



ultrasound scanner fitted to 6/8 MHz linear-array and 3.5 MHz convex probe. On recorded scanning images, the embryonic vesicle diameter (EVD) and crown-rump length (CRL), head length (HL), bi-parietal diameter (BPD), thoracic diameter (TD), umbilical cord diameter (UCD), long axis of heart (LAH), and short axis of heart (SAH) and placentomes of embryo/fetus were measured using computer software. The relationships between gestational age and each parameter of the ultrasonic measurements were expressed as straight-line equations and plotted as linear regression using Statistica 7.0 software, being statistically significant at a level of  $P < 0.05$ . Mean values were correlated to fetal age, and inverse regression equations were created for each parameter. Results obtained showed the following values: EVD ( $r = 0.94$ ), CRL ( $r = 0.94$ ), HL ( $r = 0.74$ ), BPD ( $r = 0.70$ ), TD ( $r = 0.88$ ), UCD ( $r = 0.73$ ), LAH ( $r = 0.77$ ), SAH ( $r = 0.80$ ), and placentome ( $r = 0.71$ ). Additionally, embryonic size increased from the first detection of the embryo to the end of the study. In conclusion, the ultrasonographic technique is a reliable method to estimate gestational age through the embryonic/fetal measurement once its increase follows a linear regression standard.

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#### 449 EFFECTS OF HORMONAL ADMINISTRATION IN TWO DIFFERENT SHIFTS AND OVULATORY DYNAMICS IN NONBREEDING SEASON ON TOGGENBURG GOATS

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Assisted reproduction has been used to optimize reproduction in goats. Ultrasound technology has resulted in a definite gain of knowledge in terms of ovulation time. The aim of this study was to evaluate if the shift (morning or afternoon) of hormonal administration affects different reproductive parameters. This study was conducted from October to December (nonbreeding season) of 2005, in Piauí/MG (21°35'S latitude and 43°15'W longitude), Brazil. Eighteen nulliparous ( $n = 9$ ) or pluriparous ( $n = 9$ ) Toggenburg goats were assigned equally according to body weight and condition score into two treatments. Animals received intravaginal sponges (60 mg of MAP, Progespon<sup>®</sup>, Syntex, Buenos Aires, Argentina) for 6 days plus 37.5 µg of cloprostenol (Prolise<sup>®</sup>, ARSA S.R.L., Buenos Aires, Argentina) latero-vulvar and 200 IU eCG (Novormon<sup>®</sup> 5000, Syntex) i.m. 48 h before sponge removal. Procedures were done early in the morning for T1 (10 h) and later in afternoon for T2 (17 h). Goats were monitored twice daily to identify estrous onset and its duration. After sponge removal, ultrasound evaluations were performed every 8 h until ovulation to determine the time, number of ovulations, and ovulatory follicle diameters (5-MHz transducer; Aloka, SSD 500<sup>®</sup>, Tokyo, Japan). Statistical analyses were performed using all tests at the 95% confidence interval with a SAEG<sup>®</sup> program (Funarbe, Viçosa, Brazil). The results are presented as mean ± SD. The interval (h) from sponge removal to estrous onset was  $30.7 \pm 10.6$  (T1) and  $34.3 \pm 17.6$  (T2), whereas its duration was  $33.3 \pm 22.3$  (T1) and  $34.3 \pm 22.4$  (T2) ( $P > 0.05$ ). The interval (h) from sponge removal to ovulation was  $54.4 \pm 10.2$  (T1) and  $53.4 \pm 12.3$  (T2) ( $P > 0.05$ ). Also, the interval (h) from estrous onset to ovulation was  $26.8 \pm 8.7$  (T1) and  $18.1 \pm 26.3$  (T2). No difference ( $P > 0.05$ ) was observed in the number of ovulations for T1 ( $1.89 \pm 0.93$ ) or T2 ( $1.89 \pm 0.60$ ). The diameter of the ovulatory follicle (mm) was similar ( $P > 0.05$ ) for T1 ( $8.4 \pm 1.28$ ) and T2 ( $7.36 \pm 1.15$ ) ( $P > 0.05$ ). A negative correlation was detected between the interval to estrous onset and diameter of the largest follicle ( $r = -0.41$ ;  $P < 0.05$ ), as well as between the interval to estrous onset and the interval from estrus to ovulation ( $r = -0.73$ ;  $P < 0.001$ ). A positive correlation was registered between the interval from estrus to ovulation and diameter of the largest follicle ( $r = 0.65$ ;  $P < 0.001$ ) and also between the interval from sponge removal to ovulation and diameter of the largest follicle ( $r = 0.51$ ;  $P < 0.005$ ) that was evident, indicating that follicles get larger with time. Finally, a negative correlation ( $r = -0.88$ ;  $P < 0.05$ ) was obtained between number of ovulations and average diameters of ovulated follicles. These data suggest that Toggenburg goats have a synchronization of ovulation when receiving progestagen short-term protocols in the nonbreeding season, independent of the hormonal dispensing shift.

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