a]/0.0236 and FD=[Σ(DE_i*tf_i*(1-tp_i))-PD*0.0236*0.48-NEm]/0.0393, where DE_i-DE intake (MJ/d) from i (i=protein, NSP, starch, oil), tp_i and tf_i-efficiency of transformation for protein and fat gain of i, a-intercept, 0.48-net energy cost for protein gain (kJ/kJ) taken from literature, NEm-maintenance net energy requirement as 750 kJ/$kg^{0.60}$/d. Results show that the measured parameters were not affected by DES but differed at two ELs (ADG 453 vs 786g/d, G:F 0.24 vs 0.30 kg/kg, PD 60 vs 91g/d, FD 112 vs 260g/d; P<0.05). Energetic efficiency (NE/DE) of NSP, starch and soy oil was 62, 73 and 62 %, respectively, and the values were independent of energy supply. These efficiency values for starch and soy oil have been also reported in the literature. Our results support that highly fermentable NSP can be used in pig diets, and its relatively high energetic efficiency should be considered at diet formulation.

Key Words: Fattening pig, NSP, Energetic efficiency

T130 Effect of feeding rye silage on growth performance, blood and carcass characteristics in finishing pigs. J. H. Cho*[1], Y. K. Han[2], B. J. Min[1], Y. J. Chen[1], H. J. Kim[1], J. S. Yoo[1], J. W. Kim[1], and I. H. Kim[1], [1]*Dankook University*, *Cheonan, Chungnam, Korea*, [2]*Sungkyunkwan University, Faculty of Life Science & Technology*, *Suwon, Gyeonggi, Korea*.

This study was conducted to evaluate the effects of feeding rye silage on growth performance, blood and carcass characteristics in finishing pigs. The total of eighteen (Landrace×Yorkshire×Duroc) pigs(74.22±0.71kg) were used in 49-days assay. Dietary treatments included 1) CON(basal diet), 2) S1(basal diet + 1.66% rye silage), 3) S2(basal diet + 3.32% rye silage). Through the entire experimental period, ADFI in CON(2,446g) and S2(2,385g) treatments was higher than S1(2,295g) treatment(P<0.05). Pigs fed rye silage were significantly decreased on serum cortisol concentration difference(-1.79,-1.21 vs 0.30) compare to pigs fed basal diet(P<0.05). The Hunter's L^* value(44.16) of loin of pigs fed S2 diet was higher than that(38.83) of loin of pigs fed CON diet(P<0.05). The b^* value(3.40, 3.47) of loin of pigs fed S1 and S2 diets were higher than CON(2.65) treatment(P<0.05). Backfat thickness in CON treatment(22.45 vs 17.35, 16.78mm) was significantly increased compare to S1 and S2 treatments(P<0.05). In leans fatty acid contents, the content of palmitic(21.91 vs 19.92, 20.65) and stearic(13.28 vs 11.45, 11.16) acids were significantly higher in CON than others(P<0.05), also, eicosenoic(1.27 vs 0.91, 0.69) and linolenic(0.30 vs 0.23, 0.24) acids were the highest in S2 treatment among treatments(P<0.05). Total SFA(34.41 vs 33.66, 33.87) was the highest in CON(P<0.05). S1 and S2 treatments were higher USFA/SFA ratio(1.80, 1.81 vs 1.56) than CON treatment. In fats those, linolenic acid was higher in S2(0.38) treatment than those of S1(0.28) and CON(0.29) treatments(P<0.05). Digestibility of DM(81.39, 81.59 vs 77.61%) in pigs fed S1 and S2 diets were greater than that of pigs fed CON diet(P<0.05) and S1 treatment was higher than CON on digestibility of N(84.38 vs 76.25%)(P<0.05). VFA emission from fecal, measured after 1d, was significantly increased in pigs fed S1 and S2 diets(P<0.05). In conclusion, our results showed that feeding rye silage might be beneficial in cortisol concentration difference, hunter's L^* value and b^*, fatty acid contents and nutrient digestibility.

Key Words: Rye silage, Growth performance, Carcass characteristics

T131 Effect of sex and feeding level on productive performance and carcass quality of Iberian × Duroc pigs. M. P. Serrano[1], D. G. Valencia[1], J. C. Sánchez[1], R. Lázaro[1], A. Fuentetaja[2], and G. G. Mateos*[1], [1]*Universidad Politécnica de Madrid*, *Spain*, [2]*Copese*, *Segovia, Spain*.

Iberian pigs are the ancestral dark–haired pigs of Spain. Currently, they are reared under free range or intensive production systems and sacrificed at 150 to 180 kg BW, and both sexes are castrated. We used 160 Iberian pigs under an intensive system to study the influence of sex (EF, entire females; CF, castrated females; and CM, castrated males) and feeding level (AL, *ad libitum*; RT, 23% restriction of *ad libitum* feed intake from 42 to 112 kg) on productive performance and carcass quality at 152 kg BW. There were six treatments (3 × 2) and four replicates (seven pigs) per treatment. From 42 to 152 kg BW, EF tended to eat less (2762 vs. 2902 and 2840 g/d; $P \leq 0.10$) than CF or CM but sex did not affect ADG or G:F. From 42 to 112 kg BW, AL fed pigs grew faster than RT pigs (720 vs. 551 g/d; $P \leq 0.001$). However, from 112 to 152 kg BW, after the end of the feed restriction period, RT pigs recovered, and ate more feed (3714 vs. 3390 g/d; $P \leq 0.05$) and grew faster (822 vs. 655 g/d; $P \leq 0.001$) than AL fed pigs. As a result, G:F was better for RT than for AL pigs ($P \leq 0.01$). At the end of the trial, RT fed pigs grew less ($P \leq 0.001$) than AL fed pigs but G:F was not affected. Carcass yield ($P \leq 0.10$) and carcass fat (51.7 vs. 58.2 and 58.9 mm at P_2 and 40.9 vs. 49.4 and 49.1 mm at m. *Gluteus medius*; $P \leq 0.01$) were lower and primal cuts yield was higher (43.8 vs. 41.9 and 41.4%; $P \leq 0.001$) for EF than for CF or CM. Carcass yield (80.1 vs. 81.0%; $P \leq 0.001$) and carcass fat (52.8 vs. 59.8 mm at P_2 and 43.2 vs. 49.7 mm at m. *Gluteus medius*; $P \leq 0.001$) were lower but primal cuts yield were higher (42.9 vs. 41.8%; $P \leq 0.05$) for RT than for AL fed pigs. The use of EF rather than CF is recommended when Iberian pigs reared under intensive production systems are destined to the dry cured industry. Also, a 23% feed restriction from 42 to 112 kg BW might improve primal cuts yield of pigs at slaughter without jeopardizing gain to feed ratio.

