BRIEF COMMUNICATION

POST-PARTUM OVULATION AND OESTRUS IN
SPRING-LAMBING EWES

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Summary. By means of ovarian examination and teasing with vasectomized rams, the intervals to first post-partum ovulation and oestrus were determined in a 2^3 -factorial experiment with twenty-four German Merino ewes which lambed between 28th October and 15th November 1966. First ovulation occurred 32.1 ± 1.9 (8 to 45) days after lambing. Three, fifteen and six ewes had none, one or more than three silent ovulations respectively, before showing heat after a mean interval from lambing for all ewes of 57.1 ± 4.5 days. The regression of post-partum interval to ovulation (Y) on ewe's weight 3 days *post partum* (X) was significant ($P < 0.01$); for ewes weighing 83 to 162 lb, $Y = 55.15 - 0.21X$. The regression of post-partum interval to oestrus on ewe's weight was not significant, and neither were the effects of treatments, namely, weaning at 3 or 20 days *post partum*, supplementary feeding of 0 or 1 lb maize grain daily from 3 to 28 days *post partum*, and joining with vasectomized rams at 3 or 14 days *post partum*.

With a view to increasing the frequency of lambing without resorting to the use of exogenous hormones, some attention has recently been paid to the natural recommencement of ovarian and oestrous cycles during the puerperium of the ewe (Barker & Wiggins, 1964; Smith, 1964; Mauléon & Dauzier, 1965; van Niekerk & Mulder, 1965). It appears that suckling a lamb, the level of nutrition and the stimulus due to the presence of rams may under certain conditions be three important factors which influence the post-partum intervals to ovulation and oestrus.

Twenty-four German Merino ewes, which were being kept continuously in pens and group-fed a maintenance ration of *Eragrostis curvula* hay, maize silage, salt and bonemeal, were mated late in the breeding season in June 1966. During approximately the last month of pregnancy a supplementary ration of uncrushed maize grain was fed at the rate of $\frac{1}{4}$ lb/ewe daily. The ewes lambed between 28th October and 15th November, which is the time of year

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in South Africa when non-pregnant ewes of this breed are about to start their new breeding season (Hunter, 1964). All ewes suckled their lambs until Day 3 (day of lambing taken as Day 0) and were then randomly allocated in three replications to the eight treatment groups of a 2^3 -factorial experiment. The three factors were as follows: (1) weaning: the ewes either suckled their lambs only until Day 3 or continued to suckle one lamb until Day 20, when these lambs were also removed; (2) feeding: on Days 3 to 28 the ewes either received a substantial supplementary ration of 1 lb uncrushed maize grain, or received no supplementary ration; (3) teasing: the ewes were teased with vasectomized rams either from Day 3 or from Day 14, until the first post-partum oestrous periods of all ewes had been recorded. From the start of teasing in each case, vigorous vasectomized rams (which were regularly changed) remained continually with the ewes and, in addition, at 8-hr intervals fresh teasers were introduced to the groups of ewes for periods of 15 min, and mating behaviour observed. The day of first post-partum ovulation was determined at laparotomies performed on all ewes at 20 days *post partum* and, if necessary, at 20-day intervals thereafter, using local anaesthesia and a laparotomy cradle (Lamond & Urquhart, 1961). The day of first post-partum ovulation was estimated by inspection of the ovaries and reference to the illustrations of Quinlan & Maré (1931), showing the appearance of ovaries and corpora lutea of the ewe at different stages of the oestrous cycle.

Apart from one ewe which ovulated 8 days *post partum*, the animals in this experiment ovulated 18 to 45 days after lambing (mean 32.1 ± 1.9 days), sixteen of the twenty-four ewes ovulating after 26 to 40 days. Following lambing, three of the ewes showed oestrus at the time of their first ovulation, fifteen first ovulated without heat, i.e. underwent a silent ovulation, and then showed oestrus one cycle later, while the remaining six ewes had three or more silent ovulations before showing heat. The first oestrous period of the season in the experimental ewes was recorded on 7th December. Thereafter the incidence of oestrus was quite rapid until 12th January, when nineteen of the ewes (79%) had shown heat. An interval of at least a month then passed before the remaining five showed heat. For all ewes, the mean interval between lambing and first heat was 57.1 ± 4.5 days. For the nineteen ewes on heat by 12th January, the mean interval from lambing to first heat was 47.5 (36 to 61) days.

Although the ewes were uniformly fed throughout pregnancy and all lambed in fairly good condition, there was considerable variation in the size of the ewes and a significant linear regression ($P < 0.01$) of the post-partum interval to first ovulation (Y) on the ewe's weight 3 days *post partum* (X). For the range in X in this experiment between 83 and 162 lb, $Y = 55.15 - 0.21X$. Thus, those ewes which weighed about 85 lb shortly after lambing ovulated after a mean of almost 40 days, while heavy ewes, weighing about 160 lb, ovulated about 20 days *post partum*. Due to the greater variation in the post-partum interval to first heat, the regression of this interval on weight of ewe was not significant.

Between 3 and 28 days *post partum* the ewes lost a mean of 4.6 ± 1.3 lb in weight. This loss was significantly increased ($P < 0.05$) by suckling a lamb for

20 as opposed to 3 days and significantly decreased ($P < 0.05$) by the supplementary maize ration. However, neither of these treatments, nor the commencement of teasing at different intervals *post partum*, nor any of the interactions, significantly affected the post-partum intervals to ovulation or to oestrus. No ewe ovulated while suckling a lamb. Although two ewes ovulated within 20 days of lambing, both had had their lambs removed 3 days after lambing.

The post-partum intervals to first ovulation and to first oestrus in ewes lambing later in the breeding season may differ markedly from these findings.

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