

Short communication

## Effect of synchronisation on calving date following natural mating in beef cattle

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### Abstract

Fertility is the main component influencing total herd efficiency in beef cattle. This short communication reports on the effect of oestrous synchronisation followed by natural mating on calving percentage and distribution of calvings. The results for the first year show that a practical way to decrease the length of the breeding season is using oestrous synchronisation followed by natural mating. The preliminary results also show that natural mating after oestrus synchronisation can increase conception rate, although these results are still inconclusive. Results show that cows calved earlier in the calving season and cows in anoestrus started cycling again. If long calving seasons are shortened and calving percentage increase, more and heavier calves of a uniform age may be weaned. Cows calving earlier in the season have a longer “recovery period” and haven the opportunity to calve in a better body condition during the next season, compared to cows calving late in the season. Cows that calve early also have a better chance of conceiving in the next breeding season.

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**Keywords:** Oestrous synchronisation, calving percentage, calving distribution

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The South African beef market has changed radically over the last four decades. In the past farmers could sell their cattle as oxen or old cows for a reasonable price. However the advent of a large feedlot sector in South Africa (70% – 75% of slaughtered cattle are finished through feedlots), means that the commercial market currently demands animals that are early maturing, efficient converters of high quality feed and possess superior carcass attributes (Scholtz *et al.*, 2008).

Fertility is the main component influencing total herd efficiency in beef cattle. Synchronization can lead to an increase in the total weight of calves weaned in a limited calving season most likely by decreasing the days to calving but also by increasing the number of calves born (Holm, 2006). A shorter calving season can thus increase weaning weight and produce more uniform calves.

Research is currently being undertaken in South Africa by the Agricultural Research Council to evaluate the effect of oestrous synchronisation, followed by natural mating on calving percentage and the distribution of actual calvings to establish if synchronization can lead to an increase in the total weight of calves weaned from a limited calving season, most likely by decreasing the days to calving, but also by increasing the number of calves born.

This short communication reports on the results of the first year of the research being conducted at the Roodeplaat experimental farm of the ARC-Animal Production Institute (25°34'11.27''S; 28°22'05.36''E). The research started with 92 Bonsmara cows in an extensive production system grazing natural vegetation described as Savanna (Rutherford & Westfall 1994), Sourish Mixed Bushveld (Veld Type 19) (Acocks 1988). The cows were divided into four herds (groups n = 23/group). All four herds had the same age structure and calving parity. In each of the four herds 12 of the 23 cows were synchronized prior to breeding and 11 cows in each herd were not synchronized and served as the control within each individual herd. The breeding season commenced in January until March and the calving season commenced in October until end of December. Cows were implanted on day 0 at the beginning of the summer breeding season with an implant behind the ear. The implant contained 3mg progesterone norgestomet and the implant was removed on day 10 when the cows were injected i.m. with 3mg Norgestomet and 5mg oestradiol before mating commenced 56 hours later. Body condition was scored by means of the five-point Scottish scoring system

(Edmundson *et al.*, 1989) as this system is more commonly used in South Africa than the American nine-point scoring system (Escrivão, 2012).

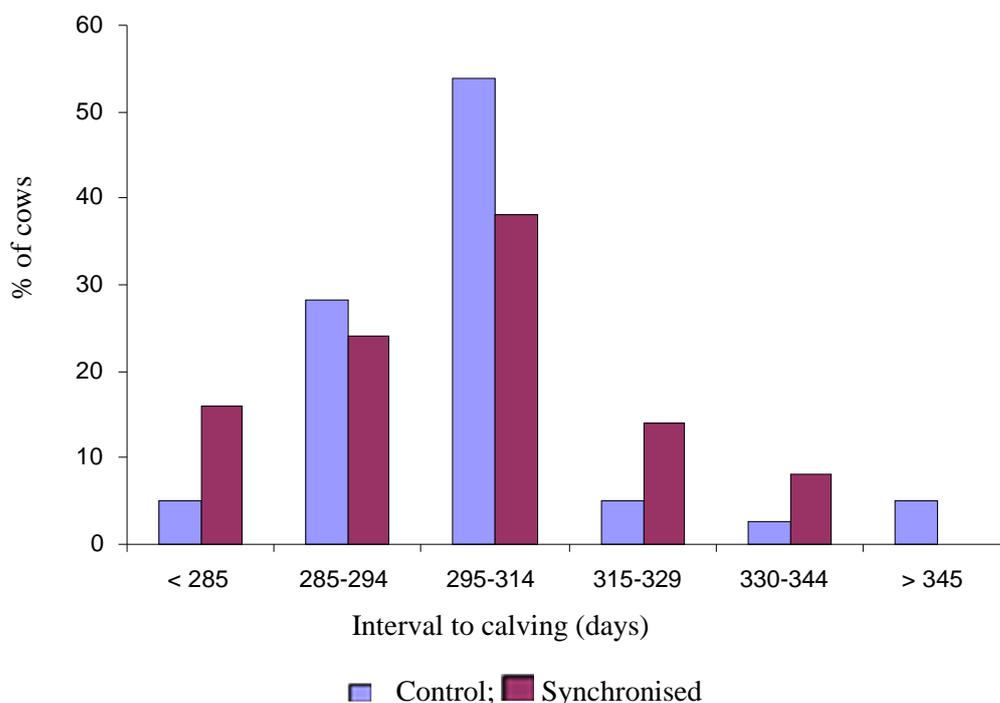
The calving percentages of the different groups are shown in Table 1.

**Table 1** Calving percentage of Bonsmara cows that were synchronised and the control (non-synchronised cows) for the first breeding season

Parameter	Herd 1	Herd 2	Herd 3	Herd 4
Calving % (control)	90%	77%	85%	90%
Calving % (synchronised)	70%	62%	92%	100%

Results from the first calving season show that the calving percentage did not differ significantly ( $P > 0.05$ ) between cows that were synchronized or not, prior to the breeding season. The calving percentage varied between 62% and 92%, which is in line with results of Wiltbank (1970) who reported calving percentages of between 60% and 94% for different experimental herds.

The days to calving after the onset of the breeding season for synchronized and the control cattle are illustrated in Figure 1. In the current study, more synchronized cows calved earlier in the calving season (Figure 1). The cows that calved earlier in the season also had a longer recovery period that will reduce lactation stress (Odhiambo *et al.*, 2009). Earlier weaning may lead to increased body energy reserves of the cow at calving and minimize the effect of a negative energy balance on the postpartum interval and the subsequent breeding performance.



**Figure 1** Days to calving after the onset of the breeding season for synchronized and control Bonsmara cattle

The average days to calving from the start of the breeding season were 243 for the synchronized cows and 267 for the non-synchronized (control) cows. Calves born from the synchronized group were therefore on average 24 days older than the calves born from the non-synchronized animals. With an average daily gain of 720g/day, the calves born from the synchronized cows produced calves will weigh on average 17kg heavier at weaning, if the calves are weaned on the same date.

Body condition score (BCS) was higher at the following breeding season for cows that calved earlier in the season. This finding is consistent with previous published reports and may provide an alternative management strategy to improve subsequent reproductive performance in beef cows (Odhiambo *et al.*, 2009). BCS score at calving can be seen as the single most important determinant of the resumption of ovarian cyclicity (Spitzer *et al.*, 1995; Morrison *et al.*, 1999).

Preliminary results of study thus show that oestrous synchronization, followed by natural mating can decrease the length of the breeding season, increase the cow “recovery period” before the next breeding season and produce heavier weaner calves.

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