Key Words: Iberian pigs, Productivity, Carcass quality

Physiology and Endocrinology: Reproductive Physiology

T132 Production and cryopreservation of embryos from Sarabi cattle. M. H. Fazeli*[1,2] and S. M. Mirtorabi[2], [1]*Azad University, Shahre Kord Campus*, *Shahre Kord, Iran*, [2]*Animal Breeding Center*, *Karaj, Iran*.

Endogenous breeds of cattle despite of their genetic values in terms of adaptability to the suboptimal or adverse environmental, management, and disease conditions are becoming extinct. They are either being crossed with exotic breeds or totally replaced in most cases by the European breeds. Preservation of the breeds has been an important implication of the embryo transfer technology. A program concerning preservation of several native cattle breeds was launched by the Animal Breeding Center, Karaj, Iran. The program consists of collection and freezing of both semen and embryos. The results of production and freezing of embryos from Sarabi, a breed of cattle native to the north-east of Iran is reported here. A total of 127 Sarabi cows were super-ovulated by either eCG or FSH following synchronization by two injections of PGF 11 days apart. Embryo collection by non-surgical technique was attempted on 97 cows (76%) which were considered to have responded favorably to the super-ovulatory treatments. The remaining cows were not flushed due to failure of response (ovarian

cysts or difficulties in passing the Foley catheter as very large and prolapsed cervical rings was a common finding in this breed). Of 940 eggs, 694 were classified as fertilized (73.8%) and 452 as suitable for freezing (65.1%). The mean numbers of eggs per super-ovulated cows and collected cows were 7.4 and 9.7, respectively. The corresponding mean numbers for the fertilized eggs were 5.5 and 7.15, respectively. The mean number of frozen embryos per collected cow was 4.6. Thirty two percent of the donor cows produced more than 10 eggs (range: 0 -52). It was concluded that despite the large size of the cervix with the prolapsed rings in Sarabi cows, embryo production can be carried out as successfully as in European breeds.

Key Words: Embryo production, Sarabi breed, Cattle

T133 Fertility of bull semen imported or domestically produced in Iran. M. H. Fazeli*[1,2], F. Raeissi[1], A. Haghighat Nia[3], H. Nabizadeh[2], and F. Zamani[2], [1]*Azad University, Shahre Kord Campus, school of Veterinary Medicine*, *Share Kord, Iran*, [2]*AI Center, Nahadehaye Dami Jahad*, *Karaj, Iran*, [3]*Damshid Softwares*, *Tehran, Iran*.

There were complaints regarding the low fertility of frozen semen produced in Iran. Many variables affect fertility of frozen semen including female fertility, management, environment, and all factors associated with production, handling and the innate fertility of the bulls. Many times the poor fertility of the semen is blamed for the unacceptable pregnancy rate. It was decided to make a valid comparison of fertility between the imported and the domestically produced bull semen. The origins of imported semen were mostly North America and the Netherlands. No attempt was made to compare fertility of bulls from different countries and they were treated as one single group. A total of 65009 AI records collected during 3 years from 33 dairy herds scattered around the country were analyzed. The eligibility criteria for the bulls were to have AI records from at least 5 different herds and a minimum of 100 heifers or 200 cows. Pregnancy rates determined by rectal palpation were used as fertility criterion. Results showed a significant decline in the pregnancy rates by AI during the 3 years period (46.1% vs 41.63% vs 40.6%, P<.05). The pregnancy rates for all bulls during spring, summer, fall, and winter were 44.9%, 36.2%, 43.8% and 46.1%, respectively. The pregnancy rate was significantly lower during the summer seasons. The imported semen were mostly used on heifers (66.2%) whereas only 24.5% of the locally produced semen were used on heifers and they were used mostly on the cows as in most cases the cost of imported semen was 30-40 times higher. The pregnancy rates for the imported and Iranian semen on heifers were 63.9% and 64.8% (P>.1) and on cows were 42.7% and 40.2% (P>.1), respectively. It was concluded that fertility of semen produced in Iran was not different from that of those imported. Most complaints of poor fertility is because of reduced success rate occurring during the summer seasons which is due to heat stress and failure of proper management to alleviate the condition.

Key Words: Bull semen, Fertility, Iran

T134 Profiles of circulating estradiol after different estrogens in dairy cows. A. H. Souza, A. P. Cunha*, D. Z. Caraviello, and M. C. Wiltbank, *University of Wisconsin*, *Madison*.

Supplementation with estrogens may allow correction of some reproductive problems due to high steroid metabolism rate in high producing cows. Thus, the objective of this study was to characterize the circulating concentrations of estradiol-17β (E2) after treatment with different types or doses of estrogens in the absence (Experiment 1) or presence (Experiment 2) of a dominant follicle in lactating dairy cows. In Experiment 1, cows (n = 12) had all follicles > 5 mm removed by ultrasound-guided follicular aspiration. Treatments were: no treatment, E2 (0.5 mg), or estradiol benzoate (EB, 0.5 mg). Cows were then re-randomized to receive: no treatment, E2 (1.0 mg), EB (1.0 mg), or estradiol cypionate (ECP, 1.0 mg). Analyses were performed with the procedure MIXED of SAS. In Experiment 1, cows treated with E2 had greater peak of E2 (0.5 mg = 8.3 pg/mL; 1.0 mg = 12.8 pg/mL) than ECP-treated (1.0 mg = 3.4 pg/mL) cows with EB-treated cows having intermediate values (0.5 mg = 4.9 pg/mL; 1.0 mg = 9.6 pg/mL). Similarly, E2-treated cows had the shortest intervals from treatment to peak (4h) and from peak until return to nadir (23h) with ECP-treated cows having longest (peak = 30h; nadir = 50h) and EB-treated cows having intermediate values (peak = 16h; nadir = 30h). In Experiment 2, circulating E2 was evaluated near AI in cows (n = 24) receiving Ovsynch with or without E2 supplementation 48h after PGF2α. Treatments were: no treatment, E2 (0.5 mg), or E2 (1.0 mg). Cows treated with 1.0 mg E2 had shorter time to peak and greater maximum circulating E2 (5.0 h; 18.5 pg/mL) than controls (9.5 h; 5.5 pg/mL) with cows treated with 0.5 mg E2 being intermediate (5.5 h; 10.6 pg/mL). Thus, the presence of a dominant follicle and treatment with differing types of estrogen produce substantial differences in the circulating E2 profile. In dairy cows, 1.0 mg dose of E2 increased circulating E2 during Ovsynch without disrupting the normal decline in circulating E2 after the LH surge.

