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The male effect — a comparison of rams and bucks for teasing ewes

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ABSTRACT

The aims of this study were to compare ovarian and oestrous activity in ewes teased over a range of dates in late anoestrus by either rams or bucks. Entire Dorset rams or feral bucks (male goats) were joined with anovular Romney ewes on either January 20, 27; February 3, 10 or 17 in a 2×5 factorial design (N=350). Ovulations were determined 4 d later and first oestrus up to 6 weeks later. On day 8, ovulations were determined in ewes anovular on day 4 to buck teasings.

Spontaneous ovulations first occurred in mid February. Rams were more effective than bucks at inducing ovulations. Furthermore, rams induced ovulations in ewes that failed to respond to bucks. Date of teasing had no effect on the pattern of first matings in ovulating ewes. Ewes stimulated to ovulate by rams tended to display oestrus earlier than ewes stimulated by bucks. These results demonstrate that rams and bucks will initiate early ovulation and oestrus in ewes, but rams are superior teasers to bucks.

Keywords Oestrous activity; ovulation; ram effect; buck effect; early mating; breeding season.

INTRODUCTION

The seasonality of reproduction in female farm animals can be influenced by the presence of males. For example, rams are capable of initiating an early and synchronised oestrus in ewes (Edgar and Bilkey, 1963). The same phenomenon has been reported in goats whereby bucks can induce does into synchronised matings (Shelton, 1960; Chemineau, 1983). The mechanism involved in sheep involves increased gonadotrophin stimulation ultimately resulting in either 1 or 2 ovulations unaccompanied by oestrus (Knight, 1983). Coincident oestrus and ovulation does not occur until the second or third ovulation about 3 weeks after ram contact. By contrast, in goats the first ovulation event is coincident with oestrus (Chemineau, 1983).

Although the timing of ovulation and oestrus following a successful male effect in sheep and goats is different, bucks have been shown to initiate ovulation in sheep (Knight *et al.*, 1983). The responsiveness of ewes to rams can vary depending on the depth of seasonal anovulation (Edgar and Bilkey, 1963). The aim of this study was to determine if buck-ewe teasing showed a similar dependence. The study was undertaken to compare the ability of rams and bucks to initiate ovulation and oestrus in ewes over a range of dates during late seasonal anovulation.

MATERIALS AND METHODS

The design was a 2×5 factorial (N=350). Either 6 entire Dorset rams or 6 entire feral bucks were joined with 35 ewes on 1 of 5 dates — January 20, 27; February 3, 10 or 17. These dates were chosen

because they extended over the transition between the anovular and ovular season for Romney ewes. Romney ewes were allocated at random to treatment groups following stratification on live weight within year of birth. The ewes were isolated from males by at least 200 m for at least 6 weeks prior to January 20.

On the morning of each joining date, the allotted ewes underwent laparoscopic examination to determine ovarian status. Only anovular ewes were joined with males (day 0). During this teasing phase, the animals were grazed in small 0.25 to 0.5 ha paddocks and no further attempts were made to increase male-female proximity. On the morning of day 4, all teased ewes underwent a second ovarian examination to determine if ovulation had occurred. All ewes were then joined with harnessed vasectomised Dorset rams and first matings recorded 2 to 3 times weekly for 6 weeks. On day 8, ewes which had been teased by bucks but which were anovular on day 4, underwent a third ovarian examination. The purpose of this examination was to determine if these ewes were refractory to the ram after having had other male contact. Binomial data were analysed by standard statistical procedures following logit transformation.

RESULTS AND DISCUSSION

The ewes weighed 51 kg at the start of the trial. No ovulations were recorded in ewes at their first observation during January. First ovulations were recorded on February 10 and 17 when 3% and 17% had spontaneous ovulations (Fig. 1). This confirmed that most ewes were at the transition between the anovulation and ovulation seasons.

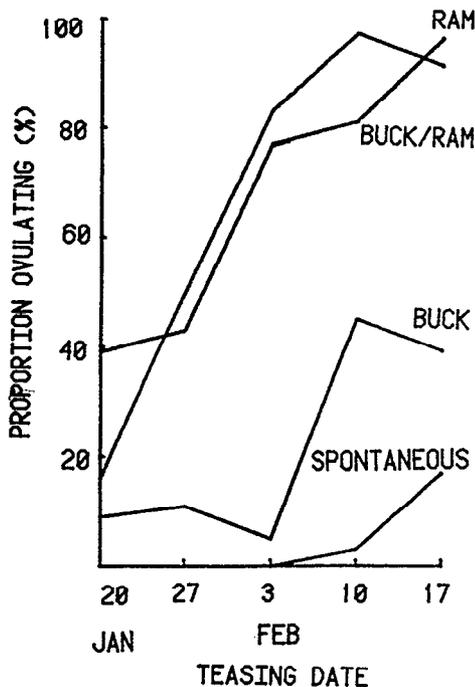


FIG. 1 Pattern of ovulation in unteased ewes and ewes teased with either a ram, buck or buck and ram.

