THE INFLUENCE OF FREQUENCY OF SEMEN COLLECTION ON DAILY SPERM OUTPUT OF RAMS

A.W.N. CAMERON*, I.J. FAIRNIE*, D.H. CURNOW**, E.J. KEOGH** and D.R. LINDSAY+

There is only one published report on the effect of frequency of semen collection on daily sperm output of rams (Chang 1945). He found that the total number of sperm collected was still increasing as the frequency of collection reached six per day. Unfortunately, he did not allow time for the epididymal sperm reserves to stabilize before comparing the different collection frequencies. In this experiment we attempted to determine the minimum frequency of ejaculation which yielded the maximum number of sperm from rams being subjected for long periods of semen collection.

Four groups of three mature Merino rams were subjected to four treatments: 1, 2, 4 or 8 ejaculates collected each day, in an experiment with a Latin square design. The experiment was conducted during Summer with each treatment lasting approximately three weeks. Semen was collected using an artificial vagina of French design. The volume of each ejaculate was recorded and the sperm concentration was estimated using a calibrated Gallenkamp colorimeter. From these, the number of sperm per ejaculate, and daily sperm output were calculated.

Only the semen characteristics recorded in the last seven days of each treatment were used when analysing the results because ejaculation reduces the epididymal sperm reserves. During a period of semen collection, the initial semen characteristics differ from those obtained following depletion of the epididymal sperm reserves (Amann 1970).

TABLE 1 The effect of ejaculation frequency on mean ± S.E. volume of ejaculate, concentration of sperm and daily sperm output. Means in the same rows not having the same superscript are significantly different, ($P < .05$)

	Number of Ejaculations per day			
	1	2	4	8
Ejaculate volume (ml)	0.87 ± 0.07^a	0.60 ± 0.05^b	0.41 ± 0.03^c	0.28 ± 0.03^d
Sperm concentration ($\times 10^6$/ml)	4003 ± 256^a	3325 ± 269^b	2587 ± 203^c	1623 ± 153^d
Daily sperm output ($\times 10^6$)	3369 ± 259	4028 ± 461	4114 ± 328	3417 ± 252

Increasing the frequency of semen collection significantly decreased the ejaculate volume ($P < 0.001$) and concentration ($P < 0.001$) and there appeared to be a curvilinear relationship with the total number of sperm collected each day. We conclude that the maximum number of sperm for use in an artificial insemination programme can be obtained with as few as two ejaculations per day when collections are made daily.

This work was supported by the Wool Research Trust Fund.

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*Muresk Agricultural College, WAIT, Northam, W.A. 6401.
**Departments of Clinical Biochemistry and
+ Animal Science and Production, University of W.A., Nedlands, W.A. 6009.