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## The effects of stocking rate and level of winter supplementation on pregnancy rates in spring calving cows in the Kansas Flint Hills

### Abstract

Pregnancy rates the first 40 days of breeding were lower in cows stocked at less than 6 acres/AU than in those allowed more grazing acres. Supplementation rate during the last 100 days of gestation had little effect on pregnancy rates. Thin cows that had weaned their first calf had lowest pregnancy rates.

### Keywords

Cattlemen's Day, 1981; Report of progress (Kansas State University. Agricultural Experiment Station); 394; Beef; Stocking rate; Pregnancy rates

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# **K** The Effects of Stocking Rate and Level of Winter Supplementation on Pregnancy Rates in Spring Calving Cows in the Kansas Flint Hills

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**U**  
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## Summary

Pregnancy rates the first 40 days of breeding were lower in cows stocked at less than 6 acres/AU than in those allowed more grazing acres. Supplementation rate during the last 100 days of gestation had little effect on pregnancy rates. Thin cows that had weaned their first calf had lowest pregnancy rates.

## Introduction

Low stocking rate increases weight gain in grazing steers and suckled beef cows. Adequate winter energy supplementation improves body condition and can improve reproductive performance in calving cows. Our study was designed to measure the effects of stocking rate and level of winter supplementation on body condition and pregnancy rates in spring calving cows grazing native Flint Hills range.

## Procedure

Spring calving cows from eight locations within a 35 mile radius were pregnancy tested to determine time of conception and total pregnancy rates. Cows were classed by age; those 3 years old and those older than 3. Only cows that had previously weaned a calf were included. Body condition was scored from 1 to 9 for thinnest to fattest cows. Stocking rate and supplementation level were determined for each set of cows. Supplemental feeding began 100 days before calving, but no supplement was fed during the breeding season.

## Results and Discussion

Stocking rates ranged from 4.6 acres to 9.3 acres per animal unit (AU). Cows on range stocked at less than 6 acres/AU had lower pregnancy rates after 20, 40, and 60 days of breeding, but only the difference at 40 days was statistically significant (Table 14.1). Cows from heavily stocked range also were thinner when pregnancy tested. Winter supplement levels had no effect on conception rates.

Cows that had weaned their first calf were thinner and had lower pregnancy rates than older cows after 40 and 60 days of breeding (Table 14.2). Cows with body condition 4 had lower pregnancy rates after 20 days of breeding than those with a body condition of 6 (Table 14.3), and the 4s had lower pregnancy rates after 40 and 60 days of breeding than those in body condition of 5 or 6. The younger cows with a body condition of 4 were particularly affected. Clearly, thin body condition is not conducive to good reproductive performance.

Estimates of pregnancy rates after 20, 40, and 60 days of breeding as affected by actual stocking rates are shown in Figure 14.1; it does not predict pregnancy as affected by stocking rate, but shows that more acres per AU tended to increase pregnancy rates after 20, 40, and 60 days of breeding. Higher pregnancy rates during the early period (first 40 days) is desirable, because the early conceiving cows are the first to give birth, and the earliest born calves usually wean heavier. However, we emphasize that factors such as body condition of the dam at calving, weight gain of the dam after calving, time of calving with the relation to start of breeding, and bull fertility were not considered in this experiment. These factors should not be overlooked in a herd management program.

Table 14.1. Effect of stocking rate on pregnancy rates and body condition.

	Stocking Rate	
	<6 acres/AU	6 or more acres/AU
No. of cows	447	290
Percent Pregnant after:		
20 days	23	36 <sup>b</sup>
40 days	36 <sup>a</sup>	67 <sup>b</sup>
60 days (end of breeding)	79	84
Body condition at time of pregnancy exam.	4.4 <sup>a</sup>	5.3 <sup>b</sup>

a,b Values in the same row with different superscripts differ significantly (P<0.01).

Table 14.2. Effect of dam age on pregnancy rates and body condition.

	Age of Dam	
	3 years	More than 3 years
No. of cows	158	579
Percent pregnant after:		
20 days	28	31 <sup>b</sup>
40 days	43 <sup>a</sup>	60 <sup>b</sup>
60 days (end of breeding)	74 <sup>a</sup>	88 <sup>b</sup>
Body condition at time of pregnancy exam	4.7 <sup>a</sup>	5.1 <sup>a</sup>

a,b Values in the same row with different superscripts differ significantly (P<0.01).