Rams and bucks differed in the pattern in which they induced ovulations in ewes ($P < 0.05$) (Fig. 1). Fewer than 10% of ewes teased by bucks had ovulated prior to the February 10 teasing. About 40% of the ewes ovulated when subsequently teased by bucks. This was about 15% (42 v 57%) lower than the mid February teasing response with bucks at Ruakura (Knight *et al.*, 1983). This difference may have arisen as a result of the frequent mobbing-up practiced at Ruakura, the difference between individuals or breeds (Saanen v feral bucks) or year effects.

By contrast, ewes teased by rams demonstrated an almost linear increase in ewes ovulating with increasingly later teasing dates (Fig. 1). Furthermore, on the last teasing date, more than 95% of ewes ovulated. This finding is in agreement with other observations which have reported peak responses to mid February joinings (Edgar and Bilkey, 1963). The higher response in ram compared to buck teased groups may have been because of improved ram-ewe contact and higher quality or quantity of pheromone production by rams (Knight, 1983).

Rams induced ovulations in ewes that were anovular to buck teasings. The pattern of response was similar to that achieved when isolated ewes were teased by rams (Fig. 1). This response was unexpected since it is generally accepted that male-female isolation of at least 17 d is an essential pre-

requisite to achieving a ram effect (Knight, 1983). This latter finding challenges this notion and raises the possibility that coincident buck-ram teasings may be more effective than either species alone.

Teasing date had no significant effect on the mating pattern of ewes. About one third of ovulating ewes were first mated within 3 weeks of the start of teasing, 90% within 4 weeks, 92% within 5 weeks and 99% within 6 weeks. This pattern is largely consistent with earlier reports that mating activity commences around 19 to 23 d after ram introduction (Knight, 1983). However, compared to teasings after January 20, teasing on January 20 tended to reduce the incidence of ewes mating within 4 weeks (73% v 90%), 5 weeks (74% v 91%) and 6 weeks (82% v 99%) of the start of teasing. The net effect was a later mean date of first mating in the ewes teased on January 20. This result suggests that January 20 was near the limit required for effective ram teasings.

The overall mating pattern of large increases over weeks 3 to 4 was consistent in ram and buck teased groups although 6 to 20% more ram teased ewes mated over the 6 weeks after male introduction (Fig. 2). The incidence of first matings in ewes ovulating to rams but not bucks was intermediate at all teasing dates.

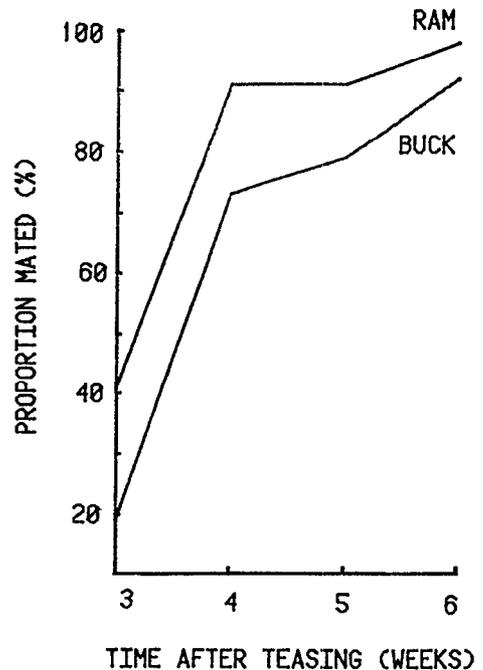


FIG. 2 Pattern of mating in ewes teased with either a ram or buck.

CONCLUSION

These results demonstrate that rams are more effective than bucks at inducing ovulations and

oestrus in seasonally anovular Romney ewes. Furthermore, the ability of rams to initiate ovulations in ewes teased by bucks challenges the notion that male-female isolation is an essential prerequisite for the male effect in sheep. Apparently some ewes do not recognise a buck as a male.

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REFERENCES

Chemineau P. 1983; Effect on oestrus and ovulation of exposing Creole goats to the male at three times of the

- year. *Journal of reproduction and fertility* 67: 65-72.
- Edgar D.G.; Bilkey D.A. 1963; The influence of rams on the onset of the breeding season in ewes. *Proceedings of the New Zealand Society of Animal Production* 23: 79-87.
- Knight T.W. 1983; Ram induced stimulation of ovarian and oestrus activity in anoestrus ewes — a review. *Proceedings of the New Zealand Society of Animal Production* 43: 7-11.
- Knight T.W.; Tervit H.R.; Lynch P.R. 1983; The effect of boar phenomones, rams' wool and the presence of bucks on anovular ewes early in the breeding season. *Animal reproduction science* 6: 126-134.
- Shelton M. 1960; Influence of the presence of a male goat on the initiation of oestrus cycling and ovulation in Angora does. *Journal of animal science* 19: 368-375.