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# **K** Effects of Weaning Weight on Reproductive Performance in Beef Heifers

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L. R. Sprott, L. R. Corah, and G. H. Kiracofe

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## Summary

Fertility during the first two breeding seasons was not affected by the dam's weaning weight, but lightest heifers at weaning reached puberty later, had smaller pelvic areas at calving, more difficult deliveries, had more calves die, and weaned a smaller percentage of their calves.

## Introduction

Light-weight heifers appear to have lower pregnancy rates and wean fewer calves. In this experiment, we determined the effects of dams' weaning weights on their reproductive performance through the second breeding season.

## Procedure

To determine the effects of dam weaning weight on reproductive performance, we held Angus and Angus x Hereford heifers (163 head) in a drylot from weaning through breeding, calving, and rebreeding. Heifers were classified at weaning as light (less than 367 lbs) or heavy (367 lbs or more). Heifers were grown at 1.5 pounds per head per day. NRC requirements were met during gestation and lactation. Puberty was defined as the first standing estrus.

Both breeding seasons lasted 60 days, and heifers were artificially inseminated by one technician using semen from a bull of known fertility. Calving ease was scored: 1=no assistance; 2=easy pull; 3=difficult pull; 4=caesarean section. Twenty-four hour milk production was measured by the weigh-suckle-weigh technique. After heifers not pregnant from the first 60-day breeding period were eliminated, 134 heifers remained.

## Results and Discussion

Light heifers (less than 367 lbs) at weaning reached puberty later ( $P<.01$ ) than those that were heavier at weaning (Table 12.1), but conception and pregnancy rates and weight gains during the growing phase were similar for both groups. Pelvic areas were similar when heifers reached 15 months of age.

Pelvic areas at calving were smallest ( $P<.05$ ) in dams lightest at weaning (Table 12.3), and they had more ( $P<.09$ ) difficult deliveries. Calves born to the lightest weaning dams were smaller at birth ( $P<.05$ ). Daily gain and adjusted weaning weight of the calves were similar but more ( $P<.05$ ) calves born to light weaning dams died the first 24 hours after birth, probably from stress during difficult deliveries. Dams in the light weight group weaned fewer ( $P<.05$ ) calves. Milk production, post-calving interval to estrus, and conception were similar in both groups (Tables 12.2 and 12.3).

Table 12.1. Effects of weaning weight on reproductive performance during first breeding period.

	Weaning weight	
	Light ( $<367$ lbs)	Heavy ( $367$ lbs or more)
No. of animals	90	73
Average weight at puberty (lbs)	630.1	614.2
Average age at puberty (days)	388.4 <sup>a</sup>	333.8 <sup>b</sup>
Percent first service conception	71.7	67.6
Percent pregnant	87.0	80.0
Average daily gain (lbs)	1.4	1.4
Pelvic area at 15 months of age (cm <sup>2</sup> )	199.0	203.3

<sup>a,b</sup>Values in the same row with different superscripts differ significantly ( $P<.01$ ).

Table 12.2. Effects of dams' weaning weight on their reproductive performance after calving.

	Dams' weaning weight	
	Light ( $<367$ lbs)	Heavy ( $367$ lbs or more)
No. of cows	51	50
Postcalving interval to estrus (days)	58.2	57.2
Percent first service conception	64.0	64.0
Percent pregnant	80	82

Table 12.3. Effects of dams' weaning weight on milk production, calving difficulty, and offspring performance.

	Dams' weaning weight	
	Light (<367 lbs)	Heavy (367 lbs or more)
No. of cows	78	56
24-hr milk production (lbs)*	12.3	10.3
Pelvic area at calving (cm <sup>2</sup> )	249.8 <sup>a</sup>	261.2 <sup>b</sup>
Calving difficulty	1.78 <sup>c</sup>	1.39 <sup>d</sup>
Calf birth weight	60.1 <sup>a</sup>	64.2 <sup>b</sup>
Calf average daily gain up to 120 days of age (lbs)*	1.14	1.17
Adjusted weaning weight of calf (lbs)	384.8	383.9
Percent calves dying within 24 hrs of birth	13 <sup>a</sup>	2 <sup>b</sup>
Percent calves weaned	64.1 <sup>a</sup>	82.1 <sup>b</sup>

a,b Values in the same row with different superscripts differ significantly (P<.05)

c,d (P<.09)

\*n=44, 42 respectively



Kamar heatmount detectors are put on the rump with adhesive. When pressure is applied for a few seconds the detector turns red. A red detector indicates the cow was ridden, thus was in heat.