Table 14.3. Effect of body condition on pregnancy rates.

	Body condition		
	4	5	6
No. of cows	168	274	197
Percent pregnant after:			
20 days	14 <sup>a</sup>	15 <sup>a</sup>	24 <sup>b</sup>
40 days	32 <sup>a</sup>	43 <sup>b</sup>	60 <sup>c</sup>
60 days (end of breeding)	70 <sup>a</sup>	90 <sup>b</sup>	92 <sup>b</sup>

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

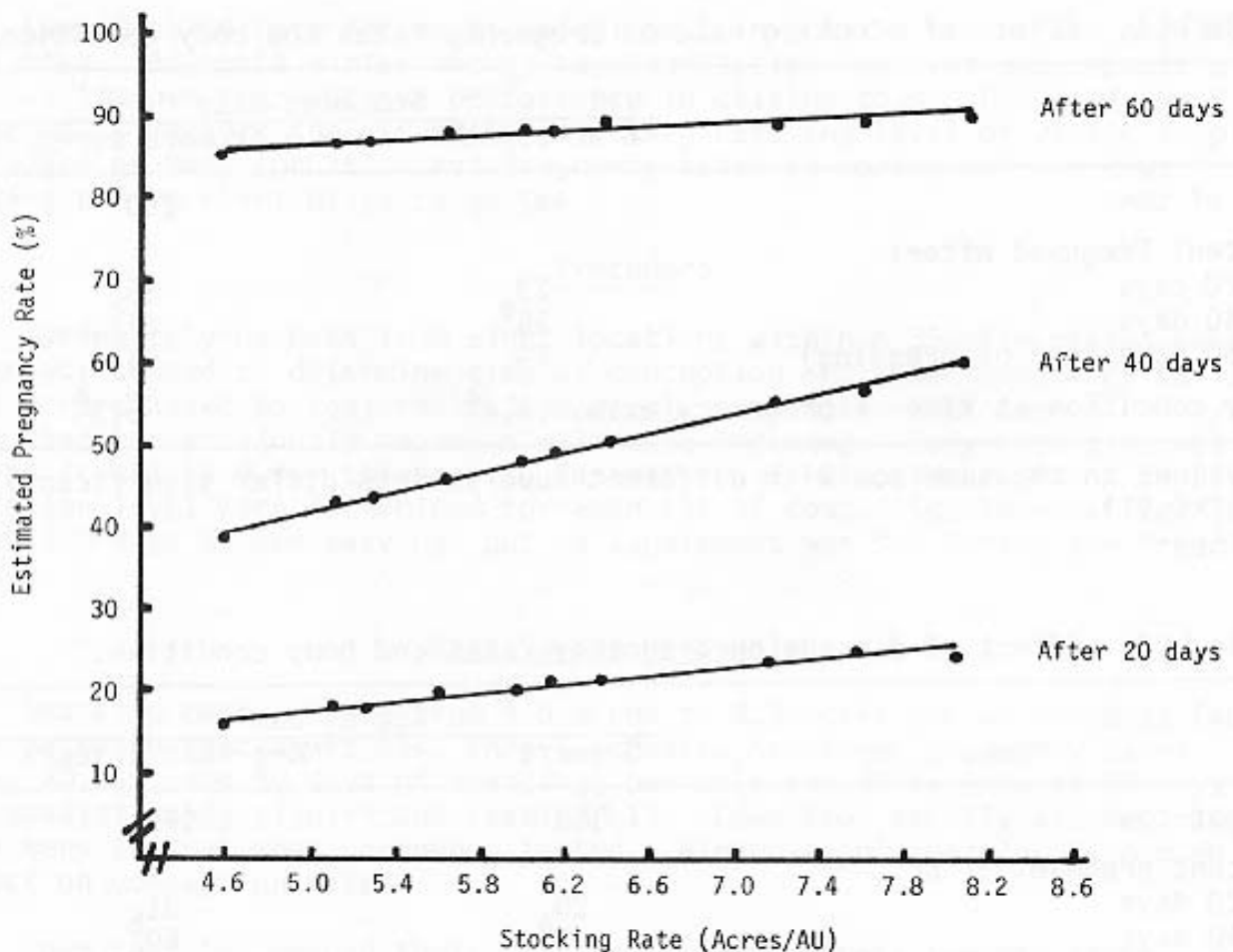


Figure 14.1. Estimates of pregnancy rates after 20, 40, and 60 days of breeding as affected by stocking rate.