NC and AC1 treatments ($P<0.05$). N digestibility was higher in both PC and AC3 treatments compared with NC and AC1 treatments ($P<0.05$). The RBC count was increased in ALA treatment compared with NC treatments ($P<0.05$). Hemoglobin in AC2 treatment was higher than NC treatment ($P<0.05$). Lymphocyte, WBC, IgG and total iron binding capacity were not affected among all treatments ($P<0.05$). The reduction of total protein was higher in NC treatment than PC, ALA, COS and AC3 treatments ($P<0.05$). Iron concentration was higher in ALA and all of the AC treatments than NC treatment ($P<0.05$). In conclusion, supplementation of 3 ppm ALA or 5 ppm ALA with 0.5% COS may have beneficial effects on weanling pig.

Key Words: Delta-Aminolevulinic acid, Chitooligosaccharide, Weanling pigs

M126 Dietary supplementation with the Chinese herb improves growth performance and tissue integrity in weanling piglets. F. G. Yin[1], X. F. Kong[1], Y. L. Yin*[1], H. J. Liu[1], Y. P. Liao[1], and G. Y. Wu[1,2], [1]*Institute of Subtropical Agriculture, The Chinese Academy of Sciences*, *Changsha, Hunan, P.R. China*, [2]*Texas A&M University*, *College Station*.

The experiment was conducted to determine the effects of dietary supplementation with the Chinese herb on growth performance, diarrhea incidents, serum biochemical parameters, and tissue integrity in weanling piglets. Sixty pigs were weaned at 21 days of age, housed individually and assigned randomly into one of three treatment groups (20 pigs/group), representing the corn- and soybean meal-based diets supplemented with 0 (control) or 0.2% Chinese herb or 0.02% Colistin (an antibiotic). The genus and species of the herbs used in the study were *Astragalus membranaceus (Fisch.) Bge.var.mongholicus (Bge) hsiao; Acanthopanax senticosus (Rupr. Et Maxim) Harms; Codonopsis pilosula (Franch.) Nann.; Crataegus pinnatifida Bge.; and Salvia miltiorrhiza Bge.* Pigs had free access to diets and drinking water. Feed intake and BW were measured weekly. Blood samples were obtained randomly from 5 piglets of each treatment group at wks 1, 2, 3, and 4 post-weaning. Results indicated that dietary supplementation with the Chinese herb for 4 wks increased ($P < 0.05$) ADG by 18.8% (432.1 vs 363.8 g), did not affect ($P > 0.05$) F:G (1.57 vs 1.62), and reduced ($P < 0.05$) diarrhea incidence by 40% in piglets, when compared with the control group. Dietary supplementation with Colistin did not affect ($P > 0.05$) ADG (385.9 vs 363.8 g)and had no effect ($P > 0.05$) on F:G (1.67 vs 1.62). At wk 1, serum concentrations of triglycerides in the herb-supplemented piglets were lower ($P < 0.05$) than those in the control group. At wk 2, the activity of serum creatine kinase (an indicator of tissue integrity) was lower ($P < 0.05$) in the herb-supplemented piglets in comparison with the other two groups. At wk 4, the activity of stomach amylase in the herb-supplemented piglets was higher ($P < 0.05$) than in the control and Colistin-supplemented piglets. These findings suggest that the Chinese herbal formula is a highly effective and safe feed additive for improving growth performance, preventing diarrhea, and protecting tissue integrity in weanling piglets. Supported by funds from the Chinese Academy of Sciences and China NSF.

Key Words: Growth performance, Chinese herb, Pigs

Physiology and Endocrinology: Estrous Synchronization

M127 Post-AI interventions in lactating dairy cattle. I. Ovarian responses to GnRH, hCG, and exogenous progesterone (CIDR). J. S. Stevenson*, D. E. Tenhouse, M. A. Portaluppi, and A. Lloyd, *Kansas State University*, *Manhattan*.

