Physiology and Endocrinology: Reproductive Technologies and Management

**W211** The effect of day six or day seven prostaglandin F₂α (PGF₂α) injections and using a disinfectant lubricant with Controlled Internal Drug Release (CIDR) inserts for estrus synchronization in dairy heifers. W. M. Graves*, A. K. McLean1, R. C. Smith1, J. B. Rosenberg2, and B. C. Beachnau1, 1University of Georgia, Athens, 2Fort Dodge Animal Health, IA, 3Pfizer Animal Health, Portland, MI.

Our objective was to compare d-6 versus d-7 prostaglandin F₂α (PGF₂α) injections and the effect of using a disinfectant lubricant with CIDR inserts (Eazi-Breed CIDR, Pfizer Animal Health, New York, NY) placed intravaginally for 7 d. A total of 164 heifers at two locations received CIDR inserts (Eazi-Breed CIDR, Pfizer Animal Health, New York, NY) placed either d 6 or d 7 at the time CIDR inserts were removed. Two different types of lubricants, Safe Lube (H&W Products, Inc., Salem, OH) and Nolvalube (Fort Dodge Animal Health, Fort Dodge, IA) with Nolvasan disinfectant (0.1% chlorhexidine acetate) were used to measure effects on discharge at removal and conception. Insertion devices were dipped in Nolvasan solution (29.57mL/L) before use, then dried with a paper towel prior to using Safe Lube for application. Insertion devices were just wiped and more Nolvalube added between heifers using the disinfectant lubricant. Data were analyzed by Chi-Square. Twenty-nine of 81 (35.80%) heifers treated with Safe Lube showed signs of vaginal discharge versus 18 of 83 (21.69%) treated by Chi-Square. Twenty-nine of 81 (35.80%) heifers treated with Safe Lube for appli- cation. Insertion devices were just wiped and more Nolvalube added between heifers using the disinfectant lubricant. Data were analyzed by Chi-Square. Twenty-nine of 81 (35.80%) heifers treated with Safe Lube showed signs of vaginal discharge versus 18 of 83 (21.69%) treated by Chi-Square. Twenty-nine of 81 (35.80%) heifers treated with Safe Lube for appli- cation. Insertion devices were just wiped and more Nolvalube added between heifers using the disinfectant lubricant. Data were analyzed by Chi-Square. Twenty-nine of 81 (35.80%) heifers treated with Safe Lube showed signs of vaginal discharge versus 18 of 83 (21.69%) treated by Chi-Square. Twenty-nine of 81 (35.80%) heifers treated with Safe Lube for appli- cation. Insertion devices were just wiped and more Nolvalube added between heifers using the disinfectant lubricant. Data were analyzed by Chi-Square. Twenty-nine of 81 (35.80%) heifers treated with Safe Lube showed signs of vaginal discharge versus 18 of 83 (21.69%) treated by Chi-Square. Twenty-nine of 81 (35.80%) heifers treated with Safe Lube for appli- cation. Insertion devices were just wiped and more Nolvalube added between heifers using the disinfectant lubricant. Data were analyzed by Chi-Square. Twenty-nine of 81 (35.80%) heifers treated with Safe Lube showed signs of vaginal discharge versus 18 of 83 (21.69%) treated by Chi-Square. Twenty-nine of 81 (35.80%) heifers treated with Safe Lube for appli- cation. Insertion devices were just wiped and more Nolvalube added between heifers using the disinfectant lubricant. Data were analyzed by Chi-Square. Twenty-nine of 81 (35.80%) heifers treated with Safe Lube showed signs of vaginal discharge versus 18 of 83 (21.69%) treated by Chi-Square.

Key Words: CIDR, PGF₂α, Synchronization, Disinfectant Lubricant

**W212** Development of a boar semen mobility assay. A. A. Olivera, D. L. Fernandez*, and E. S. Fonda, Department of Animal and Veterinary Sciences, California State Polytechnical University, Pomona.

Eighteen ejaculates from six mature boars were used to develop a porcine sperm mobility assay that could be performed under field conditions. A modified densitometer was used to determine an index representing the changes in light absorption after spermatozoa penetrated a resistance medium. The control values were subtracted from the experimental values to create the Net Mobility Index (NMI). Variables used in this experiment were incubation time (5, 10, 15 or 20 min), extender (Mod- ena, X-Cell, MR-A or VSP), sperm concentration (1, 2, or 3 x 10⁷ cells/mL) and Accudenz Resistance Media concentration (3%, 6% or 9%). Inactivated sperm cells were used as controls. NMI values were lower (P<0.01) for inactivated sperm (3.16±0.22 vs 25.044 ± 0.39). NMI values increased (P<0.05) with incubation time (5 min, 13.78±0.39; 10 min, 23.80±0.37; 15 min, 29.00±0.38; 20 min, 32.31±0.37). However, sperm penetration tended to stabilize over time. NMI differed (P<0.05) among extenders (X-Cell, 31.42±0.37; Modena, 26.70±0.37; MR-A, 23.91±0.39; VSP, 17.53±0.39). Increasing sperm concentration increased (P<0.05) NMI (1 x 10⁷/8, 19.20±0.33; 2 x 10⁷/8, 25.28±0.33; 3 x 10⁷/8, 30.19±0.33), however, neat ejaculate NMI (29.51±0.39) was similar to (P>0.05) NMI for 3x10⁶/8 cells/mL. NMI differed (P<0.05) among the three concentrations of resistance media (3%, 28.71±0.33; 6%, 24.23±0.33; 9%, 21.73±0.33). We conclude that the changes in the light absorption of the resistance media are an expression of the sperm mobility. Moreover, this technique has a potential application, under field conditions, to assess objectively sperm mobility and categorize males based on a Sperm Mobility Index.

Key Words: Sperm, Boar, Mobility

**W213** In vitro production of Holstein embryos using Beltsville method sex-sorted sperm. R. D. Wilson*, K. A. Weigel1, P. M. Fricke1, M. L. Leibfried-Rutledge2, D. L. Matthews1, J. J. Rutledge1,2, and V. R. Schutzkus1, 1University of Wisconsin Madison, 2BOMED Inc, Madison, WI.

Our objective was to explore the impact of sperm sorting on the efficiency of in vitro embryo production in Holstein cattle. Cull cows were used as donors, and oocytes were collected via colpometry or at the time of slaughter. Oocytes to be used for in vitro production of Holstein semen were collected on the bakers farm. The percentages of embryos produced were 51.5 and 56.5 percent for non-sorted sperm or sex-sorted sperm from three Holstein sires. Embryos were transferred into recipient Holstein cows and heifers on the time ofJ. B. Roseberg. 2.3 percent, respectively. These results suggest that sexing sperm sorting on the percentage of embryos developing to blastocyst effects. Overall conception rate was 36 percent for heifer recipients and 18 percent for milking cow recipients (P<0.05). To test the effect of sperm sorting on the percentage of embryos developing to blastocyst stage, oocytes were recovered from anonymous donors at a slaughterhouse and fertilized using non-sorted sperm or sex-sorted sperm from these sires. Oocytes (n=3312) fertilized using non-sorted sperm produced (P<0.05) more embryos developing to blastocysts than oocytes (n=1577) fertilized using sex-sorted sperm (20.1 ± 2.9 percent vs. 12.2 ± 2.3 percent, respectively). These results suggest that sexing sperm using the Beltsville method (fluorescence-activated cell sorting) method may have adverse effects on embryo development and conception rates in in vitro production systems.

