

Reproduction in Domestic Animals

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Reproductive disorders in alpacas and llamas at a referral center

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This study reports on the main conditions seen at our clinic over 12 years on 2435 female and 164 male alpacas and llamas. The major complaints in females were repeat breeding (74%), pregnancy loss (18.5%), reproductive emergencies (5.1%) and genital abnormalities (2.4%). Uterine disorders, primarily endometritis and endometriosis were the most common diagnosis (54%). In maidens, the main disorders were ovarian hypoplasia (30%), persistent hymen (17.9%) and vaginal aplasia (9.7%). Chromosomal abnormalities were seen in 34% of these cases. Luteal insufficiency, frequently associated with obesity, was the cause of recurrent pregnancy loss in 18% of the cases. In males, infertility was primarily due to testicular hypoplasia (45%) and testicular and epididymal cysts (17%). Testicular degeneration due to heat stress was the leading cause of infertility in proven males. Reproductive emergencies were dominated by uterine torsion (54.4%) and dystocia (25.6%). The most common causes of the dystocia were head and limb deviations and breech presentation. Neonatal death ($n = 46$) in the first week of life was due to maladjustment or sepsis associated with dystocia (63%), prematurity or long pregnancy length (> 370 days) (17.4%) and congenital abnormalities (13%). This retrospective analysis may direct veterinarians to determine education and degree of expertise needed to set up a camelid theriogenology service. The diagnostic approach is similar to that used in horses. Experience in imaging techniques and knowledge of camelid reproductive peculiarities and medical complications are important in order to provide a high standard of care.

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Optimisation of the reproductive capacity in ross-308 breeders (Hens), using delayed photostimulation

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Aviculture practice proved that certain dysfunctions could occur in fowl reproductive status if photostimulation schedule is not correlated with somatic development. Photostimulation onset was postponed by a week to allow the fowl to reach the optimal live weight required to sustain an appropriate laying intensity and to produce high quality incubation eggs. The experiment comprised 11,992 Ross-308 breeders, randomly divided in two groups (Lc and Lexp) reared on permanent litter, using the same technology, in two halls identically equipped. The same lighting schedule was applied for both groups as the producer recommended. In the experimental group, when the hens were 21 weeks old photostimulation began and light intensity was increased (to 60 lux). Postponing photostimulation of the hens induced better live weight uniformity ($v = 10.89\%$, compared to 11.90% in control group) and higher eggs yield ($+4.69$ eggs/hen), while the feed conversion ratio was calculated to be 271.26 g feed/egg (compared to control: 281.49 g/egg); casualties were 0.55% lower than for fowl reared in accordance with the management guide. The eggs produced by the hens under belated photostimulation proved to have better quality traits than those laid by the control group.

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Effect of progestagen pretreatment on fertility of ewes

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The duration of exposure to progestagens prior to artificial insemination (AI) or natural mating was examined in Karagouniko ewes during

the transition to the breeding season. Progestagen intravaginal sponges were inserted in all ewes and remained *in situ* for either 14 days (Long exposure, groups LA and LM) or 6 days (Short exposure, groups SA and SM). All ewes received 400IU eCG and 53–55 h later intracervical AI was performed in groups LA ($n = 79$) and SA ($n = 99$) using fresh diluted semen (500×10^6 spermatozoa/ml). In groups LM ($n = 70$) and SM ($n = 68$) ten fertile rams were introduced for oestrus detection and natural mating. In the latter groups progesterone concentration was assessed in blood samples collected daily for 4 days starting at sponge removal (day 0). Pregnancy diagnosis was performed by ultrasonography 55 days later. On day 3 progesterone concentration was higher ($p < 0.05$) in group SM compared with LM. Onset of oestrus after sponge withdrawal did not differ between groups. Pregnancy rate was greater ($p < 0.05$) in group LA (40.5%) and SM (35.3%) compared with SA (25.3%) and LM (17.1%), respectively; litter size was 1.75, 1.58, 1.52 and 1.50, respectively. These results indicate that fertility rate after progestagen pretreatment depends on the method of insemination. Further experiments are underway to define a fixed-time AI protocol in Karagouniko ewes subjected to short progestagen pretreatment.

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Progestagen treatment associated with different doses of eCG to advance the breeding season in churra galega bragançana ewes

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To assess the effects of long-term progestagen treatment associated with different doses of eCG (equine Chorionic Gonadotropin) to advance the breeding season in Portuguese Churra Galega Bragançana ewes, we used a group of 41 females (two were later rejected) aged between 2 and 7 years. In mid May, all ewes were treated with an intravaginal sponge impregnated with 20 mg fluorogestone acetate (FGA) for 12 days. Half the ewes received an injection (i.m.) of 500 UI eCG and the other half an injection (i.m.) of 750 UI eCG at sponge removal. Blood samples were taken twice a week for two weeks before sponge insertion and daily for 5 days after eCG injection for progesterone determination. Four intact rams with harness marker were used to identify oestrus. Transrectal ultrasound scanning was performed for pregnancy diagnosis. In early May, 63.4% of all ewes had low progesterone values. Treatments resulted in 97.4% ewes in oestrus and in 89.7% ewes with corpora lutea (CL) ($\chi^2 = 60.6$; $p < 0.001$). The higher dose of eCG had a positive effect on oestrus (94.4% vs. 100.0%; $\chi^2 = 6.2$; $p < 0.05$) and pregnancy (61.1% vs. 81.0%; $\chi^2 = 9.7$; $p < 0.01$) and fertility ((number of lambing ewes/total number of ewes) $\times 100$) (61.1% vs. 76.2%; $\chi^2 = 5.2$; $p < 0.05$) rates. The eCG dose had no effect in ewes with CL (88.9% vs. 90.5%; $\chi^2 = 0.053$; $p > 0.05$) nor on prolificacy (1.5 ± 0.8 vs. 1.7 ± 0.6 ; $p > 0.05$). In conclusion, long-term FGA treatment may be used to advance the breeding season in Churra Galega Bragançana ewes and the reproductive response depends on the eCG dose.

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The effect of elevated non esterified fatty acid concentrations during bovine oocyte-complex maturation on subsequent embryo viability

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Negative energy balance (NEB) in dairy cows leads to elevated non esterified fatty acid (NEFA) concentrations in follicular fluid which is associated with impaired oocyte development. This study focused on the effect of NEFA exposure during oocyte-complex (COC) maturation on COC amino acid turnover; a marker of early embryo viability. During serum-free maturation, 734 bovine COCs were exposed to (1)