We hypothesized that increasing concentrations of progesterone (P4) after AI would increase fertility. Our objective was to assess changes in ovarian structures and ovulation rate in response to GnRH, hCG, or exogenous progesterone (CIDR insert) beginning 4 to 8 d after AI (d 0) and again 7 d later (d 7). Blood was collected from 749 cows in 3 herds on d 0 and 7. Ovaries of 161 cows were scanned for the presence of early diestrous corpus luteum (CL). Once confirmed, cows were assigned randomly to serve as controls (CON) or receive a CIDR insert for 7 d, 100 μg of GnRH, or 3,300 IU of hCG. Ovarian structures were scanned and mapped before treatment and on d 7. More ($P < 0.01$) cows were induced to ovulate in response to GnRH and hCG. Diameter of follicles that ovulated did not differ (13.8 ± 0.5; n = 70 vs. 12.7 ± 0.4; n = 78), respectively, for GnRH and hCG cows. Compared with CON, cows treated with GnRH or hCG had fewer ($P < 0.01$) follicles ≥ 5 mm on d 7 than d 0, more ($P < 0.01$) induced CL (d 7), and more ($P < 0.01$) total CL (d 7), but serum P4 was only increased ($P < 0.01$) after hCG. Largest follicle diameter on d 7 were less ($P < 0.05$) after GnRH and hCG, but total follicular volume on d 7 (data not shown) was reduced ($P < 0.05$) by GnRH, hCG, and CIDR compared with CON. Volume of the original luteal structures were increased ($P < 0.05$) by hCG, but tended ($P = 0.07$) to be reduced by CIDR and GnRH compared with CON. Total CL volume was increased ($P < 0.05$) by hCG, but reduced ($P < 0.05$) by CIDR compared with CON. We concluded that GnRH and hCG effectively induced ovulation, increased number of CL (not total CL volume after GnRH), but only increased serum P4 in hCG-treated cows.

Table 1.

Trait	CON	CIDR	GnRH	hCG
Ind. ov., %	4.9 (41)	4.9 (41)	60** (40)	77.5** (40)
Ind. CL/cow (d 7), no.	0.1 ± 0.1 (41)	0.1 ± 0.1 (41)	0.7* ± 0.1 (40)	1.1* ± 0.1 (41)
Incr. P4 (d 0-7), ng/mL	2.5 ± 0.2 (190)	2.2 ± 0.2 (179)	2.3 ± 0.2 (193)	3.7* ± 0.2 (187)
Change in orig. CL vol., mm^3	3131 ± 619 (55)	1350$^+$ ± 662 (50)	1446$^+$ ± 652 (50)	4766* ± 640 (52)
Follicle diam. (d 7), mm	14.3 ± 0.7 (41)	13.2 ± 0.8 (40)	11.6* ± 0.8 (36)	11.0** ± 0.7 (38)
Total CL vol. (d 7), mm^3	12,298 ± 1106 (41)	8,008** ± 1101 (41)	12,373 ± 1117 (40)	18,410** ± 1108 (40)

Different ($^+P = 0.07$; $*P < 0.05$; $**P < 0.01$) from control.

Key Words: hCG, GnRH, Luteal capacity

M128 Post-AI interventions in lactating dairy dattle. II. Conception rates and pregnancy survival in response to GnRH, hCG, and exogenous progesterone (CIDR). J. S. Stevenson*[1], D. E. Tenhouse[1], M. A. Portaluppi[1], D. R. Eborn[1], S. Kacuba[2], and J. M. DeJarnette[2], [1]*Kansas State University*, *Manhattan*, [2]*Select Sires*, *Plain City, OH*.