Key Words: Estradiol, Dairy cattle, Ovsynch

T135 Observed and predicted numbers of single, twin, and triplet births in a cattle population selected for increased twinning. G. L. Bennett*, M. F. Allan, R. A. Cushman, and S. E. Echternkamp, *USDA-ARS, U.S. Meat Animal Research Center*, *Clay Center, NE*.

A previously developed mathematical model to predict the distribution of single, twin and higher order calvings was tested in a cattle population selected for increased twinning to evaluate the model at high levels of multiple births. The original model was based on a distribution of ovulation rate (estimated from ewes because genetically high ovulating cows did not exist), an independent loss of preimplantation embryos, and a dependent, placental anastomosis caused loss of fetal litters. Unlike sheep, placental anastomosis occurs in most multifetus pregnancies in cattle. When it was developed, the model showed good agreement with actual distributions of singles, twins, and triplets for groups of females ranging from 13 to 35% multiple births in a cattle population selected for high twinning rate. This population currently averages about 50% multiple births. In 16 year-season groups from spring 1998 through fall 2005, there were 940 single, 823 twin, 67 triplet and two quadruplet calvings with calves born per cow ranging from 1.33 to 1.66 per year-season. In each year-season, the distribution of singles, twins, and triplets or more was predicted from the model based on observed average calves per cow. In total, 948.8 single, 804.0 twin, 78.8 triplet, and 0.5 quadruplet calvings were predicted by the model. Predicted and observed singles, twins, and triplets or more for the 16 year-season groups showed good agreement (chi-square= 18.17; df = 16; $P = 0.31$). Results validate the use of this model based on concepts of independent and dependent losses of embryos and fetuses for predicting distributions of singles, twins, and triplets in populations of cattle with high genetic levels of twinning.

Key Words: Calving, Model, Twin

T136 Effects of estradiol and testosterone on the peripheral and anterior pituitary IGF system in barrows. J. A. Clapper* and E. M. Stansbury, *South Dakota State University*, *Brookings*.

Estradiol (E) has been demonstrated to alter components of the peripheral and anterior pituitary (AP) IGF system in pigs, however, testosterone (T) may also play a role. To further delineate the effects of E and T on the IGF system in pigs the following experiment was conducted. Fifteen crossbred barrows of similar age and weight (100 ± 3 d, 53.4 ± 1.4 kg) were stratified by litter to one of three treatment groups. Treatments were barrows receiving no E or T (C; n = 5), those receiving E (E; n = 4), and those receiving T (T; n = 6). Two E implants (Compudose) were placed subcutaneously in one ear of E pigs while T pigs received two silastic tubing implants (5 cm × 0.465 cm) filled with crystalline T placed subcutaneously in the base of each ear. Blood samples were obtained on d 1 before implantation, then on d 14, 28, 42, 56, and 63. Pigs were killed on d 64 when AP were collected. Mean serum concentrations of E were not different (P>.05) among groups on d 1 but by d 14 through 63, mean serum concentrations of E were greater (P<.05) in E pigs than in T or C pigs. Mean serum concentrations of T were increased (P<.05) in T pigs from d 14 through 63 compared to d 1. Mean serum concentrations of IGF-I were greater (P<.05) in E pigs (244 ± 22 ng/mL) than in C (178 ± 12 ng/mL) or T pigs (184 ± 11 ng/mL). Western ligand blot analysis identified 46- and 41- kDa forms of IGF-binding protein (IGFBP)-3 and a 34 kDa IGFBP-2 in serum and a 33 kDa form of IGFBP-2 and a 29 kDa form of IGFBP-5 in the AP. Mean relative amounts of 46- and 41-kDa IGFBP-3 in serum were decreased (P<.05) in T pigs compared to E and C pigs. No difference (P>.05) was detected in mean relative amounts of serum IGFBP-2 among treatments. Mean relative amounts of AP IGFBP-2 and -5 were each greater (P<.05) in E pigs than C or T pigs. These preliminary data provide evidence that while E may increase circulating IGF-I and AP IGFBP-2 and -5, T may alter relative amounts of IGFBP-3 to effectively increase the bioavailabilty of IGF-I in the pig.

Key Words: IGF-I, Estradiol, Testosterone

T137 Accuracy of pregnancy diagnosis in Holstein cows using transrectal ultrasonography based on a serum pregnancy associated glycoprotein (PAG) ELISA. E. Silva*[1], R. A. Sterry[1], D. Kolb[2], N. Mathialagan[3], M. F. McGrath[3], J. M. Ballam[3], and P. M. Fricke[1], [1]*University of Wisconsin*, *Madison*, [2]*Lodi Veterinary Clinic*, *Lodi, WI*, [3]*Monsanto Agricultural Company*, *St. Louis, MO*.

Pregnancy examinations were performed by one herd veterinarian throughout the study using transrectal ultrasonography (US) in lactating Holstein cows (n=877) 27 d after first postpartum timed AI. Outcomes were categorized as: pregnant (PG) = CL, normal uterine fluid, embryo visualized; questionable pregnant 1 (QP1) = CL, normal uterine fluid, embryo not visualized; questionable pregnant 2 (QP2) = CL, abnormal uterine fluid, embryo not visualized; pregnancy loss (PL) = nonviable embryo; nonpregnant (NP) = no CL and/or uterine fluid. Outcomes using US were compared to those categorized PG or NP using a PAG ELISA of plasma samples collected at US. Outcomes for cows in which US and PAG agreed were considered correct, whereas cows in which outcomes disagreed were rechecked using US 32 d after TAI. Outcomes for 112 cows disagreed between US and PAG, and 102 of these cows were rechecked. Statistical agreement (Kappa) between PAG and US was 0.74 (P<0.001). Distribution of cows among the US categories was 21.7, 19.7, 4.4, 1.0, and 53.1 % for PG, QP1, QP2, PL and NP categories, respectively. Within each US category, the proportion of cows in which pregnancy outcomes disagreed was 3.7 (7/190), 13.9 (24/173), 64.1 (25/39), 44.4 (4/9), and 11.2 (52/466) % for PG, QP1, QP2, PL and NP categories, respectively. Based on the US recheck, 51.0 and 49.0 % of incorrect outcomes on d 27 were from PAG and US, respectively. Incorrect outcomes for US were 2.1 (4/190), 8.9 (15/168), 52.8 (19/36), 22.2 (2/9) and 2.2 (10/464) % for PG, QP1, QP2, PL, and NP categories, respectively. Overall, PAG incorrectly diagnosed 2.1 (10/467) % of PG cows as NP and 10.5 (42/400) % of NP cows as PG. Thus, although agreement between PAG and US at 27 d after TAI was acceptable, US outcomes of QP1, QP2 and PL (25.2% of all US outcomes) were less accurate than PG or NP outcomes.