Key Words: Sexed Semen, In Vitro Production, Dairy Cattle

**W241** Induction of bilateral double ovulation to promote twinning in beef cattle. M. Hoge*, A. Bor1, Y. Lavon1, M. Maman1, S. Jacoby1, and D. Wolfenson1, 1The Hebrew University, Rehovot, Israel, 2Agricultural Research Organization, Bet Dagan, Israel.

Beef cattle producers gain substantial economic benefits from cows that produce twins. Calf survival and birth weight are greater and incidences of abortion and dystocia are less in bilateral than unilaterial twin preg- nancy. A major objection to using gonadotropins to induce twins is the wide variation of ovarian response. The present study examined induction of bilateral-double or triple ovulation by stimulating follicle
growth with FSH, use of ultrasound-guided selective follicular aspiration to remove extra-large follicles, followed by supportive FSH to maintain co-dominance. In Exp. 1, Holstein cows were given short (three doses, n=6) or long (five doses, n=6) FSH treatment (50 mg Foltriton) every 12 h, from day (d) 3 of the cycle. On d 5, selective aspiration was performed. In Exp. 2, FSH was given on d 7, two supportive 30 mg doses of FSH were given 12 h apart to maintain co-dominance, on d 8, GnRH was given and post-ovulation CL growth was determined. Short and long FSH treatments induced double or triple ovulation in 42% of the cows. In Exp. 2, a short FSH treatment was given only to cows (n=10) with 7 to 8 mm medium follicles on d 3, and supportive FSH (30 mg) was given on d 5 and 6. Two non-responding cows were excluded, and 6 out of 8 cows (75%) exhibited double or triple ovulation. Control cows (n=6) that did not receive FSH ovulated a single follicle, as expected. In Exp. 3, on Holstein heifers, 4 heifers with no supportive FSH doses ovulated a single follicle, and 50% of those that received 10 mg on d 5, 6 and 7 (n=5) or 30 mg on d 5 and 6 (n=5) exhibited double or triple ovulations. Overall for Exps 1-3: 3.0 medium and 1.8 large follicles were counted on d 4, 2.5 follicles were aspirated on d 5, and 70% of the cows exhibited bilateral ovulations. The results suggest that FSH combined with selective follicular aspiration can be used to induce bilateral twinning in beef cattle.

**Key Words:** Twins, Double Ovulation, Beef Cattle

**W215** Effects of holding time prior to freezing on the motility, viability and membrane binding ability of ram sperm. P. H. Purdy*, USDA-ARS-National Animal Germplasm Program, Fort Collins, CO.

The United States sheep industry lacks infrastructure to effectively collect and store genetic resources in the national repository. Therefore, we investigated a methodology that could be used to ship diluted ram semen samples that were cooled and held at 5°C for up to 48 hours prior to cryopreservation. Semen samples from 6 rams were collected and the concentration and motility were determined using spectrophotometry and computerized automated semen analysis (CASA), respectively. Samples were diluted to 400 x 10^6 cells per mL with a one-step Tris-egg-yolk-glycerol media and cooled to 5°C over 2 hours using a styrofoam shipping box and commercial cold packs. The samples were maintained at 5°C in the shipping box, and aliquots were loaded into 0.5 mL French straws at 0, 24 or 48 hours after cooling, frozen in vapor 4.5 cm above liquid nitrogen for 12 to 13 minutes and plunged for storage. No differences between freeze times (0, 24, 48 h) were detected using ANOVA in post thaw motility (29, 31, 36%; P > 0.05), plasma membrane integrity (28, 35, 29%; P > 0.05) or live acrosomal integrity (99, 99, 99%; P > 0.05). Motility was assessed using CASA, and plasma membrane integrity and acrosomal integrity were simultaneously determined using the fluorescent stains propidium iodide and FITC-PNA, respectively, with flow cytometry. In addition, no differences were observed in the mean number of cells binding to a chicken oocyte membrane (461, 532, 319; P > 0.05) at time 0, 24 and 48 h, respectively. These results indicate that ram semen may be held at 5°C for up to 48 hours prior to freezing with no deleterious effects on post thaw motility, plasma membrane integrity and acrosomal integrity. In addition, the chicken oocyte membrane binding assay demonstrates a simple in vitro method to assess post-thaw ram sperm capacitation, acrosome reaction and binding ability. The combination of the shipping protocol and viability testing has the potential to ease the constraint on collecting and freezing ram semen.

**Key Words:** Ram Spermatozoa, Cryopreservation, Capacitation and Acrosome Reaction

**W216** Effects of PGF presynchronization and CIDR on pregnancy rates in suckled beef cattle subjected to fixed-time insemination following estradiol and progesterone treatment to synchronize follicular growth, and PGF and estradiol cypionate treatment to synchronize ovulation. J. A. Small1, M. G. Colazo2, J. P. Kastelic3, and R. J. Mapleton2. 1Agriculture and Agri-Food Canada, Brandon, Manitoba, 2WCVM-University of Saskatchewan, Saskatoon, Canada, 3Agriculture and Agri-Food Canada, Lethbridge, Alberta.

The objective was to determine effects of presynchronization and controlled-release progesterone on pregnancy rate in beef cattle subjected to a synchronization program based on estradiol, progesterone (P4) and PGF treatment for AI without estrus detection (TAI). Cross-bred suckled beef cattle (n = 288) at 47 ± 14.8 d (mean ± standard deviation) post-partum were allocated to three treatment groups on the basis of parity (n=78, 66, 41, and 79 for Lactations 1, 2, 3 and 4 and 5 to 10, respectively), body weight (range 416 to 842 kg), and body condition score (range 3.5 to 6.0). All cattle were treated with 2.5 mg estradiol-17β and 100 mg progesterone (P4; both from Sigma Chemical Co, St. Louis, MO) im on Day 0 and 500 µg cloprostenol sodium (PGF; Estrumate, Schering-Plough, Pointe Claire, QC) and 0.5 mg estradiol cypionate (ECP; Professional Veterinary Laboratories, Winnipeg, MB) im on Day 7, with AI 56 h later (TAI Day 9.3). Experimental treatments were CIDR (1.9 g P4; Bioniche Animal Health, Belleville, ON) for 7 d on Day 0 (Groups 1 and 3), and PGF on Day -7 (Groups 2 and 3). All AI utilized frozen-thawed semen with proven fertility. From Days 11 to 54, the cattle were exposed to fertile bulls and frequently observed for estrus and breeding. Pregnancy was diagnosed by ultrasonography (Day 54) and transrectal palpation (Day 129). There was no interaction of parity and treatment (P>0.05). Pregnancy rate to TAI was lowest (P<0.05) for Group 2 (46.9, 31.2, and 45.3%; for Groups 1, 2, and 3, respectively). Pregnancy rate to natural service was greatest (P<0.05) for Group 2 (46.9, 64.6 and 45.3%); most breedings occurred from 17 to 24 d after TAI (85.2, 59.1, and 72.4%; P>0.05). Cumulative pregnancy rates were similar (P>0.05) among groups (93.8, 95.8 and 90.6%). Pregnancy rate to TAI was significantly increased with a CIDR, but was not significantly affected by PGF presynchronization.

