Factors influencing the short term ovarian response of milking Lacaune ewes to the male effect

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During a 5-year longitudinal study, we assessed the main factors impacting the short-term ovarian response of ewes to the male effect (ME) in a commercial organic dairy sheep farm. Each year the cyclicity before ME and the ovarian response following ME was monitored within a flock varying from 228 to 269 adult Lacaune dairy ewes. Mature rams (from 3 to 12 each year), equipped with an apron that prevented mating, were introduced at D0 (day of the ME) for 14 days. Blood samples were collected at D-10, D0 and D+11 to measure plasma progesterone concentrations and determine the occurrence of cyclicity before the ME as well as the proportion of ewes responding to the ME. We collected for each ewe five continuous and two categorical explanatory variables: age, lambing to ME (LME) interval, total milk production, third milk control, last litter size and body condition score (BCS). The BCS was classified into three categories: High (BCS>3), Medium (2<BCS≤3) and Low (BCS≤2). Binary logistic regressions were performed within-year analysis while a mixed-effect binary logistic regression model was used for the between-year analysis. Cyclicity before the ME and the response of ewes to the ME were highly impacted by the year of the study (from 29 to 61% and 31 to 85%, respectively). The ewes that combined relative high BCS, low milk production at the third milk control and long LME interval were most likely to be cyclical before ME ($P<0.05$; $P<0.001$; $P<0.001$, respectively). On this same parameter, age also had a positive linear effect on the probability of being cyclical ($P<0.05$). Regarding the response to the ME, ewes with a relative high BCS, low milk production at the third milk control and high age were most likely to respond ($P<0.001$; $P<0.001$; $P<0.001$, respectively). In conclusion, we show that the ME can disrupt the inhibitory effects of the photoperiodic signal depending on the nutritional status of milking ewes. Since this study was conducted in a commercial farm, we established several practical recommendations to maximize the performances of the ME.

Oestrus and fertility responses in ewes treated with modified Ovsynch and progesterone therapy

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The development of economical interventions to enhance reproductive performance during out of season breeding in ewes is still warranted in India to drive their utilization. Aim of the study was to evaluate reproductive efficacy of short, medium or long-term modified Ovsynch plus progesterone (P4) therapy protocols in ewes. The crossbred (Nali×Rambuillet) ewes were enrolled into 4 groups for out of season breeding (May-July; summer season). The Ovsynch protocol (GnRH, 4 µg buserelin acetate-PGF2α, 125 µg cloprostenol-GnRH, 4 µg buserelin acetate) with modifications was employed in 3 treatment groups sequentially on days 0, 5, 7 (Group-I, short-term); on days 0, 8, 9 (Group-II, medium term) and on days 0, 12, 13 (Group-III, long-term). This was combined with P4 therapy (with AVIKESIL-S® intravaginal P4 sponges, each having 350 mg P4) for 5 (0-5), 8 (0-8) and 12 (0-12) days in Group-I, -II and -III, respectively. One group (Group-IV) of ewes was kept untreated as control group. Each group comprised of randomly selected 50 ewes. Five proven breeding rams per group were used for mating with the ewes exhibiting oestrus. Data on oestrus activity and fertility variables were recorded for each group. The oestrus induction rates in ewes of group-II (52%, $P<0.01$) and group-III (38%, $P<0.05$) were significantly greater than in Group-IV (20%, control) ewes. The oestrus duration was significantly longer in ewes of group-II than in group-IV (35.6±3.3 vs 26.5±2.3 hours, respectively). The pregnancy and lambing rates in ewes of group-II (48%, 46%; respectively) were significantly greater than in group-IV (16%, 16%; respectively). However, prolificacy and fecundity was similar among the groups. Serum P4 levels at sponge removal were lower ($P<0.01$) in group-III ewes compared to others. Serum P4 (day 28 post-mating) and estradiol-17β (at oestrus) profiles were also higher ($P<0.05$) with medium term protocol compared to others. In conclusion, the modified protocol with P4 therapy (of 8 days duration as in Group-II compared to short and long-term) resulted in better augmentation of fertility in ewes during out of season breeding in the subtropical climate.