We hypothesized that increasing concentrations of progesterone in the early luteal phase after AI will increase conception rates and pregnancy survival in lactating dairy cows. Holstein cows in 5 herds were assigned randomly on d 5 to 8 after AI to serve as controls or to receive either an i.m. injection of 100 µg of GnRH, 3300 IU of hCG, or a CIDR insert for 7 d. Conception rates (CR; 30-42 d after AI) and pregnancy survival (44-73 d after AI) were assessed by ultrasonography in 2 herds and by palpation per rectum in 3 herds. Tendencies for interactions of treatment × herd ($P < 0.11$) and treatment × lactation group ($P = 0.08$), but no 3-way interactions were detected. Treatment with hCG increased ($P < 0.05$) CR in second-lactation cows (see Table). The CIDR and hCG tended to ($P < 0.10$) or increased ($P < 0.05$) CR in 2 herds, whereas the CIDR decreased CR in herd 4. Pregnancy survival [controls (97.3%), CIDR (93.1%), GnRH (92.1%), and hCG (95.7%)] was reduced ($P < 0.05$) by GnRH compared with controls. We concluded that post-insemination treatment with the CIDR or hCG tended to increase CR, but only in some herds. Treatment with hCG increased CR in second-lactation cows.

Table 1. Conception Rates

Herd	Control	CIDR	GnRH	hCG
1	31.0 (41)	47.3† (41)	31.1 (40)	36.4 (39)
2	26.9 (158)	32.0 (158)	29.6 (159)	35.3† (158)
3	24.8 (143)	38.3* (162)	29.2 (153)	35.8* (153)
4	33.3 (206)	23.0* (204)	29.4 (209)	33.3 (209)
5	25.7 (164)	23.0 (150)	21.1 (163)	27.1 (165)
Lactation group				
First	32.7 (247)	34.4 (254)	35.7 (250)	32.6 (253)
First	32.7 (247)	34.4 (254)	35.7 (250)	32.6 (253)
First	32.7 (247)	34.4 (254)	35.7 (250)	32.6 (253)
First	32.7 (247)	34.4 (254)	35.7 (250)	32.6 (253)
First	32.7 (247)	34.4 (254)	35.7 (250)	32.6 (253)
Second	25.5 (206)	33.2 (204)	26.7 (212)	39.1* (212)

Different from control (*$P < 0.05$; †$P < 0.10$) by Chi-Square.

Key Words: Conception rate, Pregnancy survival, Progesterone

M129 Induction of cyclicity in postpartum anestrous beef cows using progesterone, GnRH and estradiol cypionate (ECP). J. Wheaton*[1] and G. Lamb[2], [1]*University of Minnesota*, *St. Paul*, [2]*University of Minnesota*, *Grand Rapids*.

The objective of the study was to determine whether treatment of postpartum multiparous and primiparous anestrous Angus beef cows with a CIDR and $PGF_{2\alpha}$, with and without the addition of GnRH or ECP at the time of CIDR insertion, is effective in stimulating cyclicity. Lactating primiparous (n = 47, 2 yr of age, 495 ± 6 kg) and multiparous (n = 76, ≥ 3 yr of age, 553 ± 9 kg) cows were assigned by calving date to four treatment groups: 1) $PGF_{2\alpha}$ (n = 30), 2) CIDR-$PGF_{2\alpha}$ (n = 30), 3) GnRH-CIDR-$PGF_{2\alpha}$ (n = 33), and 4) ECP-CIDR-$PGF_{2\alpha}$ (n = 27). CIDR were in place from d -7 to 0. GnRH (100 µg) or ECP (2 mg) were administered sc on d -7, and 25 mg $PGF_{2\infty}$ was given on d 0. Day 0 averaged 38 d postpartum. Blood samples were collected on days -19, -9, 0, 5, 9, 12, 16, 19, 23, 26 and 30 for progesterone analysis. Pretreatment luteal activity was detected in 26% of primiparous and 14% of multiparous cows. Progesterone levels on day 0 were greater ($P \leq 0.001$) in primiparous (3.2 ± 0.3 ng/mL) than multiparous (2.0 ± 0.2 ng/mL) cows. Following CIDR withdrawal, progesterone levels from day 5 to 30 were used to categorize response profiles as either 1) treatment-induced cyclicity, 2) continued anestrus, or 3) spontaneous ovulation and subsequent formation of a CL. Incidence of treatment-induced cyclicity was influenced by treatment and parity. Percentages of cyclic cows were greater in the three CIDR-treated groups ($P = 0.002$) than in the $PGF_{2\alpha}$ group (53 and 0%, respectively). Percentages of cyclic cows in the CIDR-$PGF_{2\alpha}$, GnRH-CIDR-$PGF_{2\alpha}$ and ECP-$PGF_{2\alpha}$ groups were 54, 56 and 50%, respectively. Incidence of treatment-induced cyclicity was greater ($P = 0.01$) in primiparous (75%) than multiparous (41%) cows. Treatment of early postpartum anestrous primiparous and multiparous beef cows with CIDR-$PGF_{2\alpha}$ provides an approach to increase the percentage of cows that have reinitiated estrous cycles by the start of the breeding season. Findings indicate that the cyclicity response rate is influenced more by management conditions than by parity.