**Key Words:** Estrus Synchronization, Fixed-Time AI, Beef Cattle

**W217** Effect of presynchronization with GnRH on fertility of holstein dairy heifers receiving synchronization of ovulation and timed artificial insemination (TAI). H. Rivera* and P. M. Fricke, University of Wisconsin, Madison.

To evaluate the effect of presynchronization with GnRH on the response of heifers receiving a hormonal protocol for synchronization of ovulation and TAI, Holstein dairy heifers (n=106) 14.9 ± 0.2 mo of age were randomly assigned to each of two treatments. Heifers (n=82) in the first treatment (GPG) received a hormonal protocol for synchroniza- tion of ovulation and TAI (100 µg GnRH, d 0; 25 mg PGF2α, d 6; 100 µg GnRH+TAI, d 8), whereas heifers (n=84) in the second treatment (GGPG) received the same treatment as GPG heifers but with the addition of 100 µg GnRH 7 d before the first GnRH injection of the protocol (d -7). Artificial insemination before scheduled TAI on d 8 was conducted for heifers in both treatments based on once daily assessment of removed tail chalk beginning on d 0. Although presynchronization increased (P<0.05) the proportion of heifers with ≥ 2 CL on d 0 (30% 25/84 vs. 5% 4/81), the proportion of heifers ovulating after the first GnRH injection on d 0 (39% 31/80 vs. 40%, 32/80), the proportion of heifers undergoing luteal regression after PGF2α on d 6 (89% 58/65 vs. 94%, 64/68), the proportion of heifers ovulating after the second GnRH injection on d 8 (87%, 66/76 vs. 85%, 66/78), the proportion of heifers receiving AI before TAI (9.5%, 8/84 vs. 4.9%, 4/82), and conception rate 30 d after AI (51%, 43/84 vs. 45%, 37/82) did not differ between GGPG vs. GPG heifers, respectively. Serum progesterone (P4) concen- tration on d 0 was greater (P<0.05) for heifers with ≥ 1 CL (3.9 mg/ml) compared to heifers with one CL (2.8 mg/ml); however, serum P4 did not differ at the PGF2α injection on d 6 based on CL number (3.8 vs 3.6 ng/ml). In conclusion, presynchronization with GnRH 7 d before ini- tiation of synchronization of ovulation using GnRH and PGF2α, failed to decrease the proportion of heifers expressing estrus during the protoc- ol and did not improve synchronization response or fertility to the protocol. Supported by Hatch project WIS04431 to PMF.

**Key Words:** Dairy Heifers, Synchronization of Ovulation, Timed Artificial Insemination

**W218** Effect of termination of pregnancy on serum concentrations of pregnancy associated glycoproteins in beef cows. D. C. Busch*, J. A. Atkins, D. J. Schafer, J. F. Bader, J. D. Patterson, T. E. Parks, J. A. Green, and M. F. Smith, University of Missouri, Animal Science Research Center, Columbia.

Pregnancy associated glycoproteins (PAGs) are produced by binucleate cells in the ruminant placenta and have been used to diagnose pregnancy in cattle from d 27 post insemination to term. Previous studies indicate that PAGs have a half-life of approximately 8 d following calving; however, we hypothesized that the half-life would be shorter during early gestation.

Reproductive efficiency in dairy cattle decreases when animals are exposed to heat-stress conditions. Studies were conducted in the summer and fall seasons of 2003 to evaluate the efficacy of supplemental GnRH injections post-breeding on pregnancy rates in lactating dairy cattle. Lactating dairy cows in Summer (n=44) and Fall (n=74) were synchronized using the Ovsynch protocol, bred (TAI), and assigned to one of three GnRH treatment groups: Control (CON; no GnRH post-TAI), GnRH on d 5 & 11 post-TAI (GnRH-5/11), or GnRH on d 5 post-TAI (GnRH-5). Blood samples were collected on specified days following each trial for evaluation of serum concentrations of progesterone (P4). Ultrasonography was performed on d 5, 11, and 17 post-TAI on a subset of cows (n=8/treatment) for both studies for determination of CL area and number. Ambient temperature and relative humidity were collected daily at 10 min intervals for calculation of temperature-humidity index (THI). Overall Summer THI (24-h) was 77 (mild heat stress). No differences (P>0.10) were observed for serum concentrations of P4, CL area, and number with respect to treatment for CON, GnRH-5/11, and GnRH-5. Serum P4 was greater (P<0.05) from GnRH-5/11 compared to GnRH-5 and CON. Serum concentrations of P4 decreased (P<0.05) with the average interval to onset of estrus following CIDR removal differed (P<0.05) between treatments. Pregnancy rates for CON, GnRH-5/11, and GnRH-5 were 7.0%, 20% and 29% respectively with no treatment differences (P>0.10). However, estrus detection post-thaw for numbers of live sperm and percent motility. There was an effect of bull on PR/AI at (P<0.01), and pregnancy survival between (P<0.01), 28 and 56 d post-AI. PR/AI (%) and pregnancy survival (%) was decreased in the bull with the lowest overall fertility in treated vs. controls (10 vs. 25 and 58 vs. 86, respectively), but was not affected in the bull with the highest overall fertility (45 vs. 44 and 91 vs 98, respectively). Numbers of live sperm per straw, percent motility, and total live motile sperm were different between bulls (P<0.01). There were strong correlations between PR/AI and pregnancy survival (R=0.68) and % motility and PR/AI (R=0.71). In summary, prolonged in vivo incubation of sperm from high and low fertility bulls on pregnancy rates and pregnancy survival in lactating dairy cows. All cows (n=907) received Ovsynch to precisely control ovulation. Cows were inseminated at either 8 h prior to (treated), or 16 h after (control), the final injection of GnRH of Ovsynch. Therefore, treated and control cows received AI approximately 36 and 12 h after insemination, respectively. Based on ultrasound examinations, only cows with synchronized ovulations were used in the study. Cows were assigned to treatments based on parity and days in milk (DIM). Bulls (n=5) were selected based on estimated relative conception rate (ERCR: + 4 or -4) and were assigned equally to cows in each treatment by parity and DIM. Ultrasonography was used to diagnose pregnancy at 28 and 56 d after AI. Outcomes were pregnancy rate / AI (PR/AI; %) at, and pregnancy survival (%) between, 28 and 56 d post-AI. Semen (n=5 straws per bull) was randomly chosen and evaluated post-thaw for numbers of live sperm and percent motility. There was an effect of bull on PR/AI at (P<0.01), and pregnancy survival between (P<0.01), 28 and 56 d post-AI. PR/AI (%) and pregnancy survival (%) was decreased in the bull with the lowest overall fertility in treated vs. controls (10 vs. 25 and 58 vs. 86, respectively), but was not affected in the bull with the highest overall fertility (45 vs. 44 and 91 vs 98, respectively). Numbers of live sperm per straw, percent motility, and total live motile sperm were different between bulls (P<0.01). There were strong correlations between PR/AI and pregnancy survival (R=0.68) and % motility and PR/AI (R=0.71). In summary, prolonged in vivo incubation of sperm from high and low fertility bulls on pregnancy rates and pregnancy survival in lactating dairy cows. All cows (n=907) received Ovsynch to precisely control ovulation. Cows were inseminated at either 8 h prior to (treated), or 16 h after (control), the final injection of GnRH of Ovsynch. Therefore, treated and control cows received AI approximately 36 and 12 h after insemination, respectively. 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then every 2h for the first 12h after treatment, then every 6h for the next 18h. Estrus detection occurred every 6h through the entire study as well as real time ultrasonography every 4h to determine the time of ovulation. Control sows were bred based on the onset of estrus (n=9) and treatment sows were bred at +8 and +32h after the gel was administered. There were no differences in treatments in ovulation time (p=0.28), estrus length (p=0.60), farrowing rate (p=0.80), litter size (p=0.35), or LH surge (p=0.49). However, variation associated with ovulation time was significantly reduced (p=0.01) for saline, 1.2%, and 1.5% treatments compared with controls. The intravaginal absorption of GnRH in Ovugel or saline alone with a timed insemination program is an effective method to reduce the interval over which ovulation occurs without overly decreasing fertility.

