

Effects of Postpartum Weight Loss on Performance of Fall Calving Cows

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Story in Brief

In each of two years, 54 mature Hereford cows in good body condition were allotted to one of 3 nutritional treatments at the time of calving in September and October. Treatments were (1) maintain weight from calving through breeding, (2) lose 10 percent of their post-calving weight from calving to the beginning of breeding and (3) maintain weight from calving to breeding but lose 10-15 percent of their body weight during the breeding season (December 1 — February 1). Due to forage and weather conditions, weight losses during the first year were less than anticipated and greater than planned during the second year.

Weight loss before breeding tended to delay the interval to estrus. Cows that lost weight during the breeding season had lower conception rates. Weight loss during breeding was especially detrimental to rebreeding when it followed weight loss before breeding as occurred during the second year. These results show that good condition at calving is not enough to guarantee good reproductive performance of fall calving cows.

Introduction

It has been shown that cows losing weight after calving tend to have longer postpartum intervals from calving to estrus than cows that are gaining weight. Most cows in Oklahoma, whether spring or fall calving, will lose weight from calving to breeding. Fall calving cows and early spring calving cows frequently lose weight during the breeding season as well. It is important, therefore, that the effect of weight loss before and during the breeding season on cow reproduction and calf performance be measured so that feed resources might be more effectively allocated. The objective of this research was to determine the effects of weight loss before and during the breeding season on rebreeding of cows and performance of calves.

Experimental Procedure

This report covers the first two years of this study conducted during the 1980-81 and 1981-82 breeding seasons. All cows were mature Herefords that calved from mid-September to late October. The cows grazed bermuda pastures until calving and were moved to native grass shortly after calving.

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One day each week, cows with calves at least 2 days old were weighed (1st postpartum weight), scored for body condition (1 = very thin to 9 = very fat) and allotted by block to one of three treatments based on date of calving. Treatments were: (1) maintain weight from calving though breeding, (2) lose about 10 percent of their postcalving weight from calving to the beginning of breeding and be fed the same as Group 1 during breeding and (3) maintain weight from calving to breeding followed by a loss of 10-15 percent of their body weight during the breeding season.

Supplemental feed for both years consisted of cottonseed meal at the rate of from 2 to 3 lb/head/day from calving to breeding for Groups 1 and 3 and no cottonseed meal before breeding for Group 2. During the breeding season Groups 1 and 2 were fed 4 lb/head/day of cottonseed meal while Group 3 was fed none. Hay was fed only when snow or ice covered the dormant forage. Year 1 was very mild but year 2 was cold with extended periods of rain and ice. Following breeding, all cows were fed together at the rate of 4 lb/hd/day of cottonseed meal with hay fed when snow or ice covered available forage.

All calves were weighed, and males were castrated by banding at birth. Calves were weighed at the beginning and end of the breeding season and at weaning in mid-May. Cows were weighed and scored for body condition at 2-week intervals from calving to the end of breeding and at 28-day intervals to weaning. The breeding season was 60 days from about December 1 to February 1 each year. Estrus was detected by sterile bulls with chin-ball markers before breeding and by marker-equipped fertile Hereford bulls during the breeding season.

Results and Discussion

Results of year 1 are shown in Table 1 and results of year 2 are shown in Table 2. Since significant treatment X year interactions were found, the data will be presented by year.

Year 1

Due to mild winter and abundant forage, Group 2 lost less weight before breeding than anticipated. During the breeding season, cows in Group 3 lost an average of 149 lb or about 15 percent of their body weight. Weight losses following the breeding season were the inverse of weight losses from calving to the end of breeding. Group 1 cows were the heaviest at the end of breeding and lost the most weight from February to May. Group 3 cows were the thinnest at the end of breeding, but lost the least from February to May. Group 2 cows were intermediate. Since all groups were pastured together from February to May and fed the same amount of supplement, this would suggest that some compensatory gain response may occur in cows on low quality roughage diets. Body condition changes were similar to weight changes throughout the study.

Cows were in excellent condition at calving and all cows were observed in heat during the breeding season of year 1. Cows in Group 2 tended to have a longer interval from calving to first estrus than in Groups 1 or 3. Pregnancy rates were similar for cows in Groups 1 and 2 (79 and 88 percent), but were

Table 1. Cow and calf performance: Year 1

	Treatment			Prob.
	1	2	3	
Number of cows	19	17	18	
Cow wt, lb				
After calving	1041	1021	1027	NS
Change to breeding	-6	-32	-9	NS
Change during breeding	-51 ^a	-67 ^a	-149 ^b	<.01
Change from breeding to weaning	-118 ^a	-85 ^b	-54 ^c	<.01
Total change	-175	-184	-208	NS
Cow condition score				
After calving	6.4	6.2	6.5	NS
Change to breeding	-.27	-.25	-.38	NS
Change during breeding	-.36 ^a	-.20 ^a	-.93 ^b	<.01
Change from breeding to weaning	-.24	-.25	.12	NS
Reproductive performance				
% pregnant	79 ^a	88 ^a	50 ^b	<.05
Days from calving to first estrus (number in heat)	52(19)	70(17)	58(18)	NS
Calf wt, lb				
Birth wt	73	70	73	—
Adjusted 205 day wt	352	344	321	NS

^{a,b,c}Means on the same line with different superscript letters differ ($P < .05$).