Key Words: Beef Cows, Postpartum Anestrus, CIDR

M130 Effects of feeding palm oil fatty acids on milk production and composition and follicle size in early lactating cows. A. Heravi Moussavi* and M. Danesh Mesgaran, *Center ofFerdowsi University of Mashhad*, *Mashhad, Iran*.

The study was designed to test the effects of dietary fatty supplementation on milk production and composition, dry matter intake (DMI), and size of dominant follicle in early lactating cows. From d 5 to 50 postpartum, sixteen cows were used and fed isonitrogenous diets containing 0 (n = 8) and 2% (n = 8) palm oil fatty acid. Milk production and composition, DMI, body weight, and body condition score were analyzed using the MIXED model for a completely randomized design with repeated measures. The model included treatment, parity (2nd or 3rd to 5th), time and the interactions. For analysis of milk production the previous 305 d milk yield was used as the covariate. Dry matter intake (22.58 and 21.82 ± 0.22 kg/d, respectively) was significantly reduced by the supplementation ($P < 0.05$). Cows fed palm oil fatty acids produced more milk than the control ($P < 0.05$; 37.54 and 40.93 ± 1.01 kg/d, respectively). The interaction between parity and treatment was significant ($P < 0.05$) and 2nd lactation cows produced more milk than the older in the supplemented group. Milk fat and lactose percentages and also milk constitute yields were not affected by diet but milk protein percentage (3.25 and 3.09 ± 0.05, respectively) was significantly reduced by the supplementation ($P < 0.05$). Body condition score and body weight changes were similar between the groups. At day 43 postpartum, cows were induced to a synchronized ovulatory cycle with an i.m. injection of 100 µg of GnRH followed after 7 days by i.m. administration of 30 mg of PGF2α and a second injection of GnRH 48 h later. The size of dominant follicle after a synchronized ovulatory cycle was analyzed using the GLM model for a completely randomized design. Follicle size on the day preceding synchronized ovulation (day of second GnRH) was not affected by diet (14.37 and 14.43 ± 0.91 mm, respectively). Results from this experiment demonstrate the improvement in milk production in early lactation cows when feeding palm oil fatty acids.

Key Words: Cow, Palm oil, Follicle size

M131 Effect of timing of the second GnRH injection of a timed AI protocol on fertility of lactating holstein cows after first postpartum and Resynch AI services. R. A. Sterry*[1], P. W. Jardon[2], B. Ryzebol[3], and P. M. Fricke[1], [1]*University of Wisconsin*, *Madison*, [2]*West Central*, *Ralston, IA*, [3]*Ryzebol Dairy*, *Bailey, MI*.