**Key Words:** Estrus Synchronization, Artificial Insemination, Beef Cows

### W225 Synchronization of estrus in replacement beef heifers using GnRH, prostaglandin F2α (PG), and progesterone (CIDR): a multi-location study.


The Ohio State University, Columbus, 1University of Minnesota, St. Paul, 2USDA-ARS, 3Kansas State University, Manhattan, 4The Ohio State University, Columbus, 5University of Illinois, Urbana, 6Select Sires, Inc., 7North Dakota State University, Fargo.

Our objectives were to determine whether a fixed-time insemination (TAI) protocol could yield similar pregnancy rates to a protocol requiring detection of estrus (EAI) and whether an injection of GnRH at CIDR insertion enhanced fertility. Estrus in 2,077 replacement beef heifers from 12 locations was synchronized and AI occurred after four treatments: 1) a CIDR for 7d with 25 mg of PG on the day of CIDR removal, followed by detection of estrus and AI during 84h. Heifers not detected in estrus by 84h received 100\(\mu\)g of GnRH and were inseminated (EAI; n = 517); 2) heifers were treated and inseminated as EAI heifers but also received GnRH at the time of CIDR insertion (GnRH+EAI; n = 504); 3) heifers received a CIDR for 7d with PG on the day of CIDR removal, followed in 60h by a second injection of GnRH and TAI (TAI; n = 531); and 4) heifers were treated and inseminated as TAI heifers but also received GnRH at CIDR insertion (GnRH+TAI; n = 525). Pregnancy was diagnosed by transrectal ultrasonography on d 30 to 35 and blood samples were collected (d 17 and 7, relative to PG) to determine estrous cycle stage. Percentage of heifers cycling at initiation of estrus synchronization was 91%, but the percentage of heifers cycling among locations ranged from 78% to 100%. Overall pregnancy rates among locations ranged from 38% to 74%. Pregnancy rates were 57.3, 54.5, 53.1, and 49.1% for GnRH+EAI, EAI, GnRH+TAI, and TAI, respectively. Although no differences in pregnancy rates among treatments were observed, the GnRH+TAI treatment most consistently achieved the greatest pregnancy rates. In addition, the GnRH+TAI protocol provides an alternative to estrous synchronize heifers with TAI as an option without detection of estrus.

**Key Words:** Estrus Synchronization, Artificial Insemination, Beef Heifers


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This study was designed to test the ovulatory and reproductive characteristics of sows treated with Ovugel (EIEICO, Radnor, PA), a gel containing a GnRH agonist administered intravaginally. The treatment groups received 100\(\mu\)g of GnRH agonist in varying viscosities of the gel, 0.6% (n=12), 0.9% (n=12), 1.2% (n=12), and 1.5% (n=12) respectively. A positive control group (n=11) received the 100\(\mu\)g of agonist in saline while the control sows received a vehicle of the 1.2% gel at 96h post weaning. Jugular canulas were placed 48h before administration of the treatment. Blood samples were taken every 6h before treatment,
**W226** Influence of milk production on conception following artificial insemination or embryo transfer in lactating Holstein cows. D. G. B. Demetrio*, J. L. M. Vasconcelos, C. A. R. Bríguglia and J. R. Chiari, FMVZ-UNESP, São Paulo, Brazil. 

The aim of this trial was to evaluate conception following artificial insemination (AI) or embryo transfer (ET) in lactating Holstein cows. The trial was conducted at a dairy farm located in Descalvado, São Paulo, Brazil, from October to December of 2003. Cyclic cows were synchronized using a modified Ovsynch protocol (GNRH - 50μg; 6d - PGF2α - 25mg - 48h GNRH - 50μg). Days after the second injection of GnRH, synchronized heifers (n=18) were assigned to either G1 (n=9; CIDR 1.38 g) or G2 (n=9 CIDR 1.9 g). Only heifers that had a regressed CL (determined by P4 concentrations on d 6, 7, 7.5 and 8) were used (5 heifers in G1 and 7 in G2). Serum P4 concentrations were quantified by RIA. Peak concentrations of P4 were evaluated at 0, 1, 4, 8 and 12 h after CIDR insertion, and every other day for 25 d. The decline in concentrations of P4 was evaluated at 1, 4, 8 and 12 h after CIDR removal. Data were analyzed by a general linear models (GLM) procedure. Two cows from G2 lost the CIDR (at d 8 and 25, respectively) and were excluded from the analysis. Serum concentrations of P4 peaked within 1 h after device insertion, with peak concentrations higher (P<0.05) for G1 (10.2±1.21ng/mL) than for G2 (6.8±1.02ng/mL). Within 4 h concentrations of P4 were similar for G1 (6.3±0.64ng/mL) and for G2 (6.0±0.54ng/mL) and thereafter through d 25. Concentrations of P4 ranged from 2.3 ng/mL between d 1 and 8 for G1 and until d 11 for G2, and then from 1-2 ng/mL until the day of insert removal. On d 25, mean concentrations were 1.02±0.12ng/mL and 1.12±0.12ng/mL for G1 and G2, respectively. The increase in P4 in cow 25 was attributed to one of the exams were considered to be cycling. Follicular diameter at one of the exams were considered to be cycling. 