Key Words: Pregnancy associated glycoprotein, Transrectal ultrasound

T138 Angiogenesis of the endometrium and fetal membranes during early pregnancy in sheep: Morphological evaluation. L. P. Reynolds*[1], A. T. Grazul-Bilska[1], L. Della Salda[2], G. Ptak[2], and P. Loi[2], [1]*North Dakota State University*, *Fargo*, [2]*Universita di Teramo*, *Teramo, Abruzzo, Italia*.

Placental vascular development (angiogenesis) is critical for normal placental function and thus for embryonic/fetal growth and development. With assisted reproductive techniques, including cloning, the embryos exhibit poor placental angiogenesis, which may contribute to their high rate of loss after transfer. Although we previously reported a 2-fold increase in endometrial vascularity from d12 to 40 of pregnancy in ewes (Reynolds and Redmer, Biol Reprod 47:698-708, 1992), only relatively broad (6- to 10-d) intervals were evaluated. To provide a more complete description of normal placental vascular development, tissues were collected from ewes on d20, 22, 24, 26, 28, and 30 after mating (n = 5 to 6/d), and also from mid-luteal, nonpregnant (d9 to 11 after estrus; n = 5) control ewes. To maintain the morphology, specimen-pins were inserted completely through the uterus and fetal membranes at the level of the external intercornual bifurcation. Cross-sections (0.5-cm thick) were then made with a Stadie-Riggs microtome knife, immersion-fixed in 10% neutral buffered formalin or Carnoy′s solution, and embedded in paraffin. To visualize the vascular beds, histological sections were stained with periodic acid-Schiff′s reagent. The crown-rump length (C-R) of the embryos increased exponentially from d20 to 30 of pregnancy ($y = 4.694e^{0.2319x}$, where y = C-R in mm and x = day; $R^2 = 0.973$; $P < 0.001$). By d22, the endometrial lumenal epithelium was already flattened (low cuboidal to squamous) compared with that of nonpregnant controls, which was tall, pseudo-stratified columnar. On d22, a sub-epithelial endometrial capillary plexus also was beginning to develop, and the fetal membrane (allantochorion) was just beginning to vascularize. Development of the endometrial capillary beds and sub-epithelial capillary plexus continued through d30. By d24, the capillaries of the allantochorion were well developed, and this continued through d30. This more complete description of early placental angiogenesis in sheep will provide the foundation for determining whether placental vascular development is altered in compromised pregnancies.

Key Words: Early pregnancy, Placenta, Angiogenesis

T139 Effect of neonatal environment on adult reproductive function of boars. J. K. Griffin*, M. C. Seal, and W. L. Flowers, *North Carolina State University*, *Raleigh*.

The objective of the study was to examine the influence of litter size during lactation on adult reproductive function of boars. Boars born in litters of 10 pigs or more during October (Fall) or March (Spring) were allocated to nurse in litters of 6 (small) or greater than 9 pigs (large) by crossfostering one day after birth (n=9 boars/treatment/season). After a 3-week lactation, boars were weaned and managed under similar conditions for 2 years. Treatment by season by time interactions were present (P<0.05) for body weight and testicular size. For boars born in the Spring, body weight and testicular size were greater (P<0.05) for boars raised in small than large litters between 3 weeks and 2 years of age. In contrast, no advantage of nursing in a small litter was observed in body weight or testicle size until 15 weeks of age (P<0.05) for boars born in the Fall. Regardless of season, more (P<0.05) boars raised in small (73%) than large (39%) litters were successfully trained to collect by 170 days of age. In the Spring replicate, boars reared in small litters had increased (P<0.01) sperm cells/ejaculate during the entire collection period (180 days to 2 years of age). In the Fall replicate, sperm cells/ejaculate were higher (P<0.05) in boars weaned in small litters only between 300 and 360 days of age compared with their counterparts in large litters. No other consistent differences were observed for other semen quality parameters (P=0.15). Heterospermic inseminations and DNA paternity testing techniques were used to assess fertility of boars beginning at 210 days of age. Insemination doses were made by mixing 3 billion motile spermatozoa each from a boar raised in a small and a large litter. Boars raised in small litters sired 65% of the 915 piglets tested (P<0.05). In conclusion, reduction of the number of piglets in the litter in which boars are raised during lactation had a positive effect on their sperm production and fertility as adults. However, the chronological development of these differences appears to be influenced by season of birth.

Key Words: Boars, Spermatogenesis, Swine

T140 Gonadal response to HCG and GnRH analog in male sheep exposed to excess prenatal testosterone. S. E. Recabarren*[1], P. P. Rojas-Garcia[1], M. P. Recabarren[1], V. Alfaro[1], R. Smith[2], and T. Sir-Petermann[3], [1]*University of Concepcion*, *Chillan, Chile*, [2]*University of Chile*, *Santiago*, [3]*University of Chile*, *Santiago*.

Although there is accumulating evidence that prenatal T may compromise adult female reproductive function, the early exposure of excess T on the adult reproductive function has been less studied in males. The aim of this study was to assess the gonadal responsiveness to a pharmacological challenge of HCG (500 U) and GnRH agonist leuprolide(10 µg/kg BW) in adult male sheep exposed to T excess (T–males, n=5)during days 30-120 of fetal development and in control males (C–males, n=5). LH and T were measured in blood samples collected before, and at 30–min intervals for the first 3–h, and at 3–6–h intervals until 72 h after GnRH agonist administration while only T was measured after HCG administration. T increased similarly in C–males and T–males after HCG with a peak of 10.12±0.75 ng/ml and 9.16±0.78ng/ml at 2–2.5 h respectively, reaching a nadir after 6h and again increasing until the end of the experiment. LH and T increased and decreased in parallel in C–males and T–males after leuprolide. T increased to a peak of 12.83±1.8 in C–males and of 13.05±2.06 ng/ml in T–males at 2–3 h respectively and then decreased with no further increase. Areas under the curve of LH and T response after leuprolide were similar between C–males and T–males. Results suggest that prenatal T exposure may not alter the pituitary–gonad endocrine function in adult males. The long-term effect on fertility remains to be determined. Fondecyt grant 1050915

Key Words: Testosterone, Male sheep, Prenatal steroid exposure

T141 Impact of exogenous ghrelin administration on circulating concentrations of luteinizing hormone in steers. J. A. Daniel*, G. A. Perry, and A. E. Wertz-Lutz, *South Dakota State University*, *Brookings*.

