, lb		-0.95	.638	2.021

[a]Probability of a greater T for the hypothesis, H_o: parameter = 0.
[b]Condition score.

Wagner et al. (1984) demonstrated that cow weight and condition can be efficiently increased prior to winter. Spring calving cows gained

2.4 lbs for each pound of soybean meal consumed. The results of this study may be interpreted to suggest that cows with more condition entering the winter lose more weight and condition during winter than thin cows when supplemented alike.

It appears that under Oklahoma range conditions, the utility of manipulating body fatness in order to realize a savings in maintenance costs is limited. Perhaps body weight and condition are more readily maintained under production systems utilizing higher quality harvested forages.

Table 2. Regressions of winter (November 15, 1983 to May 25, 1984) condition change on cow breed, December cow weight, December condition, calving date, calf birth weight and calf sex.

Variable		Regression Coefficient	P[a]	Standard Error
Intercept		3.710	.001	.847
Breed of cow:	Angus	0.075	.714	.203
	Hereford	0.000		
Sex of calf:	bull	-0.394	.030	.177
	steer	-0.312	.169	.224
	heifer	0.000		
December weight, lb		0.003	.001	.001
December CS[b], units		-1.062	.001	.125
Calving date, days		0.001	.880	.004
Calf birth weight, lb		-0.015	.065	.008

[a]Probability of a greater T for the hypothesis, H_o: parameter = 0.
[b]Condition score.

Literature Cited

Wagner, J.J. et al. 1984. An alternative supplementation schedule with and without Lasalocid for wintering beef cows. OSU MP-116:120.