### Key Words: CIDR, Progesterone, Beef Heifers


The CRESTAR protocol consists of a 9-d ear implant (3mg of estradiol valerate) at the beginning of the CRESTAR protocol. Estradiol valerate at the beginning of the CRESTAR protocol. The trial was conducted at a dairy farm located in Descalvado, São Paulo, Brazil, from October to December of 2003. Cyclic cows were synchronized using a modified Ovsynch protocol (GNRH - 50μg; 6d - PGF2α - 25mg - 48h GNRH - 50μg). Days after the second injection of GnRH, synchronized heifers (n=18) were assigned to either G1 (n=9; CIDR 1.38 g) or G2 (n=9 CIDR 1.9 g). Only heifers that had a regressed CL (determined by P4 concentrations on d 6, 7, 7.5 and 8) were used (5 heifers in G1 and 7 in G2). Serum P4 concentrations were quantified by RIA. Peak concentrations of P4 were evaluated at 0, 1, 4, 8 and 12 h after CIDR insertion, and every other day for 25 d. The decline in concentrations of P4 was evaluated at 1, 4, 8 and 12 h after CIDR removal. Data were analyzed by a general linear models (GLM) procedure. Two cows from G2 lost the CIDR (at d 8 and 25, respectively) and were excluded from the analysis. Serum concentrations of P4 peaked within 1 h after device insertion, with peak concentrations higher (P<0.05) for G1 (10.2±1.21ng/mL) than for G2 (6.8±1.02ng/mL). Within 4 h concentrations of P4 were similar for G1 (6.3±0.64ng/mL) and for G2 (6.0±0.54ng/mL) and thereafter through d 25. Concentrations of P4 ranged from 2.3 ng/mL between d 1 and 8 for G1 and until d 11 for G2, and then from 1-2 ng/mL until the day of insert removal. On d 25, mean concentrations were 1.02±0.12ng/mL and 1.12±0.12ng/mL for G1 and G2, respectively. The increase in P4 in cow 25 was attributed to one of the exams were considered to be cycling. Follicular diameter at one of the exams were considered to be cycling. 

### Key Words: CRESTAR, Follicular Diameter, Nellore Cows

**W228** Serum progesterone concentrations in Nellore x Angus heifers treated with 1.38 g or 1.9 g CIDR devices. R. M. Santos*, J. L. M. Vasconcelos, G. C. Perez, A. B. Maciel, and G. C. Perez, DPEA-FMVZ-UNESP, Jaboatobal, SP, Brazil, 2FMVZ-UNESP, Botucatu, Brazil.

The aim of this study was to determine serum concentrations of progesterone (P4) during treatment with intravaginal devices containing either 1.38 g or 1.9 g of P4 for 25 d. Estrous cycles of Nellore x Angus heifers (n=26) were synchronized using a modified Ovsynch protocol (GNRH - 50μg - 6d - PGF2α - 25mg - 48h GNRH - 50μg). Days after the second injection of GnRH, synchronized heifers (n=18) were assigned to either G1 (n=9; CIDR 1.38 g) or G2 (n=9 CIDR 1.9 g). Only heifers that had a regressed CL (determined by P4 concentrations on d 6, 7, 7.5 and 8) were used (5 heifers in G1 and 7 in G2). Serum P4 concentrations were quantified by RIA. Peak concentrations of P4 were evaluated at 0, 1, 4, 8 and 12 h after CIDR insertion, and every other day for 25 d. The decline in concentrations of P4 was evaluated at 1, 4, 8 and 12 h after CIDR removal. Data were analyzed by a general linear models (GLM) procedure. Two cows from G2 lost the CIDR (at d 8 and 25, respectively) and were excluded from the analysis. Serum concentrations of P4 peaked within 1 h after device insertion, with peak concentrations higher (P<0.05) for G1 (10.2±1.21ng/mL) than for G2 (6.8±1.02ng/mL). Within 4 h concentrations of P4 were similar for G1 (6.3±0.64ng/mL) and for G2 (6.0±0.54ng/mL) and thereafter through d 25. Concentrations of P4 ranged from 2.3 ng/mL between d 1 and 8 for G1 and until d 11 for G2, and then from 1-2 ng/mL until the day of insert removal. On d 25, mean concentrations were 1.02±0.12ng/mL and 1.12±0.12ng/mL for G1 and G2, respectively. The increase in P4 in cow 25 was attributed to one of the exams were considered to be cycling. Follicular diameter at one of the exams were considered to be cycling. 

### Key Words: CIDR, Progesterone, Beef Heifers


The chance of a female calf being born is less than that of a male calf (female: male ratio of calves born is 46:54); and only 85% of female calves that are born successfully begin their first lactation. Therefore, increasing numbers of females available for herd replacement and marketing may increase sustainability and profitability of dairy enterprises. This study was designed to determine if prolonged in vivo incubation of sperm increases the percentage of female calves born. Lactating dairy cows (n=1606) from 3 farms received Ovsynch to precisely control ovulation. Cows were inseminated either in the uterine body or uterine horn ipsilateral to the ovary with the predicted pre-ovulatory follicle at either 8 h prior to (+8 group), or 16 h after (+16 group), the final injection of GnRH of Ovsynch (2 x 2 design). Therefore, cows in the -8 and +16 h groups received AI approximately 36 and 12 h prior to ovulation, respectively. Based on ultrasound examinations, only cows with synchronized ovulations were used in the study. Cows were assigned to treatments based on parity and days in milk (DIM). Ultrasonography was used to diagnose pregnancy at 28 and 56 d after AI. Outcomes were pregnancy rate/AI (PR/AI) %, at, and pregnancy survival (%) between 28 and 56 d post-AI, and gender of resulting offspring. There was no effect of site of AI on PR/AI, so uterine body and uterine horn groups were combined within -8 and +16 groups. The +16 h group had a greater (P<0.01) PR/AI (39 % vs. 29 %) than the -8 h group. Pregnancy survival (%) between 28 and 56 d post-AI was similar between 8 and +16 (80 vs. 83, respectively) but was greater in cows receiving uterine body vs. uterine horn AI (85 vs. 79, respectively). In summary, prolonged in vivo incubation of sperm...
prior to ovulation appears to improve female: male ratio of calves born, but reduces fertility.

