

SEASONAL INFLUENCES ON REPRODUCTION IN MALE CASHMERE GOATS

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Goats are seasonal breeders, and are generally considered to show maximal testicular size and levels of sexual activity in autumn (Evans and Maxwell 1987). We wished to see if this peak in reproduction would occur in Cashmere bucks and, if so, whether it could be advanced by treatment with melatonin in spring.

Ten Cashmere bucks received an implant of melatonin ("Regulin") every 4 weeks for 12 months, commencing in October. A further 10 animals were used as untreated controls. Both flocks were grazed in separate paddocks, and received a maintenance supplement of lupin grain and poor quality hay commencing in January. Testicular size, measured using calibrated beads, and liveweight were measured fortnightly. Sexual activity was observed every 8 weeks by presenting each buck individually to 4 oestrous does in a 4m x 4m arena for 20 minutes.

Table 1. Means ($\pm$ SE) of testicular size (TS), liveweight (LW) and no. ejaculations (E) per 20 minutes of the two groups of bucks.

		Date						
		Oct	Dec.	Jan	Mar.	May	Jul.	Oct.
Cont.	TS(ml)	80 $\pm$ 5 ^d	110 $\pm$ 8 ^{abcd}	86 $\pm$ 6 ^d	112 $\pm$ 7 ^{ab}	95 $\pm$ 8 ^{bcd}	89 $\pm$ 6 ^{cd}	129 $\pm$ 10 ^a
	LW(kg)	29 2 ^d	35 1 ^c	39 1 ^{bc}	37 2 ^{bc}	34 1.4 ^c	34 2 ^c	50 2 ^a
	E		1.8 0.5	2.3 0.4	2.1 0.4	2.8 0.3	2.9 0.4	2.2 0.3
Mel.	TS(ml)	77 5 ^d	105 6 ^b	94 6 ^b	89 4 ^{bd}	94 5 ^b	94 5 ^b	125 3 ^a
	LW(kg)	28 1 ^c	38 2 ^b	36 2 ^b	37 1 ^b	37 2 ^b	36 1 ^b	49 1 ^a
	E		1.3 0.3 ^c	2.9 0.4 ^a	2.5 0.4 ^{ab}	2.2 0.4 ^{ab}	2.2 0.3 ^{bc}	1.7 0.4 ^c

Values with different superscripts differ significantly ($P < 0.05$).

Testicular size varied significantly over the year in the controls, generally paralleling changes in liveweight. The exception was in March when testicular size was high and liveweight relatively low. Clearly, both nutrition and photoperiod influenced testicular size. Melatonin failed to increase testicular size compared to the controls in late spring. It did, however, abolish the autumn peak in testicular size seen in the controls. During March the controls had significantly ($p < 0.01$) larger testes than the bucks treated with melatonin. While it seems that melatonin can influence testicular size, further research is necessary to turn this to advantage.

In contrast to testicular size, sexual activity varied little throughout the year in controls. But in melatonin treated animals sexual activity increased significantly ($p < 0.05$) between spring and autumn, paradoxically reaching a peak as testicular size reached its nadir. This suggests an apparent lack of association between sexual activity and testicular size in Cashmere bucks.

Evans, G. and Maxwell, W.M.C. (1987). Salamon's Artificial Insemination of Sheep and Goats. First Ed. Butterworths, Sydney.

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