Four steers (450 ± 13.1 kg) were used in a crossover design to determine the effects of intravenous infusion of bovine ghrelin (bGHR) on plasma concentrations of luteinizing hormone (LH). Steers were fed individually once daily (0800 h) and allowed to consume ad libitum until 2000 when feed was removed. Daily feed allotment was sufficient to result in ≥10% feed refusal. On the day of the experiment, serial blood samples were collected from steers fitted with an indwelling jugular catheter at 15-min intervals from 0600 through 1800 h. Plasma was assayed for LH by RIA. Saline (SAL) or bGHR was infused via jugular catheter at 1200 and 1400 h, which were times when steers usually did not eat feed. Exogenous bGHR was infused to achieve a plasma concentration of 1000 pg/mL. Previous research has indicated a peak bGHR concentration of 1000 pg/mL for fasting steers. Steers were allowed 5 d to adjust between treatment periods. Then, treatments were switched between steer groups, and the sampling period was repeated. Mean concentrations and area under the concentration curve were determined for LH following administration bGHR or SAL treatment at 1200 and 1400 h. Effect of treatment, period, steer and the treatment*period interaction on mean concentrations and area under the concentration curve for LH was determined by ANOVA. Mean plasma concentrations of LH and area under the concentration curve did not differ between bGHR or SAL treated steers following the 1200 h infusion (2.4 ± 0.1 vs. 3.0 ± 0.4 ng/ml and 247.5 ± 13.7 vs. 309.9 ± 36.2 ng/ml, respectively; P > 0.29) or the 1400 h infusion (2.4 ± 0.2 vs. 2.9 ± 0.2 ng/ml and 516.0 ± 58.6 vs. 651.2 ± 42.8 ng/ml, respectively; P > 0.27). Plasma concentrations of growth hormone (GH) and bGHR were also determined and previously reported that exogenous administration of bGHR increased plasma concentrations of GH in these steers. These date indicate bolus administration of bGHR sufficient to alter plasma concentrations of GH does not alter plasma concentrations of LH in steers.

Key Words: Ghrelin, Luteinizing hormone, Cattle

T142 Assessment of a practical method for identifying anovular dairy cows synchronized for first postpartum timed artificial insemination. E. Silva*, R. A. Sterry, and P. M. Fricke, *University of Wisconsin*, *Madison*.

Lactating Holstein cows (n=842) received a Presynch/Ovsynch protocol to initiate first postpartum (pp) timed AI (TAI) as follows: $PGF_{2\alpha}$ (PGF;39±3 and 53±3 d pp); GnRH (G;65±3 d pp); PGF (72±3 d pp); G (74±3 d pp) + TAI 16 h later. Two methods for assessing cyclicity status before TAI were compared. For the first method (RIA), blood samples were collected at the 2nd PGF of Presynch and at the 1st G of Ovsynch, and cows with serum P4 ≥1.0 ng/ml in one or both samples were classified as cycling, whereas cows with serum P4 <1.0 ng/ml in both samples were classified as anovular. For the second method (US), transrectal ultrasonography was used to determine the presence or absence of a corpus luteum (CL) at the 1st G of Ovsynch, and cows without CL were classified as anovular, whereas cows with a CL were classified as cycling. Statistical agreement (kappa) between

the presence or absence of a CL using US and serum P4 (P4 ≥ 1.0 ng/ml=CL, P4 <1.0 ng/ml=no CL) at US was 0.74 (P<0.001). Sensitivity and specificity of US to assess the presence of a CL was 94.0 and 78.8 %, respectively (53 cows with a CL had serum P4 <1.0 ng/ml). Statistical agreement (kappa) between RIA and US to identify cycling cows was 0.66 (P<0.001). Sensitivity, specificity, positive predictive value, and negative predictive value of US to identify anovular status was 85.7, 87.7, 64.7, and 95.9 %, respectively. Disagreement between RIA and US to determine cyclicity status occurred because 75 cows had serum P4 ≥ 1.0 ng/ml at the 2nd PGF of Presynch and <1.0 ng/ml at the 1st G of Ovsynch (cycling by RIA), and 47 of these cows had no CL at the 1st G of Ovsynch. For cows without a CL (n=232), 79.3, 5.6, and 15.0 % had P4 concentrations of <0.5, 0.5 to <1.0, and ≥1.0 ng/ml, respectively. We conclude that assessing the presence or absence of a CL at the first G of Presynch/Ovsynch using US is a practical method for identifying cyclicity status of cows before first TAI but may slightly overestimate the proportion of anovular cows.

Key Words: Presynch/Ovsynch, Anovular cows, Ultrasonography

T143 Relationship between metabolic hormones and ovulation of dominant follicle at the first follicular wave postpartum in dairy cows. C. Kawashima*[1], E. Kaneko[1], C. Amaya Montoya[1], M. Matsui[1], T. Shimizu[1], N. Matsunaga[1], K. Kida[1], Y.-I. Miyake[2], D. Schams[2], and A. Miyamoto[1], [1]*Obihiro University of Agriculture and Veterinary Medicine*, *Obihiro, Hokkaido, Japan*, [2]*TU-Munich Weihenstephan*, *Freising-Weihenstephan, Germany*.

Recent studies suggest that IGF-1 from liver is a crucial regulatory factor in the final maturation of the dominant follicle (DF) of the first follicular wave postpartum (pp), but the detailed endocrine environment has not yet been elucidated. The aim of our study was to determine in detail the changing profiles of metabolic and reproductive hormones in relation to ovulation of the DF of the first follicular wave pp in dairy cows. Blood samples were obtained from 22 multiparous Holstein cows from 4 wk prepartum to 3 wk pp. Plasma concentrations of related hormones were measured, and the development of the DF was observed with color Doppler ultrasound. Fifty-nine percent of cows showed ovulation by 15.2 d (mean) pp. Ovulated cows showed higher plasma glucose just after calving (P<0.05), and started to decrease their body condition score from 1 wk pp; that is 1 wk later than anovulated cows. Anovulated cows showed higher insulin levels than those in ovulated cows during the prepartum period (P<0.01), and higher GH levels during peripartum period (P<0.01). In contrast, ovulated cows showed higher IGF-1 levels than anovulated cows during peripartum period (P<0.001). Each DF similarly developed at the first follicular wave pp and a clear blood flow was observed by 14 d pp despite ovulation or anovulation. When we observed in detail endocrine profiles in 9 out of 22 cows, 5 out of 9 cows (56%) showed plasma E2 increase with follicular growth followed by E2 peak, LH surge and ovulation. IGF-1 levels were maintained high level, and drastically declined to basal level 3 d before E2 peak. These profiles were not observed in anovulated cows and plasma IGF-1 remained at a low level. In conclusion, our data suggest that plasma IGF-1, enhanced by metabolic status through the prepartum period, directly stimulates maturation of the dominant follicle that can ovulate at the first follicular wave pp in dairy cows.