**Key Words:** Gender Ratio, Timing of AI, Pregnancy Rate


The CRESTAR protocol consists of an ear implant (3mg norgestomet) for 9 days associated with an injection of estradiol valerate (5mg) and norgestomet (3mg) at implant insertion. The aim was to evaluate the effects of eCG injection at implant withdrawal and/or calf removal (CR) between implant withdrawal and TAI. Nellore cows (n=415) with 119±39.7 days postpartum (DPP), body condition score (BCS) between 2.32 to 3.5 (1-5) were assigned to 4 groups in 2x2 factorial (eCGxCR): G1 (n=105) CRESTAR; G2 (n=102) CRESTAR + CR (58h); G3 (n=104) CRESTAR + eCG (Folligon® 400U) at implant removal and G4 (n=104) CRESTAR + eCG at implant removal + CR (58h). TAI was performed in the 4 groups 50-58 h after implant removal. Ovarian structures and pregnancy were evaluated by ultrasound (Aloka SSD-500). Cycles were defined as the period between the first ovulatory follicle was observed until the BBT reached 0.2°C above the basal. Flank temperature and wither temperature were positively correlated (R=0.72; P<0.01) but were not correlated to flank or wither temperatures. Pregnant mares had higher flank temperatures than nonpregnant mares (33.9±0.6°C) and nonpregnant mares (33.8±0.3°C). In conclusion, pregnant mares had higher flank temperatures than nonpregnant mares regardless of environmental conditions. This suggests that DITI measurements may have value in detecting or confirming pregnancy (late gestation) in some species.

**Key Words:** Thermography, Equine, Pregnancy

**W232** Optimizing sperm concentration to maximize monospermity and minimize polyspermy with bovine in vitro fertilization. M. Barcelo-Fimbres* and G. E. Seidel, Jr., Colorado State University, Ft Collins.

We evaluated sperm concentrations and times of fertilization for bovine IVF. Slaughterhouse oocytes were matured in a chemically defined medium (CDM) similar to SOF (J. Anim. Sci. 78:152) plus 0.5% fatty acid-free BSA and hormones (M-CDM) for 23 h, at 38.5°C in 5% CO2 in air. Then oocytes and frozen-thawed sperm, centrifuged through a Percoll gradient, were co-cultured for 4 or 18h in P-CDM (CDM + heparin). Presumptive zygotes were cultured in CDM-1 (CDM + nonessential amino acids (NEAA), 0.5 mM glucose and 10 µM EDTA) at 38.5°C in 5% CO2/5%O2/90%N2. After 5 h, half of the presumptive zygotes were fixed and stained with aceto-orcein to evaluate fertilization (FR) and polyspermy (PS). After 48h the rest were cultured 120h in CDM-1 + NEAA and 0.5% BSA. Initially all embryos were allocated to one of four treatments. Oocytes (N=980) were randomly allocated to a 2 x 3 x 4 factorial design: time of fertilization (4 and 18 h), sperm dose (1, 0.33, and 0.11 x 10^6 sperm/mL) and sperm source (4 bulls). Percentages were arcsine transformed and analyzed by ANOVA. The higher dose caused considerable polyspermy. The optimal sperm concentration was 3.3 x 10^6/mL. The higher dose caused considerable polyspermy; although the lower concentration decreased PS, it also decreases FR. The longer fertilization time resulted in a higher FR, but more PS.

**W233** Fixed-time insemination utilizing an Eazi-Breed™ CIDR® in combination with gonadotropin-releasing hormone or estradiol cypionate. K. J. Stutts*, D. W. Forrest*, and C. R. Looney*, Texas A&M University, College Station, OvaGenix, Navasota, TX.

Digital infrared thermal imaging (DITI) is a non-invasive diagnostic technique that is used to detect symmetry and asymmetry in surface temperature gradients. The objective of this study was to investigate the use of DITI to determine whether temperature differences exist between pregnant and nonpregnant mares. On the day measurements were obtained, each pregnant mare (n=10; beginning at 292.4 ± 1.4 df gestation) was paired with a nonpregnant mare (n=17). Mares were normalized to environmental conditions prior to imaging. Ambient (AMB) temperature, DITI measurements (left and right flank and wither temperatures and background temperature), and rectal temperatures (RT) were obtained every 7 days for 5 weeks before parturition. Measurements were obtained beginning in March and continued through May with AMB temperatures ranging from 4.2°C to 28.9°C. There were no differences in flank and wither temperature measurements between pregnant and nonpregnant mares. On the day measurements were obtained, each pregnant mare (n=10; beginning at 292.4 ± 1.4 df gestation) was paired with a nonpregnant mare (n=17). Mares were normalized to environmental conditions prior to imaging. Background temperature was positively correlated with flank and wither temperature (R=0.48, P<0.01) and was positively correlated with AMB temperature (R=0.92; P<0.01). RT tended to be positively correlated with AMB temperatures (R=0.32; P=0.10). The longer fertilization time resulted in a higher FR, but more PS. Overall pregnancy rates for TRT 1 (84.6%), 3 (89.0%), and 4 (50.4%) were different (P<0.05) across all treatments. Conception rates to fixed-time insemination were different (P<0.05) across all treatments. Conception rates to fixed-time insemination were different (P<0.02) across all treatments. Conception rates to fixed-time insemination for TRT 1, 2, 3, and 4 were 32.4%, 19.6%, 43.2%, and 50.4%, respectively. The longer fertilization time resulted in a higher FR, but more PS.

**Key Words:** Bovine, IVF, Polyspermy
protocols with GnRH than with ECP, and that injecting PGF$_{2a}$ on d 6 rather than d 7 when using the GnRH/CIDR protocol resulted in a higher conception rate to fixed-time insemination. Supported by Pfizer Animal Health.


Objectives were to determine the effects of incorporating a CIDR insert in a pre-synchronized (27 and 41 days in milk (DIM), PGF$_{2a}$ Heat-synch protocol (55 DIM, GnRH; 62 DIM, PGF$_{2a}$; 63 DIM, estradiol cypionate; 65 DIM, timed AI) on ovulation rate (OR), display of estrus, pregnancy rate (PR), and pregnancy loss (PL) in lactating cows. Holstein cows, 675, from two herds were randomly assigned to treatments. Blood was sampled at 41 and 55 DIM for analysis of progesterone to determine cyclicity. The CIDR was inserted at the time of injection of GnRH, and removed at the the time of injection of PGF$_{2a}$ of Heatsynch. Ovaries were scanned at the time of PGF$_{2a}$ injection and 2 and 7 d later. Pregnancy was diagnosed at 27 and 41 d after AI. Data were analyzed by the LOGISTIC and GLM procedures of SAS (2001). Addition of a CIDR to the Heatsynch protocol eliminated cows displaying estrus prior to the last PGF$_{2a}$ injection (0 vs 2.01%) and decreased proportion of cows bearing a CL at the last PGF$_{2a}$ injection (86.3 vs 91.9%; P<0.01). CIDR did not affect the proportion of cows displaying estrus after the last PGF$_{2a}$ injection (77.2 vs 73.8%; P=0.11) or OR (85.6 vs 86.6%; P=0.30). PR were similar for CIDR and controls on d 27 (35.8 vs 38.8%; P=0.68) and 41 (29.3 vs 32.3%; P=0.33) regardless of cycling status prior to Heatsynch (P=0.15). Pregnancy loss was similar for CIDR and controls (18.3 vs 16.8%; P=0.77). Cyclic cows had higher PR than anovulatory cows at d 41 after AI (33.8 vs 20.4%; P=0.03) because of lower PL (16.0 vs 30.3; P=0.06). When cows were stratified based on estrus prior to timed AI, at timed AI or no estrus, PR on d 27 (36.9 vs 45.4 vs 17.0%; P<0.001) and 41 (34.2 vs 37.2 vs 12.0%; P<0.001) differed, which might be related to the higher OR (90.0 vs 94.3 vs 63.1%; P<0.001) in cows displaying estrus. PL tended to be lower for cows displaying estrus either prior to or at timed AI than those not in estrus (7.3 vs 18.0 vs 29.6%; P=0.10). Incorporation of a CIDR insert into the Presynch/Heatsynch protocol did not improve PR in lactating dairy cows. Improvements in PR in the Heatsynch protocol are expected when more cows display estrus, thereby increasing synchronization and OR.