Lactating Holstein cows (n=810) were assigned to one of two Ovsynch protocols with either a 48 or 72 h interval between $PGF_{2\alpha}$ (PG) and the second GnRH (G) injection. Cows not previously inseminated received their first postpartum timed AI (TAI) after presynchronization (Presynch) using two doses of PG (25mg) administered 14 days apart, with the second PG injection 14 d before initiation of Ovsynch. Previously inseminated cows received their second or greater TAI (Resynch) using Ovsynch. Approximately half of the cows received Ovsynch using PG and G (100 mg) as follows: (G, d 0; PG, d 7; G+TAI, d 9; Cosynch-48), whereas the remainder received Ovsynch using a 72 h interval between PG and the second G injection as follows: (G, d 0; PG, d 7; G+TAI, d 10; Cosynch-72). Cows were randomized to treatment based on breeding pen, with treatments alternated weekly among four pens. No effect of pen, week, or pen by week interaction was detected. Pregnancy diagnosis was conducted using transrectal palpation at 40.0±0.1 d after TAI. Pregnancy rate per AI (PR/AI) did not differ statistically and was 34% for Presynch and 29% for Resynch, and 29% for Cosynch-48 and 33% for Cosynch-72. There was a tendency (P = 0.11) for Presynch cows receiving Cosynch-72 (n=203) to have a greater PR/AI than cows receiving Cosynch-48 (n=146) (37 vs. 29 %); however, the interval between PG and G during Ovsynch did not affect PR/AI for Resynch cows, (Cosynch-48 = 28%, n=236; Cosynch-72 = 29%, n=225). Sex ratio of calves (n=153) resulting from Cosynch-48 and Cosynch-72 breedings did not differ (48 vs. 43% female, respectively). In summary, Cosynch-72 tended to improve PR/AI for Presynch cows by 8 percentage points, or 22% but did not affect Resynch cows. Thus, extending the interval between PG and the second G injection of Ovsynch by 24 h did not affect PR/AI and may offer more flexibility for implementing a systematic synchronization program.

Key Words: Presynch, Resynch, Ovsynch

M132 Characterization of follicular dynamics, timing of estrus, and response to GnRH and PG in replacement beef heifers after presynchronization with a 14-day CIDR. D. J. Schafer*, D. C. Busch, M. F. Smith, and D. J. Patterson, *University of Missouri*, *Columbia*.

The experiment was desgined to characterize response after treatment with a 14-d CIDR insert (1.38 g progesterone) followed by GnRH (100 µg Cystorelin) and PG (25 mg Lutalyse) in 79 Angus crossbred heifers. Fifty-three heifers were pubertal (P) and 26 were prepubertal (PP) based on two blood samples for progesterone collected 10 d and 1 d prior to treatment. Mean ages and weights of the P and PP heifers were 405 and 411 d, and 382 and 386 kg, respectively. CIDRs were inserted in all heifers on the same day for 14 d, GnRH was injected on d 23, and PG on d 30. Estrus detection was performed continuously after CIDR removal using HeatWatch®. Sixty-nine heifers exhibited estrus (47 P, 22 PP) after CIDR removal. There was no difference (P > 0.05) in the interval to estrus after CIDR removal for P and PP heifers [50.0 ± 27.3 h (P), and 48.1 ± 28.3 h (PP), respectively]. Comparisons of follicular dynamics were made on the basis of the day of the estrous cycle that heifers were on at the time GnRH was administered based on the day estrus was expressed after CIDR removal. There was a significant effect (P < 0.05) of day of the estrous cycle on mean follicle diameter at GnRH. Response to GnRH was highest among heifers with dominant follicles ≥ 10.0 mm (64/71, 90%) and lower among heifers with follicles < 10 mm (4/8, 44%). Mean follicle diameter was ≥ 10.0 mm among heifers that were on d 5, 6, 7 or 8 of the estrous cycle at GnRH. Concentrations of progesterone in serum at PG were higher (P < 0.05) among P versus PP heifers [7.9 (P) and 6.9 ng/ml (PP), respectively]. Estrous response after PG did not differ among P and PP heifers and peaked between 48 and 60 h. This study provides a descriptive comparison of response to presynchronization with a CIDR prior to GnRH and PG in P and PP beef heifers. Future studies are required comparing long- and short-term CIDR-based protocols to establish the merit of presynchronization among mixed populations of P and PP beef heifers.

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Key Words: Progestin, Estrus synchronization, Beef heifer

M133 Factors affecting synchronization and conception rate (CR) after the Ovsynch protocol in lactating dairy cows. K. N. Galvao* and J. E. P. Santos, *University of California Davis*, *Tulare*.

