

- 472 Effect of dietary crude protein on urea in fluids of the reproductive tract of ewes and dairy cows. R.T. Duby*, J.P. Tritschler, II, R.W. Prange and F.T. Abdul-Wahid. University of Massachusetts, Amherst.

The influence of dietary crude protein (CP) on levels of urea in oviductal and vaginal fluids of ewes and vaginal fluids of cows was determined. Twelve ewes were randomly divided into two groups in a switchback design. One group was fed corn silage supplemented with corn cob meal (62:38 on dry matter basis) while the other group received corn silage and soybean oil meal. These rations contained 9.5% or 22.5% CP respectively. Rations were consumed at 1.4% of body weight. Ewes were teased daily with a vasectomized ram and both oviducts cannulated twelve days after estrus was detected. Fluids were collected over an eight day period centered around estrus. Dietary treatments were then switched and fluids collected as above. Vaginal fluids were collected from estrous ewes by aspiration from the anterior vaginal pool. Daily blood samples were obtained prior to the morning feeding. Blood samples and vaginal fluids were also collected from lactating and open, dry cows at estrus. Urea nitrogen of plasma and reproductive fluids was determined by a modified urease-Bethelot reaction. The concentration of urea nitrogen (mg%, mean \pm SE) at estrus in oviductal, vaginal and plasma sample of ewes receiving 9.6% CP were $10 \pm .7$, 9.9 ± 1.6 and 10.1 ± 1.4 respectively, while fluids of ewes receiving 22.5% CP were 24.4 ± 1.9 , 19.4 ± 3.0 , and 25.5 ± 1.6 . Differences due to day of cycle were minimal. Urea in vaginal fluids from lactating cows (n=18) varied from 10.6 to 51.1 mg% while plasma values ranged from 16.6 to 31.7 mg. In contrast, urea in plasma and vaginal fluids of open, dry cows (n=4) receiving a low protein (corn silage) diet ranged from 6-10 mg%. These studies suggest urea concentrations in the fluids of the reproductive tract are altered by CP in the diet and are a reflection of blood urea nitrogen.

KEY WORDS: Oviductal fluids, Urea

- 473 Effects of nutritional environment on breeding season in range sheep. C.V. Hulet*, L. Shupe and T. Ross, USDA, Jornada Exp. Range and New Mexico State Univ., Las Cruces

The objectives were to determine effects of season, nutritional environment and presence of the ram on incidence and rate of ovulation in finewool sheep in Southern New Mexico. Mature ewes (144 head) were randomized into groups maintained either on arid Southwest range or in drylot on alfalfa hay (1.59 kg/head/day). These nutrition-environment groups were further randomized into ram-exposure subgroups to test effects of continuous or intermittent exposure (30-day periods) to sterile rams. Both drylot and range-managed ewes were in good condition and gained weight during the study (9.8 and 5.1 kg/ewe). Copora lutea were observed twice each month for 13 months in random samples of 3 to 6 ewes from each subgroup. Seasonality of ovulation in finewool sheep managed on the range was much more marked than in animals managed on alfalfa hay in drylot. The incidence of ovulation approached zero in the range-managed ewes during May, June and July (8%, 0% and 4%, respectively); compared with 42%, 17% and 75% for the alfalfa-drylot group ($P < .02$, $P < .10$, $P < .01$). Although the incidence of ovulation in the range-managed group increased to 50% in August the incidence was still lower ($P < .05$) than in the drylot-hay group (83%). The incidence of ovulation also was lower ($P < .01$) in the range-managed than the drylot ewes during February (33% vs. 83%). Ovulation rate was highest in October (1.66) and November (1.63) and lowest in March (1.14) and May (1.14). The mean annual ovulation rate of the drylot group (1.48) was very similar ($P > .10$) to that of the range-managed group (1.39). Continuous or intermittent presence of a ram had no real effect on either the incidence or rate of ovulation. It is concluded that the nutritional environment can significantly affect seasonality of breeding in finewool range sheep. This may not be consistently modified by ram exposure.

KEY WORDS:

range sheep, breeding season, ovulation rate, nutrition

- 474 Effects of prenatal androgen exposure on sexual development and estrous cycles in female calves. D. J. Putney, W. E. Beal and G. A. Good, Virginia Polytechnic Institute and State University, Blacksburg.

Cows bred to a single sire were treated with 17 α -methyl-testosterone (MET, 250 mg/d, sq) or testosterone propionate (TP, 200 mg/d, sq) on days 40 to 60 of gestation to induce virilization of female fetuses. Female calves born after MET exposure (MET females) had a penis, prepuce and scrotum. Female calves born after TP exposure (TP females) had vaginas with small vulval openings, bilateral scrotal pouches and a small penile structure in place of a clitoris. MET and TP females possessed ovaries, oviducts, a uterus, cervix and at least