**Key Words:** CIDR Insert, Synchronization, Dairy Cows

**W237** Use of milk progesterone following artificial insemination in a resynchronization program for early re-breeding in dairy cows. A. Denson*, T. Dickerson, S. Bowers, S. Schmidt, K. Graves, K. Moulton, and S. Willard, Mississippi State University, Mississippi State.

Studies have revealed that the implementation of OvSynch protocols improves synchronization of ovulation and reduces days to first service and days open in dairy cows. Resynchronization of non-pregnant animals in a shortened time-frame post-AI may be beneficial in decreasing days open. The objective of this study was to use milk progesterone (P4) at d 21 following OvSynch and timed-AI to identify pregnant cows and resynchronize non-pregnant cows to accelerate rebreeding. Holstein (n=30) and Jersey (n=10) cows were synchronized using OvSynch and bred AI 16 h post-GnRH. All cows were administered GnRH at d 14 post-AI for resynchronization as part of a subsequent OvSynch protocol. Milk samples were collected on d 21 post-AI to diagnose cows as pregnant or non-pregnant based on qualitative high or low milk P4 (Ac-cufrin). Cows having low P4 were administered PGF$_{2a}$, followed 48 h later with a second administration of GnRH and AI 16 h later. Cows with high P4 were presumed pregnant and not administered PGF or GnRH. Blood samples were obtained from all cows on d 9, 2, 0, 7, 14, 21 through 25 and 28. Blood serum was collected for P4 analysis by RIA. Pregnancy status of cows was confirmed at d 42 post-AI by ultrasonography (US). According to the milk P4 results, 47.5 % of cows were not pregnant to OvSynch/AI based on low milk P4 levels. Serum P4 on d 42 post-AI was low (<1 ng/ ml) in 68.4 % of these presumably non-pregnant cows by RIA. Of the 52.5 % of cows with high milk P4 on d 21 post-AI, 85.7 % of the cows exhibited high (>1 ng/ml) serum P4 by RIA. Serum (RIA) and milk P4 on d 21 did not differ (McNemar’s test, P>0.10) in pregnant vs. non-pregnant determinations. Us at d 42 following the first insemination revealed an overall pregnancy rate of 22.2 %, which represented a 7.9 % pregnancy rate falsely identified as pregnancy by milk P4 (i.e., US vs. milk P4 disagreed in accuracy of pregnancy rate; McNemar’s test, P<0.01). In summary, use of milk progesterone following timed-AI in early re-breeding is recommended.

**Key Words:** Fixed Time AI, Estrogen, Calf Removal

**W235** Addition of ECP or calf removal to a modified MGA + CO-Synch protocol for synchronization of ovulation in beef cows. S. K. Johnson, K. R. Harmoney, and J. S. Stevenson*, Kansas State University, Manhattan.

A study was conducted in 735 suckled beef cows to determine if synchronization of ovulation could be improved with estradiol cypionate (ECP) or 48 h calf removal in a modified MGA + CO-Synch protocol. All cows were fed MGA (0.5 mg/hd$^3$ daily for 14 d (d-32 to -19) and received GnRH (100 µg) on d -7, PGF (25 mg) on d 0, and one fixed time AI at 72 h after PGF. Treatments were applied in a 2 x 2 factorial arrangement of four treatments. Calves either remained with cows in uterine horn AI or were removed to a mod time AI at 72 h after PGF. There was an effect (P < 0.05) of parity on pregnancy rate/AI. Pregnancy rate/AI was similar (P > 0.05) between AI following OvSynch vs. AI following detected estrus. Calves either remained with cows in uterine horns and ranged from 26 to 43 %. In summary, uterine horn AI appears to increase pregnancy rate/AI in lactating dairy cows.

**Key Words:** Uterine Horn AI, Fertility, Dairy Cows


Currently, fertility levels of lactating cows are approximately 50 % of heifers. This study was designed to determine if fertility of lactating dairy cows could be increased if semen was deposited in the uterine horns compared to the uterine body. Lactating Holstein cows (n=833) from 3 farms were randomly assigned to receive AI in either the uterine body or in the uterine horn by splitting the straw between both horns and depositing the semen near the greater curvature of each horn. Cows were assigned to the two treatments by DIM and parity. Cows received AI following a detected estrus or following OvSynch (GnRH, 7 d PGF, 48 h GnRH, 16 h AI). Technicians from each farm received training in uterine horn AI prior to the start of the trial. Pregnancy was determined by the farmer veterinarian between 35 and 65 d post-AI. Pregnancy rate/AI was greater (P < 0.01) in the uterine horn group compared to the uterine body (60 % vs 35 %). There was no effect (P > 0.05) of parity or DIM on pregnancy rate/AI. Pregnancy rate/AI was similar (P > 0.05), and there was no effect (P > 0.05) of treatment, between AI following OvSynch vs. AI following detected estrus. There was an effect (P < 0.05) of farm on pregnancy rates/AI, but there was no treatment by farm interaction (P = 0.89). All farms had increases in pregnancy rates/AI in cows inseminated in the uterine horns and ranged from 26 to 43 %. In summary, uterine horn AI appears to increase pregnancy rate/AI in lactating dairy cows.

