Seasonal patterns in production and quality of semen of rams from flocks selected for or against an early breeding season

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INTRODUCTION

Seasonal patterns of semen production and sperm quality from rams of different breeds have been previously reported (Colas, 1979). Flocks within a breed have been selected for differences in seasonal lambing patterns based on ewe lambing date (Smith, *et al.*, 1992). This trial reports the effects of this selection on the production and quality of semen from rams in those flocks.

METHOD

Twelve rams (6 BV-ve - early lambing and 6 BV+ve - later lambing) were selected on the basis of breeding value (BV) for date of lambing from the selection flocks. The trial began in August 1994 and continued to July 1995. Once a month (after a 4 day rest period) an ejaculate was collected, evaluated for volume and density and processed. An aliquot was diluted in RSD-1 (Upreti, et al., 1995) to 100 x 10^6 sperm/ml and incubated at 38°C for up to 120 hrs. The proportion of sperm still motile was recorded at approx. 12 hr intervals and the time taken to reach 5% motile was analysed. The remainder of the ejaculate was diluted to 400 x 10^6 sperm/ml in a Tris, egg yolk, glycerol freezing diluent, placed in 0.25 ml straws and frozen in liquid N_2 vapour. Upon thawing this semen was diluted to 80 x 10^6 per ml in RSD-1 and incubated at 38°C and motility assessed both visually and using a 'Hobson sperm tracker'.

Data were analysed as split-plot in time with Greenhouse-Geisser correction.

RESULTS

There were no significant effects of BV class on volume, density, total sperm per ejaculate (Fig.1) nor on maintenance of motility either before freezing or post-thaw. There was also no effect of BV on the seasonal pattern. Seasonal effects ($P<0.05$) were seen in density, volume and total sperm per ejaculate with the lowest values in spring (Sept-Oct) and maximum values in autumn (April-May). A similar pattern was seen with the maintenance of motility at 38°C in RSD-1 with the fresh semen samples. However, there was no such seasonal change in the maintenance of post-thaw motility (Fig. 2).There was a seasonal effect on the decline in VSL(straight line velocity) and LIN (linearity) over 6h at 38°C, with the magnitude lower in the breeding season.

FIGURE 1: Seasonal patterns of total sperm production for the BV-negative and BV-positive rams.

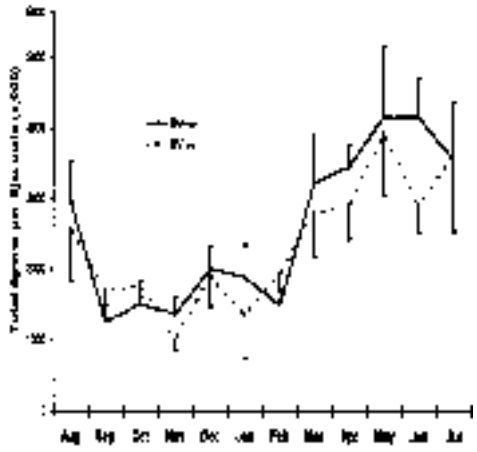
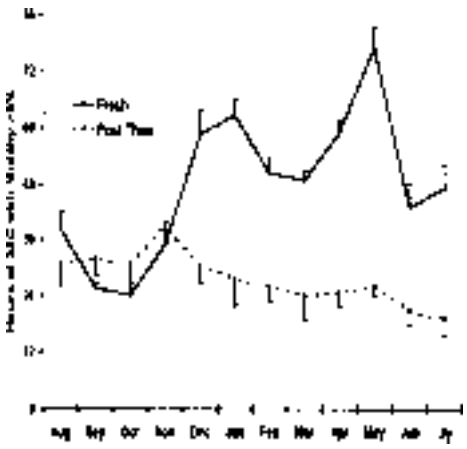


FIGURE 2: Comparison of seasonal patterns in duration of motility at 38°C for fresh and post-thaw semen.



CONCLUSION

These results indicate that selection for an earlier lambing date in ewes has not significantly altered the pattern of semen production in rams from those flocks. The seasonal patterns in sperm production and quality reflect those previously reported

REFERENCES

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