Key Words: Cow, Metabolic hormones, First follicular wave postpartum

T144 Reproductive performance of lactating dairy cows of different leptin genotype. R. C. Chebel*[1] and J. E. P. Santos[2], [1]*University of Idaho*, *Caldwell*, [2]*University of California Davis*, *Tulare*.

Objectives were to evaluate the relationships between leptin genotype and reproduction of dairy cows in the first 305 d in milk (DIM). Sequencing the Exon-2 region of the leptin gene in 814 lactating Holstein cows was performed to determine the presence of single nucleotide polymorphism. Resulting genotypes were CC=282 (34.6%), CT=392 (48.2%), and TT=140 (17.2%). Cows received two injections of PGF2a at 35 and 49 DIM, and were inseminated at detection of estrus after the second PGF2a. Cows not inseminated by 62 DIM were enrolled in the Ovsynch protocol and inseminated at fixed time 10 d later. Cows were re-inseminated upon detection of estrus, and those cows not re-inseminated and diagnosed as nonpregnant were resynchronized with the Ovsynch protocol. Pregnancy was diagnosed at 30 ± 3 and 60 ± 3 d after first postpartum AI and at 42 ± 7 and 160 ± 7 d after subsequent inseminations. Body condition score was recorded on d 3, 35, and 62 postpartum. Blood samples collected at 35 and 49 DIM were analyzed for progesterone and cows were classified as anovulatory if progesterone < 1.0 ng/mL in the two samples. Data were analyzed using the LOGISTIC, MIXED, and LIFETEST procedures of SAS. Leptin genotype influenced (P=0.01) the mean BCS of cows (CC = 3.02 ± 0.02, CT = 2.97 ± 0.01, TT = 3.05 ± 0.02) in the first 62 DIM. Proportion of cyclic cows on study d 49 was affected (P=0.03) by genotype (CC = 65.1, CT = 59.8, TT = 51.9%). Leptin genotype was not (P>0.15) associated with conception rates after the first postpartum AI at 30 or 60 d after insemination, or pregnancy loss from 30 to 60 d of gestation. Conception rate (P=0.19) and pregnancy loss (P=0.75) after second postpartum AI were also not influenced by leptin genotype. Although proportion of cows pregnant at 305 DIM was not influenced by leptin genotype, survival analysis indicated that primiparous cows of TT genotype became pregnant at a slower (P=0.03) rate as indicated by the median days open (CC = 122, CT = 121, TT = 172). Leptin genotype had minor effects on reproduction of dairy cows and it was associated with resumption of postpartum ovulation in the first 49 DIM and days open of primiparous cows.

Key Words: Leptin, Reproduction, Dairy cow

T145 Influence of maternal and fetal breed on placental and fetal weight in sheep. P. P. Borowicz*, A. T. Grazul-Bilska, K. A. Vonnahme, J. S. Caton, D. A. Redmer, and L. P. Reynolds, *North Dakota State University*, *Fargo*.

Growth and development of the fetus depend on its ability to acquire nutrients, which in turn depends on the development of the placenta. Factors that influence placental development thereby have a dramatic impact on neonatal survival and growth. The aim of this experiment was to determine the influence of fetal and maternal breeds on fetal placental (cotyledonary; COT), maternal placental (caruncular; CAR), and total placental weights in sheep. We hypothesized that: 1) the wt of placentas of highly prolific Romanov (R) sheep (litter-bearing, small birth weight) are different from those of Columbia (C) sheep (traditional, large birth weight), and 2) not only the maternal but also the fetal genome determines the wt of the placenta and therefore the exchange rate of nutrients, respiratory gases, and wastes. To test this hypothesis we established straight-bred (controls) and reciprocal pregnancies by transferring embryos from R or C ewes to R or C recipients (n = 1 embryo per dam; n = 5 total dams per group; groups: R × R, R × C, C × R, and C × C, where the first letter is the embryo

breed and the second is the ewe breed). Gravid uteri and fetuses were collected on day 130 of gestation, and COT, CAR, total placental (CAR + COT) and fetal wts were determined. Fetal wt was less for R × R and R × C (3.5 kg), intermediate for C × R (4.5 kg), and greatest in C × C (6.2 kg; $P < 0.02$). Total placental wt was greater ($P < 0.04$) for C than for R fetuses (372 vs. 298 g) regardless of dam breed, and was greater ($P < 0.04$) for C than R dams (391 vs. 278 g) regardless of fetal breed. Similarly, fetal COT wt was greater ($P < 0.03$) for C than R fetuses (285 vs. 208 g) regardless of dam breed, and greater ($P < 0.02$) for C than R dams (289 vs. 203 g) regardless of fetal breed. In contrast, total CAR wt was greater ($P < 0.02$) for C than R (102 vs. 74 g) but was similar among fetal breed. No fetus breed × dam breed interactions were seen for total COT, total CAR, or total placental wt. These data indicate a profound effect of maternal breed on fetal weight, and fetal and/or dam breed on fetal and placental weight. NIH HL64141 to DAR and LPR.

Key Words: Fetal weight, Placenta, Reciprocal study

T146 Effect of estradiol cypionate before induction of ovulation on subsequent luteal lifespan in anoestrous Nelore cows. O. G. SáFilho and J. L. M. Vasconcelos*, *FMVZ-UNESP*, *Botucatu, SP, Brazil*.