**Key Words:** Uterine Horn AI, Fertility, Dairy Cows
Production, Management and the Environment: Reproduction and Health Management


The objective was to evaluate whether addition of EAZI-BREED CIDR Cattle Inserts (CIDR) to the Ovsynch program increases first service pregnancy rate (PR) in lactating dairy cows. The study was conducted in 5 dairy farms in Central Mexico. Cows were inseminated from June through September, 2001. Within trial site and within parity, cows were assigned to either an Ovsynch (n=255) or an Ovsynch-CIDR group (n=255) for their first service. Ovsynch was initiated at 50:3 d postpartum with an injection of 100 µg of GnRH (2 mL, i.m.; CYSTORELIN), an injection of 25 mg of PGF2α (5 mL, i.m.; LUTALYSE Sterile Solution) 7 d later, a second 100 µg injection of GnRH 48 h later, and timed insemination 8 to 20 hours after the second GnRH injection. Ovsynch-CIDR cows received the same treatments but also received a CIDR Insert (1.38 g of progesterone) which was administered with the first GnRH injection and removed 7 d later at the PGF2α injection. Cows were palpated for pregnancy 40 to 45 d after timed insemination. An interaction between treatments and parity was detected (P=0.023). The interaction indicated that PR was increased for Ovsynch-CIDR compared to Ovsynch in primiparous cows (38.2% and 20%, respectively; P=0.024) but no differences were detected in multiparous cows (22.3% and 27.5%, respectively; P=0.375). A subset of cows (n=466) was classified as anestrous or cyclic based on progesterone concentrations of two blood samples collected 7 d prior to and at the first GnRH injection. For anestrous cows, PR was 18.8% for Ovsynch (6/32) and 18.4% for Ovsynch-CIDR (7/38). For cyclic cows, PR was 23.5% for Ovsynch (47/200) and 29.1% for Ovsynch-CIDR (57/196). Such effects were further subdivided according to parity but none were significant. Addition of CIDR increased first service pregnancy rates of primiparous but not multiparous lactating dairy cows submitted to an Ovsynch program. Because cows were inseminated during summer, heat stress might have affected embryonic survival but the study was not designed to specifically address such an effect.

Key Words: Ovsynch, Milk Progesterone, Synchronization

W239 Efficacy of an injection of Dinoprost Tromethamine when given subcutaneously in two different sites on luteal regression in lactating Holstein cows. R. C. Chebel*1, J. P. Reynolds1, R. L. A. Cerri2, J. Versteeg2, H. M. Rutigliano3, and J. E. P. Santos1, 1University of California Davis, Tulare, 2Pfizer Animal Health.

The objective of this study was to compare the efficacy of administration of 25 mg of dinoprost tromethamine sterile solution (Lutalyse, Pfizer Animal Health) through different routes and in different sites on luteal regression. Lactating Holstein cows, 109, were synchronized with one injection of PGF2α 14 d prior to enrollment (study d 0). On study d 0, cows were examined by ultrasonography to determine presence of a CL in one of the ovaries. Cows with CL were blocked by parity and d in milk and, within each block, randomly assigned to receive PGF2α as an i.m. injection in the seminiferous/semitendinous muscle (CON); subcutaneous injection in the cervical area (SC); and subcutaneous injection in the ischiorectal fossa (SCI). Blood was sampled at 0, 12, 24, and 48 h after treatments for measurement of plasma progesterone concentrations using a validated EIA. Luteal regression was considered when progesterone decreased to less than 1.0 ng/mL. Relative changes in progesterone (0h=100%) were evaluated after PGF2α injection. Continuous and binomial data were analyzed by the MIXED AND LOGISTIC procedures of SAS (2001), respectively. CL regression for CON, SC, and SCI at 24 (65.7 vs 64.1 vs 68.6%; P=0.92) and 48 h (94.3 vs 86.8 vs 88.6%; P=0.36) after treatment did not differ. Relative changes in progesterone (0 = 100%) at 12, 24, and 48 h after treatment were 50.4, 34.5, and 27.7% for CON, 53.0, 33.1, and 28.4% for SC, and 52.4, 32.5, and 30.6% for SCI, and no effects of treatment (P=0.98) or treatment by time interaction (P=0.87) were observed. Injection of 25 mg of dinoprost tromethamine subcutaneously in the cervical area or ischiorectal fossa resulted similar changes in progesterone and luteal regression when compared with an i.m. injection in the seminiferous/semitendinous muscle.

Key Words: Prostaglandin, Luteolysis, Dairy Cows

W240 A herd health management program resulted in decreased days open in first lactating cows in northern Thailand. K. Keawasukon*1, V. Punyaporntithaya1, P. Kattapan2, and W. Suriyasathaporn1. 1Clinic of Ruminant, Faculty of Veterinary Medicine, Chiang Mai University, Chiang Mai Province, Thailand, 2Lumphoon Office of Department of Livestock Development, Thailand.

The herd health management program (HH) is used to improve production performance in dairy farms, especially in Europe and North America. In northern Thailand, the HH program was introduced a few years ago by the faculty of Veterinary Medicine, Chiang Mai University. Therefore, the goal of this study was to evaluate the HH program on reproductive performance in the primiparous crossbred holstein cows. Data from 27 farms in Lamphun province during 1999 to 2003 were used to compare reproductive efficiencies before and after participating in the HH program that started in October 2001. Data on calving date, insemination date, and pregnancy check date were recorded. Calving and breeding season were divided into 3 seasons based on Thai Meteorological Department data, summer (mid Feb.–mid May), rainy (mid May-mid Oct.), and winter (mid Oct.–mid Feb.). The HH program factor was divided into two groups: before and after HH program. Factors associated with pregnant cows within 120 days postpartum were evaluated by Cox model. Results from 177 cows showed that median of days open of cows before and after the program were 155 and 129 days, respectively. Results from the Cox’s model showed that conception rate after participating in the HH program was increased significantly (HR = 1.96). In addition, conception rate of cows inseminated during the rainy season was lower than in summer (P = 0.07, HR = 1.82) and winter (P < 0.05, HR = 2.28). In conclusion, the HH management program improved reproductive performance of primiparous cows in northern Thailand.

Key Words: First Lactating Cows, Days Open, Cox Model

W241 Pregnancy rates and serum cortisol concentrations of relocated recipient cows in an embryo transfer program. J. L. Lopez*, E. Gonzalez, and D. L. Fernandez, California State Polytechnic University, Pomona.

Embryo transfer pregnancy rates are lower than pregnancy rates reported for AI or natural service, resulting in a significant economic loss to producers. Recipient cows in embryo transfer programs are routinely relocated. Relocation includes transportation, social regrouping of the animals, climate changes and dietary changes, among others, the stresses of which constitute relocation stress. Because stress affects reproduction, we hypothesized that relocation stress may play an integral role in the success rates of embryo transfer pregnancies. Recipient cows from Montana and Oregon (n=17) were relocated to California State Polytechnic University, Pomona (CYP) and cows from CYP (n=57) were used as non-relocated controls. All cows were treated identically in regard to diet, management and climate after arriving at CYP. Cows were synchronized for estrus and were implanted with Day 7 embryos 7 d after behavioral estrus. Blood samples were collected, centrifuged and the serum stored at -20°C until assayed for cortisol by RIA. The cows were palpated per rectum for evidence of pregnancy 60 days after implantation (Day 67) and another blood sample was collected. There was no difference (x^2= 2.42, p > 0.10) in pregnancy rates between the control (61%) and the relocated (41%) cattle. Cortisol levels were not different (1.66 ± 0.40 vs. 1.67 ± 0.20 nmol/l, respectively, p > 0.10) between