

## THE OCCURRENCE OF POST PARTUM ANOESTRUS IN BONSMARA COWS ON SUPPLEMENTED SOURVELD GRAZING

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**OPSOMMING:** DIE VOORKOMS VAN POST PARTUM ANOESTRUS BY BONSMARA KOEIE OP SUURVELD MET BYVOEDING

62 Bonsmara koeie is direk na kalwing in een van die volgende 4 groepe verdeel: Groep A met veldkalwers het as kontrole gedien; Groep B se kalwers is gespeen op 3 dae ouderdom; Groep C se kalwers is op 60 dae gespeen vir 12 dae; Groep D se kalwers is permanent gespeen op 16 dae. Koeie is na kalwing drie maal per week rektaal ondersoek om eierstokaktiwiteit en baarmoeder herstel na kalwing vas te stel. Massa van die koeie is elke veertien dae bepaal. Geen verskille is gevind in baarmoeder herstel tussen die groepe nie. Groep B het 'n betekenisvolle korter post partum anoestrus periode na kalwing as die ander groepe gehad. Groep A het 'n G D T van 0,197 kg vanaf kalwing tot eerste CI gehandhaaf, groep B 0,744 kg, groep C 0,207 kg en groep D 0,352 kg. Laktasie het post partum anoestrus meer beïnvloed as massa-toename.

### SUMMARY

Directly after calving 62 Bonsmara cows were divided into one of the following groups: Group A served as a control and calves were allowed to remain with the cows and weaned at 7 months. In groups B, C and D the calves were weaned at 3 days of age, temporarily weaned for 12 days at 60 days of age, and permanently weaned at 60 days respectively. Cows were examined rectally three times per week to determine post partum uterine involution and the onset of ovarium activity. No difference could be detected between groups regarding uterine involution. Group B had a significantly shorter post partum anoestrus period compared to the other groups. Group A had an ADG of 0,197 kg from calving to first corpus luteum post partum, group B 0,744 kg, group C 0,207 kg and group D 0,352 kg. Lactation had a greater influence on the duration of post partum anoestrus than gain in body mass.

Post partum anoestrus, as a cause of reproductive failure in ranch cows has been extensively studied, but little information is available for range cows in the Transvaal Highveld. Lactation has been found to delay reconception (Symington & Hall, 1967) and both plane of nutrition (Wiltbank, Rowden, Ingalls, Gregory & Koch, 1962; Warnick, 1967; Bosman & Harwin, 1969) and suckling (de Alba, 1962; Saidudden, Riesen, Tyler & Casida, 1968) appear to be involved in lactational stress. The experiment reported here was conducted to examine the effect of early weaning on the reproductive performance of Bonsmara cows, a breed founded on the cross breeding of *Bos Indicus* and *Bos Taurus* cattle to improve fertility and milk production in high environmental temperatures.

### Procedure

Immediately after the summer calving season, 62 Bonsmara cows on the Rietvlei Experimental Farm, south of Pretoria (28°33' east and 26°05' south) were allocated to four groups, viz.

Group A – a control group in which the calves were allowed to remain with the cows until weaning at 210 days of age.

Group B – the calves were removed from the cows at the age of 3 days and reared artificially.

Group C – at 60 days of age the calves were prevented from suckling (using nasal plates) for a period of 12 days. The calves remained with the cows during this period.

Group D – the calves were weaned at 60 days and thereafter reared artificially.

In groups C and D the calves were removed from the cows at night after the age of 3 weeks to eliminate suckling and to encourage the consumption of creep feed.

Immediately after calving, ovarian activity and involution of the uterus were determined by rectal palpation every Monday, Wednesday and Friday until the onset of cyclic activity. Uterine involution was regarded as complete when the uterus was reduced to the size and tone of the normal non pregnant bovine uterus with horns of equal or near equal size. The presence of the first corpus luteum after calving was taken to indicate the end of the post partum period of anoestrus.

Cows were kept on natural grazing supplemented by a mixture, consisting of 95% yellow maize meal and 5% fish meal, and fed at the rate of 4,5 kg per cow every week. This was divided in three equal portions and given every Monday, Wednesday and Friday morning. Free access was available to a salt and bone meal lick. The cows were further weighed every 14 days.

### Results and Discussion

The duration of the post partum period of anoestrus in relation to a gain or loss of body mass in lactating and in non lactating cows and in relation to the completion of uterine involution, together with changes in body mass, are summarized in Tables 1 and 2 respectively. The data in Table 1 clearly illustrate the problem encountered in re-breeding cows after calving.

The important effect of lactation on the duration of post partum anoestrus is clearly demonstrated by the finding that 68% of non lactating cows exhibited oestrus within 60 days after calving compared to only 22% of lactating cows (Table 1). Symington & Hale (1967) reported that perma-

**Table 1**

*The occurrence of cyclic activity and mass changes in lactating and non lactating cows within 60 days after calving in a commercial Bonsmara beef herd*

Standard	Lactating cows		Non-Lactating Cows	
	Number	%	Number	%
Cows that cycled within 60 days after calving	13	22	53	68
Cows that did not cycle	46	78	25	32
Cows that cycled while gaining mass	18	28	55	73
Cows that cycled while losing mass	18	22	5	60
Post partum average daily gain of cows that cycled	9	0,12 kg	43	0,35 kg
Post partum average daily gain of cows that did not cycle	26	0,10 kg	17	0,26 kg

**Table 2**

*Mass change, days required for uterine involution and the duration of post partum anoestrus*

Group	Mass Changes (kg)	Uterine Involution (Days)	Days to first CI
A	+16(0,197) <sup>1</sup>	31,4	81
B	+35(0,744)	34,9	47**
C	+17(0,207)	36,3	82
D	+25(0,352)	31,5	71

<sup>1</sup> Average daily gain over the period from calving to first corpus luteum

\*\* (P<0,01)

ment weaning stimulated heat in 33% of cows with a better response to early weaning in cows on a low plane of nutrition.

The experimental treatment had no effect on the time required for complete regression of the uterus (Table 2). Furthermore, the elimination of suckling at night in Groups C and D had no apparent influence on uterine involution or the duration of the post partum anoestrus period. A more

rapid rate of involution was however reported by Riesen, Saidudden, Tyler & Casida (1968) in suckled than in non suckled cows. They used histological techniques to determine the uterine changes and it has been shown by Gier & Marion (1968) that micro-morphological changes in the uterus proceed after completion of palpable regression.

Results seem to agree however that the onset of post partum ovarian activity is unaffected by the rate of uterine regression and although suckling was reported to delay the first oestrus after calving, (Schilling & England, 1968; Wagner & Hansel, 1969) the elimination of suckling at night in this study had no effect on the duration of post partum anoestrus.

It is further clear that change in body mass influenced the duration of post partum anoestrus, but the effect appeared to be less dramatic than that of lactation. The minimum daily gain required for cows to cycle at 60 days after calving appeared to be 0,74 kg but this was readily attained only in Group B where the calves were weaned at three days of age.

Supplementation of range cows significantly relieves the severity of the effect of lactation on anoestrus while early weaning has an even more dramatic effect, particularly on a low plane of nutrition. However, the practicability of early weaning to augment range cow fertility depends on the economics of the artificial rearing of beef calves, a subject which justifies further investigation.

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