^dCondition score based on scale of 1 through 9 where 1 = very thin and 9 = very fat.

Table 2. Cow and calf performance: Year 2

	Treatment			Prob.
	1	2	3	
Number of cows	15	19	20	
Cow wt, lb				
After calving	1015	1020	997	NS
Change to breeding	-45 ^a	-175 ^b	-69 ^c	<.01
Change during breeding	-86 ^a	-4 ^b	-106 ^c	<.01
Change from breeding to weaning	-70	-61	-56	NS
Total change	-200	-241	-231	NS
Cow condition score				
After calving	6.3	6.3	6.2	NS
Change to breeding	-.4 ^a	-1.4 ^b	-.3 ^a	<.01
Change during breeding	-.37 ^a	0.05 ^b	-1.37 ^c	<.01
Change from breeding to weaning	-.87	-.55	-.32	NS
Reproductive performance				
% pregnant	87	53	65	NS
Days from calving to first estrus (number in heat)	46(15)	61(13)	45(13)	NS
Days from calving to conception	82	86	84	.07
Calf wt, lb				
Birth wt	81	79	73	—
Adjusted 205 day wt	286	296	290	NS

^{a,b,c}Means on the same line with different superscript letter differ ($P < .05$).

^dCondition score based on a scale of 1 through 9 where 1 = very thin and 9 = very fat.

reduced for cows in Group 3 (50 percent). These results suggest that even if cows calve in good condition, reducing the level of nutrition before or during breeding can have detrimental effects on reproduction.

Calf weaning weights were low, reflecting the fact that calves were weaned in May without creep feed. Calves of Group 1 cows were the heaviest while calves of Group 3 cows were the lightest.

Year 2

Cows calved in slightly lower body condition during year 2 compared to cows in year 1 and the cows in the second year had greater weight losses before and during the breeding season. Forage conditions were poorer and the weather was much more severe during the second year.

Group 2 cows lost 175 lbs and 1.4 condition units from calving to the beginning of the breeding season and exhibited estrus about 15 days later than cows in Groups 1 or 3. During the breeding season, Group 3 cows, which were fed no supplemental feed, lost 106 lbs while cows in Group 1 lost 86 lbs and cows in Group 2 lost only 4 lbs. Under the forage and weather conditions experienced in the second year, protein supplement and standing forage were inadequate to maintain weight in these lactating cows. More supplemental hay has been fed in the third year of this study to more closely control weight changes. The greater weight loss for cows in Group 1 than for Group 2 during the breeding season when both groups were fed alike is in agreement with postbreeding weight changes in the first year. It would appear that cows can readily mobilize energy stores to a point and then retain weight more efficiently. This may be due to reduced milk production, more efficient digestion or metabolism or other factors.

Rebreeding rates for cows that lost large amounts of weight either before or during the breeding season were reduced. Pregnancy rates were 87, 53 and 65 percent for Groups 1, 2 and 3, respectively. The low rebreeding rate for Group 2 is inconsistent with the first year. The 175 lb weight loss for Group 2 cows during year 2 was apparently enough to suppress estrus even in cows that calved in good condition. Only 13 of 19 cows in Group 2 were detected in heat compared to all cows in Group 1. Similar to results of year 1, rebreeding performance was reduced for cows in Group 3. The days from calving to first estrus were similar for cows in Groups 1 and 3, although less Group 3 cows were detected in estrus. Several cows were detected in estrus by teaser bulls before the breeding season. Apparently the 106 lb weight loss during breeding coupled with the 69 lb weight loss before breeding was enough nutritional stress that some Group 3 cows never cycled and some that cycled once before breeding did not cycle again.

It was possible in year 2 to compute the actual days from calving to conception. Conception was computed by subtracting 282 days from the next calving date. Calving intervals were 82, 86 and 84 days for Groups 1, 2 and 3. The apparent discrepancy between days to first estrus and days to conception is due to the number of cows in estrus before the breeding season and not due to breedings per conception. Even though less cows in Groups 2 and 3 were pregnant at the end of the breeding season, those cows that conceived did so early in the breeding season. Very few cows were in heat in January. Calf weights at 205 days were lower than in year 1, reflecting the greater weight loss of the cows in year 2.

Conclusion

Cows in Group 1, which had the least weight and condition loss from calving though breeding, had the greatest percent of cows in heat and the most cows rebred in the first 2 years of this study. These data show that good condition at calving is not enough to guarantee good rebreeding rates. Weight loss before the breeding season can reduce the number of cows in estrus and lengthen the interval from calving to estrus in those cows that do cycle. A severe weight loss during breeding can reduce the rebreeding rate and is especially critical if there has been weight loss before the breeding season.