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Mating of ewe lambs or rising two-teeths at or soon after puberty is often practised but the resulting lambing percentages are usually relatively low. More successful matings of such ewes would reduce replacement costs and increase productivity.

In groups of Merino ewes aged 16-17 months and 7-8 months, data were collected on weight and age at puberty (defined as the first oestrus with ovulation). The appearance of the ovaries was observed by endoscope at four-day intervals for several weeks before, and a few days after the puberal oestrus. Vaginal smears were also examined every two days over the same period.

TABLE 1: Data on age, weight and ovarian characteristics at puberty in Merino ewe lambs and two-teeths.

Group	No. of animals	No. reaching puberty	Mean age at puberty (days)	Mean weight at puberty (kg)	% showing a prior oestrus without ovulation	% showing a prior ovulation without oestrus
1	40	38	486	35.4	20.0	20.0
2	39	30	265	31.2	33.3	59.0

The data on puberty and ovulation are shown in Table- 1. Oestrus without ovulation was a frequent occurrence, while ovulation without oestrus (silent heat) was common but not a pre-requisite for puberty. The older animals (Group 1) reached puberty earlier in the season but at greater weights than the ewe lambs. The ovarian examinations in both groups failed to show any clear pattern in follicle size and number during the weeks preceding puberty. Four days after puberty the number of follicles was less than before puberty ($P < 0.01$) though the size was not different. Vaginal smears in both groups showed much evidence of cornification at apparently random times, although there were slightly more smears showing strong oestrogenic influence 13-19 days before puberty. Seventeen of the 7-8 month old lambs were each hand-mated to two fertile rams at puberty, and 15 of these lambed.

In a second experiment, 74 Border Leicester x Merino lambs aged 7-8 months were divided into two groups, and each was run with two fertile rams. In Group 1, (39 ewes) oestrus was checked at 0900 and 1700 h and ewes which would still stand were hand-mated to another fertile ram. In Group 2 (35 ewes) only paddock mating was permitted. In Group 1, 34/39 lambs were marked by the rams, and of these, 18 were hand-mated. Fifteen lambed, of which 13 had been hand-mated. In the paddock-mated group, 26/35 were marked by the rams but only eight lambed. The numbers lambing in the two groups were not significantly different. Of the marked ewes, 10 had vaginal swabs taken to detect the presence of sperm; six which had sperm present subsequently lambed, while four in which sperm was absent did not lamb. In Group 1, 10/16 which were marked by the paddock rams but failed to stand for hand-mating had no sperm in their vaginas and failed to lamb.

These results indicate at least three of the reasons for reproductive failure in puberal ewes: a proportion fails to show oestrus, some are marked by rams but are not inseminated, and some that are marked, and inseminated, fail to ovulate.

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