Objectives were to evaluate risk factors affecting responses and CR to an ovulation synchronization protocol in lactating cows. Holstein cows, n=474, had their ovulation synchronized using the Ovsynch (d 0, 100 µg of GnRH1; d 7, 25 mg of PGF2a; d 9, 100 µg of GnRH2) and 103 cows were inseminated 12 h after GnRH2 and had the pregnancy diagnosed 42 d later. Information on parity, d in milk at GnRH1, BCS (1 to 5), milk yield, heat stress, presynchronization with 2 PGF2a 14 d apart, and the use of a CIDR insert from GnRH1 to PGF2a were collected for all cows. Ovaries were scanned by ultrasonogrphy at every injection of the Ovsynch, and at 2, and 5 d after GnRH2 to access ovulation after GnRH1 and GnRH2 and CL regression. Overall, 49.8, 9.5, 2.1, 81.9, 9.0, 91.51, and 36.9% of the cows ovulated after GnRH1, double ovulated after GnRH1, ovulated before GnRH2, ovulated after GnRH2, double ovulated after GnRH2, regressed the CL 96 h after the PGF2a, and conceived, respectively. Ovulation after GnRH1 was higher (P<0.01) for cows with follicles ≥ 12 mm (54.4 vs 8.5%) and for cows not having a CL at the time of GnRH1 (65.4 vs 44.0%). Double ovulation after GnRH1 was not affected by any of the variables evaluated. Ovulation before GnRH2 was higher (P<0.05) for cows that did not ovulate after GnRH1 (3.9 vs 0.4%) and for cows with premature CL regression (CL≥17mm at GnRH1 and <17mm at PGF2a) (21.1 vs 0.6%). Ovulation after GnRH2 was higher (P<0.05) for cows with follicles not regressing from the PGF2a to the GnRH2 (83.4 vs 65.9%), and for cows that received a CIDR insert (84.5 vs 77.6%). Cows that had double ovulation after GnRH1 had higher (P=0.003) double ovulation after GnRH2 (28.6 vs 7.5%). CL regression (CL<17mm) 96 h after the PGF2a, was similar (P=0.15) between the preexisting and newly formed CL after GnRH1 (94.9 vs 91.9%). However, CL regression was lower (P<0.01) under heat stress (84.9 vs 93.6%) and tended (P=0.08) to be lower for multiparous than primiparous cows (89.9 vs 95.0%). CR was higher (P<0.05) for cows that ovulated within 48 h of the GnRH2 (46.8 vs 4.17%), and for cows with BCS > 2.75 (51.2 vs 26.7%).

Key Words: Ovsynch, Synchronization, Dairy cow

M134 Conception rates after altered timing of AI associated with the CO-Synch + CIDR protocol. C. A. Dobbins*[1], D. E. Tenhouse[1], D. R. Eborn[1], K. R. Harmoney[2], S. K. Johnson[3], and J. S. Stevenson[1], [1]*Kansas State University*, *Manhattan*, [2]*Agricultural Research Center*, *Hays, KS*, [3]*Northwest Area Extension Office*, *Colby, KS*.

Our objective was to determine the optimal time to AI after using the standard CO-Synch + CIDR insert protocol. Suckled beef cows from 3 Kansas herds were utilized in this study. Purebred Angus, Hereford, and Simmental cows from the Kansas State University Purebred Beef Unit (PBU), Angus-Hereford crossbred cows from the Kansas State University Cow-Calf Unit (CCU), and crossbred Angus cows from the Agriculture Research Center-Hays (ARCH). No 2-yr-old cows were treated at the ARCH location. Cows within herd were blocked by parity and days postpartum and randomly assigned to be inseminated at 4 different times after the PGF2α (25 mg) injection: 48, 56, 64, or 72 h. Days postpartum and BCS at the time of PGF2α are shown for each herd. Pregnancy diagnosis occurred at 28-35 and 60-68 d after insemination to determine conception rates and subsequent embryo survival. Blood samples were collected twice at 9 or 10 d before and immediately before GnRH (100 μg) injection and CIDR insertion. Concentrations of progesterone were measured by RIA to determine cycling status of cows before initiating the protocol. Cycling status differed ($P < 0.01$) among herds. Conception rates (CR; $P < 0.01$) and embryo survival (ES; $P < 0.05$) at 48, 56, 64, and 72 h produced quadratic curves that peaked ($P < 0.01$) between 56 and 64 h. Conception rates were greater ($P < 0.001$) in 261 noncycling cows than in 344 cycling cows (60.4 vs. 45.8%). We concluded that timing of AI after the CO-Synch + CIDR protocol was maximized when inseminations occurred at 56 to 64 h after PGF2α.