The aim of this trial was to evaluate the effect of estradiol cypionate before induction of ovulation on prevention of premature luteolysis. Anestrous Nelore cows (n=35; 37.17±3.10 DPP) were evaluated by 2 ultrasound exams 8 d apart (days –10 and –2). On day –2, cows had their calves removed for 48h and received randomly either 0.5 mL i.m. injection of cottonseed oil (placebo) or 1 mg i.m. injection of estradiol cypionate (ECP®, Pfizer Animal Health, Brazil). On day 0, all cows received a GnRH injection (Fertagyl®, Intervet, Brazil). Two ovarian ultrasound exams were performed (day 0 and day 2) for ovulation evaluation. Only cows that ovulated within 48 h after GnRH injection were used for the study (Placebo, n=12; ECP, n=8). Blood samples were collected on days 0, 5, 9 and 15 for corpus luteum lifespan evaluation by progesterone (P4) analysis. Cows were considered having short cycle if P4 decreased more than 50% between days 5 and 7. Percentage of cows exhibiting short cycle was analyzed by logistic regression and serum P4 concentrations were analyzed by PROC MIXED. Incidence of short cycle and mean serum progesterone on days 0, 5, 9 and 15 did not differ between Control and ECP groups (83.3 vs. 75.0%, P>0.1; 0.4±0.4 vs. 0.4±0.5; 3.0±0.4 vs. 2,4±0.5; 0.9±0.4 vs. 1.3±0.5; 0.8±0.4 vs. 0.9±0.5 ng/ml, respectively; P>0.1). For both treatment groups, serum P4 increased from day 0 to day 5 (P<0.01), but decreased from day 5 to day 9 (P<0.01). Serum P4 concentrations on days 9 and 15 were similar (P>0.1). In conclusion, treatment with 1mg of estradiol cypionate did not prevent occurrence of short cycle in anestrous Nelore cows after induction of ovulation with calf removal and GnRH injection.

Key Words: Anestrous, Short cycle, Estradiol cypionate

T147 Effect of progesterone or 17β-estradiol on luteal lifespan in anoestrous Nelore cows. O. G. SáFilho*, C. C. Dias, and J. L. M. Vasconcelos, *FMVZ-UNESP*, *Botucatu, SP, Brazil*.

This trial was to evaluate the effect of progesterone (P4) and/or 17β-estradiol (E2) on incidence of short cycles (SC) after induction of ovulation with calf removal (CR) and GnRH injection in anestrous Nelore cows. Cows (n=142; 43±12 DPP) were evaluated by 2 ultrasound (US) exams 8 d apart (day –16 and day –8) for cyclicity. Anestrous cows (n=114) were randomly assigned to receive a 6 d treatment with an intravaginal P4 device (CIDR® Pfizer Animal Health, Brazil) prior CR and/or 1 mg i.m. injection of 17β-estradiol 48h after beginning of CR (4 treatments; 2x2 factorial design). On day –2 all cows suffered CR for 54h and received a GnRH injection at the end of CR (day 0). Only cows that ovulated within 48 h after GnRH injection (evaluated by US on days 0 and 2) were used (Control, n=23; E2, n=25; P4, n=19; P4+E2, n=18). Blood samples were collected on days 0, 5, 7, 9, 12, 15 and 19 for corpus luteum lifespan evaluation, by serum P4 analysis. Cows were considered having SC if P4 decreased more than 50% between days 5 and 7. Percentage of cows exhibiting SC was analyzed by logistic regression and P4 were analyzed by PROC MIXED of SAS. P4 were higher on day 5 than on day 0 (P<.01) on all treatments. Serum P4 increased (P<.05) between days 5 and 7 on P4 (from 2.3±0.5 to 3.7±0.5 ng/mL) and P4+E2 (from 2.4±0.5 to 3.3±0.5 ng/mL) groups and decreased (P<.01) on Control (from 2.9±0.4 to 1.9±0.4 ng/mL) and E2 (from 1.9±0.4 to 0.8±0.4 ng/mL) groups. Cows treated with P4 (P4 and P4+E2) had higher serum P4 than cows not treated (Control and E2) on days 7, 9, 12 and 15 (P<.01). Incidence of SC was lower in cows treated with P4 than in cows not treated (23.5 vs. 79.2%; P<.01), while treatment only with 17β-estradiol did not differ (P>.10) from control group (76 vs 82.6%). Cows not treated with P4 that showed heat had the same incidence of SC than cows not detected in estrus (75 vs. 80%; P>.1). In conclusion, 6 d treatment with P4 prior ovulation on anestrous cows warranted a normal luteal lifespan, while administration of 1mg of 17β-estradiol did not prevent occurrence of SC.

Key Words: Short cycle, Progesterone, Estradiol

T148 Factors affecting conception of AI or ET in lactating cows. D. G. B. Demetrio*[1], R. M. Santos[1], C. G. B. Demetrio[2], C. A. Rodrigues[3], and J. L. M. Vasconcelos[1], [1]*FMVZ-UNESP*, *Botucatu, SP, Brazil*, [2]*ESALQ-USP*, *Piracicaba, SP, Brazil*, [3]*SAMVET*, *São Carlos, SP, Brazil*.

The objective of this study was to evaluate the factors which affect pregnancy rates (PR) of AI or ET in lactating Holstein cows. Cycling cows (n=1025) producing 33.3 ± 7.2 kg milk/d received PGF2α injections and were assigned to AI or ET group. Cows detected in estrus between 48 and 96 h after the injection (n=387) received AI (n=227) 12 h after estrus detection or received 1 fresh embryo (grade 1 or 2) from non lactating donor cows (n=160) 6 to 8 d later. Pregnancy diagnosis was done by US 25 and 39 d after estrus and embryonic loss (EL) was considered when cows pregnant on day 25 were not on 39. The variables ovulation rate, PR and EL were analyzed by logistic model and the covariates DIM, milk yield (21 d average), body temperature (BT; 7 d after estrus) and P4 serum concentration (day 7) were measured. Ovulation rate was 84.8 % (328/387) and was only negatively affected (p=.05) by DIM. PR at day 25 for ovulated cows were 37.9 % (74/195) and 59.4 % (79/133) for AI and ET (p<.01) groups, respectively. BT (p=.02) affected negatively PR for both treatments. To evaluate P4, only cows with synchrony 0 (estrus 72 h after PGF2α injection) were used (n=191) from both groups and PR at day 25 were 37.5% (39/104) and 63.2 % (55/87) for AI and ET (p<.01) groups, respectively. Interestingly, there was a positive effect of P4 (p=.03) and a negative effect of BT (p=.09) and milk production (p=.04) on probability of PR on AI group while on ET group only BT (p=.08) affected PR negatively. The EL was 11.1% (8/74) and 21.5% (17/79) for AI and ET (p=.06), respectively, and high BT (p=.10) increased the probability of EL. The PR at day 39 was always higher (p=.02) for ET even after embryonic loss. The results confirm the importance of the rise of the postovulatory P4 on the initial embryonic development since affected PR only in AI group. Transfer of fresh

embryos produced from non lactating cows should be used to bypass negative effects on initial embryo development, increasing pregnancy rates in lactating cows.

