

THE EFFECT OF UTERINE MASSAGE IN ARTIFICIAL INSEMINATION OF BEEF CATTLE

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Summary

The effect of a two minute uterine massage, prior to artificial insemination, on conception rate in a beef cattle herd was examined.

Cows receiving uterine massage had a significantly higher first service conception rate of 62 per cent than the non massage group with 44 per cent.

Age had a significant effect on response to stimulation with younger cows showing a greater response than mature and older cows.

I. INTRODUCTION

The problems associated with artificial insemination in beef cattle, namely, the detection of oestrus and the management of large groups of cattle, have been discussed by Donaldson and Larkin (1966) and Lamond and Takken (1966). Plasto and Hall (1970) minimised these problems by either yarding the cows from 8 a.m. to 5 p.m. daily for oestrus observations, or only yarding cows with positive heat detectors (Baker 1965). They also used two paddocks for rotational grazing of the cows.

This experiment involved the evaluation of the effect of a 2 min massage of the uterus *per rectum*, prior to insemination, on conception rate. This investigation was prompted by the increase in first service conception rate following uterine massage reported by Tjupic (1957) and Sarapa (1967).

II. MATERIALS AND METHODS

(a) The Property

This experiment was conducted as part of an artificial breeding program of beef cattle at "Swan's Lagoon" Cattle Field Research Station, Millaroo, 160 km south-west of Townsville. The climate and vegetation of the region were described by Christian and Slatyer (1953).

(b) Cattle and Feeding Program

In this study, 288 Shorthorn cows, including 120 lactating cows, were used, the majority of cows being in good store to forward store body condition. Only cows exhibiting ovarian activity as assessed by rectal examination were used.

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During the period mid-February to late-March, the cows were lot-fed on an **ad libidum** ration of equal quantities of Townsville style (*Stylosanthes humilis*) and *Setaria* spp. hays plus urea at the rate of approximately 57 g/head daily and molasses **ad libidum**.

Crude phosphoric acid (18.6 per cent P) was administered through the drinking water to provide approximately 5 g P/head/day.

From late-March to late-June, the cows were grazed in paddocks adjacent to the yards and received no supplementation.

(c) *Oestrus Detection*

Cows with triggered or lost heat mount detectors (Baker 1965) were inseminated, detectors being lost usually by being rubbed off during the mounting activities of other cows. Cows observed on heat in the morning were inseminated in the afternoon and those on heat in the afternoon were inseminated next morning.

The majority of cows remained available for two inseminations.

(d) *Semen and Insemination Technique*

Semen was collected from Sahiwal, Brahman and Shorthorn bulls by electroejaculation by the method of Watson (1964) and diluted with egg-yolk citrate (Plasto and Hall 1970) to a count of approximately 100 million live spermatozoa/ml. After dilution, the semen was chilled and air freighted to the A.I. Centre, Wacol, near Brisbane, and deep-frozen by a standard technique (E.F. Singleton, personal communication). The final dilution was approximately 12 million live spermatozoa/dose. The deep-frozen semen, stored in liquid nitrogen, was returned to "Swan's Lagoon". Each batch of semen was examined before use and the quality assessed by the proportion of actively motile spermatozoa. This was consistently good for all batches-and bulls.

All inseminations were done by the same inseminator, semen being deposited deep into the cervix.

(e) *Treatments*

A 2 min uterine massage **per rectum** before insemination was performed on every second cow offered for insemination. The massaging or non-massaging of cows at any insemination was independent of treatment at previous inseminations.

(f) *Observations*

At the time of insemination, the cows were assessed for body condition according to the method of Winks and Lamberth (1968), lactation status, age, temperament (good, fair or poor according to the tractability of the cow) and ease of insemination (good, fair or difficult as judged by the passage of the pipette).

Pregnancy status was assessed by rectal palpation approximately 60 days after the last insemination and was used to indicate conception.

III. RESULTS

The first service conception rate of cows massaged **per rectum** was 62 per cent (Table 1) and was greater than that of the non-massaged cows ($P < 0.01$; $\chi^2 - 1 \text{ d.f.} = 8.03$). The conception rate at second service did not differ significantly between treatments but, for all inseminations studied, conception rate was significantly higher for the massaged cows ($P < 0.05$; $\chi^2 - 1 \text{ d.f.} = 4.35$).

TABLE 1
*Effects of uterine massage on pregnancy rate in beef cattle following
artificial insemination*

	Number Mated	Pregnant	Per cent Pregnant (%)
<i>1st Service</i>			
Massaged	144	89	62**
Non Massaged	144	64	44
Total	288	153	53
<i>2nd Service</i>			
Massaged	44	20	45
Non Massaged	58	33	57
Total	102	53	52
<i>3rd Service</i>			
Massaged	3	1	33
Non Massaged	8	1	13
Total	11	2	18
<i>Total Inseminations</i>	<i>Number of Inseminations</i>	<i>Pregnant</i>	
Massaged	191	110	58*
Non Massaged	210	98	47
Total	401	208	52

* $P < 0.05$

** $P < 0.01$

Age of cow appeared to influence to some extent the response to stimulation with first service conception rate having a χ^2 2 d.f. of 3.60, the second service conception rate having a χ^2 2 d.f. value of 4.78 and the conception rate of all inseminations having a χ^2 2 d.f. of 8.16 ($P < 0.05$). When the response to stimulation in all inseminations was examined within ages, there was no effect of stimulation in the old and mature cows but there was a significant effect of stimulation in the young cows ($\chi^2 - 1$ d.f. = 9.74; $P < 0.01$).

Of the other factors which were considered as possibly having an influence on conception rate, lactation status had no effect, nor did temperament nor ease of insemination.

IV. DISCUSSION

Cows receiving a 2 min uterine massage prior to insemination had an 18 per cent better first service conception rate than non-massaged cows, which was higher than that obtained by Sarapa (1967). The lack of response to massage at second service would suggest that either all cows likely to respond to uterine massage did so at first service or that there were insufficient cows presented for second service to show a significant response.

The first service conception rate for all cows in this experiment was 6 per cent higher than that reported for the overall artificial insemination program by Plasto and Hall (1970) in the same herd. Massaged cows in the present study

had a first service conception rate of 62 per cent so that uterine massage may have played a part in the improvement of first service performance over that in the general herd.

Age had a significant effect on the response to uterine massage and would suggest that younger cows responded more to uterine stimulation than mature and older cows.

It is noteworthy that there was no effect of lactation status on response to uterine massage or pregnancy rate in view of the effect of lactation on fertility in naturally mated cows as demonstrated by Plasto (1968), Lamond (1969) and Donaldson (1969). This apparent disagreement may be due to the influence of lactation anoestrus in their studies, whereas this investigation was restricted to cows exhibiting ovarian activity.

V. ACKNOWLEDGMENTS

The authors wish to thank Mr. P. Allan and the staff of "Swan's Lagoon" for valued assistance with this trial. Thanks are due to Miss P. Pepper for the statistical analyses and Dr. G. I. Alexander for his supervision and advice. Partial financial support by the Australian Meat Research Committee is gratefully acknowledged.

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