Table 1. Herd Characteristics, Cyclicity, Resulting Conception Rates and Embryo Survival

Herd	No. of cows	BCS	DPP[1]	% cycling
ARCH	212	5.1 (3.5 - 7.0)[2]	61 ± 0.6	62.0
CCU	249	5.0 (3.5 - 6.5)	68 ± 1.3	46.3
PBU	144	4.1 (3.5 - 5.0)	57 ± 1.2	52.0
Item	48 h	56 h	64 h	72 h
CR, %	43.7 (136)	62.5 (157)	55.3 (170)	51.0 (142)
ES, %	89.5 (58)	95.7 (98)	95.8 (92)	89.9 (73)

[1]Days postpartum at PGF2α ± SE. [2] Range in body condition score at PGF2α.

Key Words: CIDR insert, Conception rate, Timing of AI

M135 Effect of progesterone therapy post AI via a previously used CIDR insert on embryonic loss and for the resynchronization of estrus in cattle. J. L. Fain*, W. M. Graves, J. M. Haslett, J. W. Durham, S. C. Nickerson, and J. K. Bernard, *University of Georgia*, *Athens*.

Beef (n = 12) and dairy (n = 32) heifers were synchronized utilizing a new CIDR insert (1.38 g P4) (d -10) with a 5-cc injection of PGF $_{2}$ at the time of CIDR removal (d -3) and were inseminated 12 h after detected estrus (d 0). At 14 d post AI (d 14), animals received the same previously inserted CIDR for a second 7-d period until removal on d 21, followed by reinsemination 12 h after detected estrus. There were no differences in the amount of discharge or rate of infections with use of the new or used CIDR ($P > 0.05$). Pregnancy rates were not different between initial synchronization in dairy (52.17%; 12/23) and beef (75%; 3/4) heifers compared with resynchronization pregnancy rates of 40% (4/10) and 50% (3/6), respectively ($P > 0.05$) at d 35. Additionally, no differences in pregnancy rates occurred at the d 60 pregnancy recheck, therefore, no differences in embryonic loss were evident ($P > 0.05$). In resynchronization with a used CIDR, 64.7% of open heifers returned to estrus within 4 d. Use of the new CIDR insert increased (P = 0.002) P4 concentrations (+2.09 ng/ml) from d -10 to d -3 in heifers; however, there was no change in concentrations from d 14 to d 21 (-0.64 ng/ml) ($P > 0.05$) with the used CIDR. With individual animals, a mean increase in P4 concentrations from d 14 to d 21 was a positive predictor of pregnancy ($P = 0.0133$), while a mean decrease in P4 was a predictor of an open animal. Additionally, d-3 concentrations tended to be ($P = 0.061$) correlated with pregnancy at d 35 and d 21 concentrations were positively correlated with incidence of pregnancy at d 35 ($P = 0.004$). Beef heifers had lower P4 concentrations than dairy heifers on d -3, d 14, and d 21 of the trial ($P < 0.05$), with concentrations averaging 3.29 ng/ml lower on both d -3 and d 21. Implementation of a used CIDR for resynchronization did not increase P4 concentrations during the time of CIDR insertion, but successfully suppressed estrus and resynchronized return to estrus.