Key Words: Embryo transfer, Artificial insemination

T149 Induction of ovulation in sheep using a novel recombinant gonadotropin with dual (LH and FSH) activity. E. P. Lemke*[1], B. M. Adams[1], I. Boime[2], and T. E. Adams[1], [1]*University of California*, *Davis*, [2]*Washington University*, *St. Louis, MO*.

The biopotency of a dually active chimeric gonadotropin was evaluated using prepuberal ewe lambs. This novel gonadotropin is a monomeric glycoprotein produced by CHO cells transfected with a construct that incorporates the coding regions of the α, hLHβ, and hFSHβ subunits into a single gene (FSHβ-CTP-LHβ-CTP-α, where CTP represents the sequence encoding the C-terminal portion of hCG). Lambs (bwt = 45 ± 2 kg) received (iv) 0, 5, 10 or 20 IU/kg of the dually-active chimera (n = 6 lambs/group) at the beginning of experimentation (day 0). Follicle development and subsequent activity of corpora lutea were assessed by monitoring serum concentrations of estradiol (E2) and progesterone (P4), respectively. Ovulation rate was determined by laparoscopy on day 9. Basal serum concentrations of E2 and P4 were maintained in control animals receiving vehicle alone. Conversely, serum levels of E2 were increased ($P < 0.05$) above basal concentrations within 24 h of chimera administration and peak levels were noted 3-5 days thereafter. The magnitude and duration of E2 secretion varied among treatment groups in a dose-dependent manner ($P < 0.05$). Serum P4 was increased ($P < 0.05$) above basal levels by day 4 in all groups receiving the dually active gonadotropin. Ovulation rate in groups receiving 0, 5, 10 or 20 IU/kg was 0.2 ± 0.1, 2.2 ± 0.7, 1.6 ± 0.5, 1.2 ± 0.4 ova/lamb, respectively. Persistent follicular activity was also noted at laparoscopy, most prominently in animals receiving the highest dose of the chimeric protein. Collectively these observations indicate that this recombinant gonadotropin is active in sheep. The chimera stimulates growth and maturation of ovarian follicles and concurrent E2 synthesis. This suggests that both the LH and FSH activities of the gonadotropin are functionally expressed. We postulate that the prolonged physiological response induced by the chimera is due to the unique pattern of glycosylation characteristic of this novel gonadotropin. Supported by the USDA (NRI Grant 5-35203-16274).

Key Words: Ovulation, Sheep, Chimeric gonadotropin

T150 Association of timing of chorioallantoic membrane development with age in dairy cattle. J. D. Rhinehart*, R. A. Dailey, D. H. Poole, and E. K. Inskeep, *West Virginia University*, *Morgantown*.

About 12% of lactating dairy cows experience late embryonic or early fetal death (d 25 to 60 of gestation). These losses are economically important because lengthened interestrous intervals lead to longer calving intervals. Abnormal growth of the allantois and timing of its fusion with the chorion have preceded high rates of late embryonic / early fetal loss of manipulated embryos (Thompson and Peterson, *Human Reprod.* 2000, 15:59). Association of survival or loss with allantoic development is not known for embryos developed entirely *in vivo*. This study characterized timing of detection of the allantois and diameter of the allantoic lumen, in dairy cows and heifers, to determine whether these variables might be used to investigate late embryonic / early fetal loss. Reproductive tracts of dairy heifers (n = 28) and lactating dairy cows (n = 21) were examined daily, via transrectal ultrasonography (Aloka 900), beginning on d 21 post-insemination (PI). Variables included: first day of detection of the allantois, diameter of the allantoic lumen and length of the embryo at first detection of the allantois. Range and mean of first day of detection of the allantois (d 21 to 26, 23 ± 0.18 PI) agreed with previous reports (Curran et al., 1986, *J. Am. Vet. Med. Assoc.* 189:1295). The allantois was detected earlier ($P < 0.05$) in heifers (22.4 ± 0.22 d) than in cows (23.6 ± 0.25 d) as found by Kheradmand Kolour et al. (2005, *J. Vet. Med.* 52:74). Diameter of the allantoic lumen at first detection (4.6 ± 0.31 mm) did not differ with day of detection and was not affected by age of dam. In contrast, length of embryo (range 2.6 to 7.9 mm) varied with day of first detection of the allantois ($P < 0.05$), but not with age of dam. Differences in day of first ultrasonographic detection of placental membranes, between heifers and cows, might reflect differing developmental rates and, based on present data, there might be an asynchrony in development of the embryo and the placental membranes. Therefore, the first day of detection of the allantois might be useful for predicting pregnancy loss during placentation.

Key Words: Allantois, Ultrasonography, Dairy cows

T151 Postpartum follicular development in Brahman cows under two grazing densities. R. Soto[1], C. S. Galina[1], I. Rubio*[2], E. Castillo[2], I. Hernández[1], and F. Alarcón[1], [1]*Universidad Nacional Autónoma de México*, *Ciudad Universitaria*, [2]*Universidad Nacional Autónoma de México*, *Martínez, de la Torre, Veracruz*.

The aim of this study was to determine the changes occurring in the follicular population after calving in cows raised under two different grazing densities, and the relationship to body condition (BCS) and follicular dynamics. A total of 104 adult, lactating Brahman cows were maintained on Star Santo Domingo grass (Cynodon nlenfuensis) pasture, grazed at either a high or low density (4.0 and 2.5 Animal Units/Ha, respectively). Beginning three weeks after calving, ovarian ultrasonography was performed every other day to determine the size and number of follicles. Follicles were subdivided into the following classes <4, 4 to 5, 6 to 8, 9 to 11 and >11 mm. Cows were monitored until 180 days postpartum and cows showing estrus were mated. Analysis of variance was performed using the calving to estrus interval as a covariate. At 45 days postpartum the proportion of follicles in each class was 63, 20, 12, 4 and 1% for <4, 4 to 5, 6 to 8, 9 to 11 and >11 mm, respectively. Corresponding values for 90 days were 54, 25, 17, 4 and 1%. At 150 days values were 45, 27, 24, 4 and 1% and at 180 days 40, 29, 26, 4 and 1%. No statistical differences were found ($P< 0.05$) for follicular populations between the grazing densities and BCS. A correlation was found ($P< 0.05$) between the changes in BCS and the number of follicles in all categories being the highest for follicles < 4 mm ($r = - 0.85$). Grazing densities did not affect follicular growth during the first 105 days postpartum. Also, a high negative correlation was found between BCS and the number of follicles of all sizes. In conclusion, there was relationship between number of follicles in different size classes and BCS in postpartum Brahman cows under grazing conditions.

Key Words: Postpartum, Follicles, Postpartum