DO DIFFERENCES IN NUTRITION OR SERVING CAPACITY AFFECT THE ABILITY OF RAMS TO ELICIT THE "RAM EFFECT"?

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The induction of ovulation and oestrus in acyclic ewes by the introduction of rams or testosterone-treated (T) wethers (the "ram effect") is a response to a combination of physical and pheromonal characteristics of the male sheep (Martin *et al. 1986;* Pearce and Oldham 1988). Therefore, any factor that affects the expression of these characteristics may alter their ability to elicit the ram effect. For example, Signoret *et al.* (1982) found that more ewes were induced to ovulate by T-wethers of "high" libido than those of "low" libido. However, this experiment was inadequately controlled as there was a greater proportion of males to females in the high libido group than in the low libido group. In goats, Walkden-Brown *et al.* (1993) found that bucks that had been on a high plane of nutrition induced ovulation in more acyclic does than bucks on a low plane. In Merino rams, we have further tested these 2 hypotheses: i) rams with higher serving capacity will induce a greater proportion of acyclic ewes to ovulate than those with a lower serving capacity; and ii) supplementary feeding of rams will improve their ability to elicit the "ram effect".

The study ran over 2 successive years. In 1992, 3 group serving capacity tests (Blockey 1983) were conducted on 10 Merino rams. On 23 October, the rams were allocated to individual mating groups of 20 acyclic Merino ewes.

In 1993, 20 Merino rams (10 from 1992 plus 10 others) were allocated to 2 nutritional treatments (maintenance or supplemented) on 10 June. The stocking rate of the maintenance group was adjusted to maintain liveweight and condition score until their introduction to the ewes (19 weeks later). The supplemented group grazed pasture *ad libitum* and were fed lupin seed (600 g/hd.day) for the first 17 weeks of the same period. Five group serving capacity tests were conducted. On 23 October, the rams were allocated to individual mating groups of 10 acyclic Merino ewes.

In both years, the ovulatory response of the ewes was recorded at laparoscopy on days 6 and 11 after ram introduction. Data were analysed by regression analysis and Chi-squared tests.

There was no relationship between the serving capacity of the rams and the proportions of ewes induced to ovulate in 1992 ($P = 0.36$, $r^2 = 0.12$) or 1993 ($P = 0.27$, $r^2 = 0.07$). The average proportions of ewes induced to ovulate were 87.2 ± 1.97% (range 78.9-100%) in 1992, and 80.7 ± 3.53% (range 50-100%) in 1993. The individual serving capacities of the 10 rams that were used in both years were significantly correlated ($r = 0.74$), but the proportion of ewes induced to ovulate in successive years by the same ram was poorly correlated ($r = 0.29$).

In 1993, the maintenance and supplemented rams had similar mean liveweights (53.6 vs 54.2 kg), condition scores (1 .1 vs 1.3) and scrotal circumferences (30.1 vs 30.1 cm) before feeding treatments began. At the end of the experiment, the supplemented group had greater average liveweight (86.9 vs 72.5 kg, $P < 0.001$), condition score (2.8 vs 1.6, $P < 0.001$) and scrotal circumference (37.2 vs 34.3 cm, $P < 0.01$) than the maintenance group. There was no difference between the maintenance and supplemented rams in the average proportion of ewes induced to ovulate by day 6 (73.3 vs 81.6%) or day 11 (78.9 vs 81.6%) after introduction of the rams.

In conclusion, the differences between rams and between years in their ability to induce ovulation in acyclic ewes cannot be attributed to differences in their serving capacity or their nutrition over the preceding 19 weeks.

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