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RESEARCH NOTE

THE SYNCHRONISATION OF OESTRUS IN SHEEP: 7. UNDER DRY EXTENSIVE CONDITIONS

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Although much work has been done on the control of oestrus and ovulation under controlled experimental conditions (Boshoff, 1972; Le Roux, 1974; Robinson, 1974; Greyling, 1979; Van der Westhuysen, Greyling, Loubser & Coetzee, 1980), little has been published on the use of these techniques under practical, often unfavourable, seasonal and/or nutritional conditions. This article reports on a series of experiments performed on Merino sheep under extensive arid Karoo conditions. All synchronisations were effected using Fluorogestone impregnated intravaginal sponges for 14 days. After sponge removal, inseminations were performed at 48, 60 and 72h with 0,05 to 0,1 ml fresh electro-ejaculated semen of high motility.

During August, 208 adult Merino ewes were treated with sponges. 122 of these were injected with 300 IU PMS intramuscularly at sponge withdrawal. The conception rate of the PMS-treated group following AI at the times stated was low (30%), whereas in the group not receiving PMS only one ewe lambed (Table 1). It was concluded that under these poor nutritional and seasonal conditions the use of PMS was imperative.

Table 1

The effect of FGA intravaginal sponges for 14 days and 300 IU PMSG at sponge withdrawal on conception and lambing rates following AI at 48, 60 and 72 hours (Percentage in brackets)

Treatment	Sponge only	Sponge + PMS
Number of ewes	86	122
Number of lambing	1 (1,2)	37 (30,3)
Lambs born/ewe treated	1 (1,2)	53 (43,4)
Lambs born/ewe lambing	1 (100)	53 (143,2)

Table 2

The effect of 300 IU PMS 24 hours before or at sponge withdrawal on conception and lambing rates following AI at 48, 60 and 72 hours (Percentage in brackets)

PMS injection	– 24h	0h
Number of ewes	40	58
Number lambing	10 (25,0)	14 (24,1)
Lambs born/ewe treated	16 (40,0)	15 (25,9)
Lambs born/ewe lambing	16 (160,0)	16 (107,0)

During September 98 ewes were treated with sponges for 14 days and 300 IU PMS was injected subcutaneously either 24h before, or at sponge withdrawal. Conception rates did not differ between the treatment groups, but the fecundity of the group injected at 24h before sponge withdrawal was significantly higher than that of the Other groups (Table 2). Conception rates were again disappointingly low, but as observations showed that the oestrous response was above 80% the possibility of

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Table 3

The relationship between plasma progesterone concentration on days 18 or 19 following oestrus and lambing rates (Percentage in brackets)

Progesterone concentration	> 2ng/ml	> 1,5ng/ml	< 1,5ng/ml
Number of ewes	24	31	67
Lambing	15[a] (62,5)	18[a] (58,1)	6[b] (9,0)
Not lambing	9[a] (37,5)	13[a] (41,9)	61[b] (91,0)

[a,b] Within each line, figure having the same superscript are not significantly different from each other

embryo mortality was considered. Therefore, the concentration of plasma-progesterone on day 18 or 19 following insemination was determined. Only approximately 60% of the ewes considered pregnant on the basis of progesterone concentration eventually lambed (Table 3).

Table 4

The conception and lambing rates of ewes at the first or second heat following a 14 day intravaginal sponge treatment, 300 IU PMS at sponge withdrawal and AI at 48, 60 and 72 hours following sponge withdrawal

	First Cycle	Second Cycle
Number of ewes	522	96
Number lambing	247[a] (47,2)	36[a] (37,5)
Lambs/ewe treated	331[a] (63,4)	36[b] (37,5)
Lambs/ewe lambing	331[a] (134,0)	36[b] (100,0)

[a,b] Within each line, figures having the same superscript are not significantly different from each other

During December, 522 ewes were inseminated at fixed times following the intravaginal sponge treatment and the injection of 300 IU PMS intramuscularly at sponge withdrawal. Of these, 96 ewes were identified on heat by raddled teaser rams one cycle later. Thus 81% of the inseminated ewes were considered pregnant. However, only 47,3% lambed and of these 34% produced twins. Of the 96 inseminated at the second cycle only 36 lambed, all single lambs (Table 4). An analysis of the performance of the lambs born as singles or twins is presented in Table 5. The high mortality and insignificant increase in lamb production from twinborn lambs contra-indicates the stimulation of multiple births under these extensive conditions.

Table 5

The performance of lambs born as twins or singles under extensive conditions

	Twins		Singles
	One alive	Both alive	
42 day mass (kg)	10,4	9,5	11,3
kg lamb at 42 days/ ewe lambing	10,45		11,07
Mortality %	43,2		7,2%

From these results it is concluded that although the use of the sponge/PMS therapy can stimulate oestrus and conception under conditions where reproduction is likely to fail without exogenous stimulation, conception rates are still to a large extent dependent on the pre-requisite of an adequate environment and body condition. In addition, embryo mortality or early pregnancy losses appears to be a most significant cause of reproductive failure under adverse nutritional conditions.

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