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INFLUENCE OF COW WEIGHT CHANGE ON WEANING WEIGHTS AND SUBSEQUENT BIRTH WEIGHTS OF CALVES AND COW REPRODUCTIVE PERFORMANCE

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SUMMARY

Records covering an 11-year period were evaluated on a herd of fall calving F-1 Brahman x Hereford cows. Calf birth weights, 205-day adjusted weaning weights, calving intervals, and pregnancy data were collected annually. Cows and calves were placed on clover-ryegrass-bermudagrass pastures for 3 to 5 months during early- to mid-gestation. All animals were weighed at 28-day intervals while on the test pastures. In early to mid-July, calves were weaned and the cows removed from the test pastures and placed on bermudagrass paddocks where they remained until fall calving. During the breeding season cows were exposed to fertile bulls for a 90-day period.

The cow weight data was divided into 2 groups based on weight-loss or weight-gain while on the test pastures. The birth weight of the calves was similar ($P > .10$) for both groups of cows. The weight-loss cows weaned lighter ($P < .01$) calves than the weight-gain cows. There was a greater ($P < .01$) percentage of weight-gain cows than weight-loss cows pregnant at the end of the breeding season. Cows that lost weight and did conceive had longer ($P < .01$) calving intervals than cows that gained weight and conceived.

OBJECTIVES

The data being presented in this study was analyzed to (1) determine effect of weight change by the cow early in gestation on reproductive performance of the cow; (2) determine effect of cow performance on weanling and subsequent calf performance.

PROCEDURES

Records covering an 11-year period from a herd of fall calving F-1 Brahman x Hereford cows were analyzed. Calf birth weight, 205-day adjusted weaning weight, calving interval, and pregnancy data were collected annually. Cows with calves were placed on clover-ryegrass-bermudagrass pastures for 3 to 5 months during early- to mid-gestation. The cows were

placed on the test pastures at 3 levels of forage availability (stocking rates). While on the test pastures the cows were weighed every 28 days. In early to mid-July, calves were weaned, cows removed from the test pastures, and placed on bermudagrass paddocks where they remained until the next calving season.

During the breeding season cows were exposed to a fertile bull for a 90-day period. Sire breeds during the eleven years have included Brown Swiss, Charolais, Santa Gertrudis, Brangus, and Simmental. Cows were rectally palpated 45 days after the end of the breeding season to determine pregnancy. The cow weight data was divided into 2 groups based on weight loss or weight gain by the cow while on the test pastures. The data was analyzed by the Students t-test and Chi-Square (Ott, 1977).

RESULTS

The 11-year average of cow weight change is presented in Table 1. Cows in the weight-loss group lost 105 lbs while on the preweaning grazing treatments; whereas, cows in the weight-gain group gained approximately 116 lbs during the same period. In general, those cows which lost weight during the data collection period were assigned to the low forage availability or high stocked pasture; whereas, those cows which gained weight were assigned to the medium to high forage availability or lightly stocked pastures. Cows which lost weight weaned lighter calves ($P<.01$) (Table 1). There was a 70-pound weaning weight advantage for cows that gained weight during lactation. Table 2 shows the percent distribution of calf weaning weights as influenced by cow weight change.

Birth weights of subsequent calves were not affected by cow weight change during the first two trimesters of pregnancy (Table 1). Considering the breeds of bulls used during the 11-year period, birth weights were reasonably light at 75 pounds. Table 3 shows the percent distribution of calf birth weights as influenced by cow weight change.

Calving interval and pregnancy status of cows used in this data summary are shown in Table 4. Perhaps one of the most important considerations of those cows which lost weight prior to calving was that the calving interval was lengthened by more than one month. This not only affects weaning weights and dates, but also allows for more

potential problems in matching forage systems with animal functions. The percent pregnant vs open cows selected in this data set were also significantly affected by cow weight change in the first trimesters of pregnancy (Table 4). From the data presented there is a definite carryover effect from high stocking rate pastures which were responsible for cow weight loss as well as a decline in body condition. The full implications of this carryover effect have not been ascertained, but are under current evaluation. It may be concluded, however, that weight loss by the cow during early to mid-gestation decreases the reproductive efficiency of the cow by lengthening the calving interval and decreasing the conception rate.

Table 1. Cow weight change during the grazing season and resultant calf weaning weights and birth weights.

COW GROUP	COW WEIGHT CHANGE (lbs)	(n)	CALF WEANING WEIGHT (lbs)	(n)	CALF BIRTH WEIGHTS (lbs)	(n)
WEIGHT-LOSS	-105.1±63.6[a]	(51)	439.5±59.2[a]	(51)	74.6±11.2[a]	(35)
WEIGHT-GAIN	+116.6±62.0[b]	(145)	509.6±64.2[b]	(138)	74.6±11.3[a]	(124)

[a,b]Values with different superscripts are statistically different ($P<.01$).

Table 2. Percent distribution of calf weaning weight as influenced by cow weight change.

	WEANING WEIGHTS (lbs)					
COW GROUP	<400	400-450	451-500	501-550	551-600	>600
WEIGHT-LOSS	29.4%	29.4%	29.4%	5.9%	3.9%	1.9%
WEIGHT-GAIN	5.1%	13.0%	26.8%	28.9%	16.7%	9.4%

Table 3. Percent distribution of calf birth weights as influenced by cow weight changes.

	BIRTH WEIGHTS (lbs)					
COW GROUP	<60	60-70	71-79	80-90	91-99	>99
WEIGHT-LOSS	8.3%	33.3%	30.5%	19.4%	5.5%	2.8%
WEIGHT-GAIN	7.3%	33.1%	31.5%	20.2%	5.6%	2.4%

Table 4. Calving interval and pregnancy status of cows gaining or losing weight during the grazing season.

COW GROUP	CALVING INTERVAL (days)	(n)	PREGNANT (%)	OPEN (%)	(n)
WEIGHT-LOSS	397.25 ± 37.16^{a}	(24)	72.5^{a}	27.5^{a}	(51)
WEIGHT-GAIN	360.74 ± 41.84^{b}	(110)	90.3^{b}	9.7^{b}	(144)

^{a,b}Values with different superscripts are statistically different ($P<.01$).