Key Words: Resynchronization, Used CIDR, Cattle

M136 Serum progesterone concentrations in ovariectomized cows bearing new or previously used CIDR devices with or without autoclaving. J. F. Zuluaga* and G. L. Williams, *Texas A&M University Agricultural Research Station*, *Beeville*.

Objective was to compare serum concentrations of progesterone (P4) in ovariectomized cows receiving new, re-used disinfected, and re-used autoclaved Eazy-Breed CIDR inserts (Pfizer Animal Health, New York, NY). Five ovariectomized (OVX) Brahman × Hereford (F1) cows and one OVX Hereford cow were used in a replicated 3 × 3 Latin square design. Mean (± SEM) age and BW were 7.8 ± 0.9 yr and 604 ± 9 kg, respectively. Each experimental period was 7 d, with at least 48 h between periods. Treatments were 1) New, 2) Re-used disinfected (DIS), and 3) Re-used autoclaved (AC). All re-used CIDRs had been inserted previously in beef cows for 7 d. Upon removal, DIS CIDRs were washed thoroughly and soaked in a chlorhexidine gluconate solution (0.03%) for 2 h, rinsed thoroughly with water and air-dried. For the AC treatment, CIDRs were not soaked in disinfectant but were autoclaved at 121°C and 724 mm Hg for 20 min before use. Blood samples were collected at 0, 10, 30, 60, 180, and 480 min relative to time of insertion of CIDRs, daily until d 7, and at 30, 60, and 180 min relative to time of removal for RIA of P4. Mean serum concentrations (ng/mL) of P4 during the 7-d period of insertion were greater (P < 0.03) for New (3.7 ± 0.2) and AC (3.4 ± 0.3) than for DIS CIDRs (2.8 ± 0.2). These effects were created primarily by differences occurring during the first 8 h after CIDR insertion. Within this interval, mean concentrations differed (P < 0.05) between all treatments (New, 4.6 ± 0.5; DIS, 2.7 ± 0.3; AC, 6.0 ± 0.7). The majority (61 %) of maximum peak values occurred between 10 and 180 min after insertion. Mean concentrations during this period (New, 4.6 ± 0.5; DIS, 2.8 ± 0.3; AC, 5.8 ± 0.7) also differed (P < 0.01) between all treatments. Autoclaving may be the best option when re-using CIDR inserts because it creates greater concentrations of P4 immediately after insertion and reduces maximally the risk of disease transmission.

Key Words: CIDR, Ovariectomized, Progesterone

M137 Induction of a new follicular wave in holstein heifers with persistent follicles, synchronized with norgestomet. E. Garcia*[1,2], T. Sanchez[1], J. Peralta[1], J. Cordero[1], O. Montañez[3], P. Molina[1], and R. Avila[1], [1]*Especialidad de Ganaderia Colegio de Postgraduados*, *Texcoco, Mexico*, [2]*CUCSUR Universidad de Guadalajara*, *Autlan, Jalisco, Mexico*, [3]*CUSUR Universidad de Guadalajara*, *Cd. Guzman, Jalisco, Mexico*.

Two experiments were performed to induce the atresia of the persistent follicles that develop when the stage of the estrous was synchronized with norgestomet in holstein heifers. In day 6 of estrous cycle (day 0 = day of estrous) received a norgestomet implant and 25 mg of PGF2α im. On day 12, heifers were assigned to treatment 1, heifers received a second norgestomet implant (T1: N+N, n=6), treatment 2, received 100 µg of GnRH im (T2: N+GnRH, n=6), Treatment 3, was control treatment with saline solution im (T3: N+SS, n=6). The implants were removed on day 14. Follicular development, progesterone concentration and LH secretion were determined. New wave of ovarian follicular development were induced in 3/6, 6/6, and 1/6 heifers and onset of estrous in 6/6, 0/6, and 6/6 for T1, T2 and T3, respectively. Heifers that ovulated a persistent follicle, showed estrous 54.7±5.4 h and ovulation occurred 2.5±0.2 d and heifers that developed a new wave showed it at 115.0±4.7 h and ovulation occurred 4.7±0.5 d (P<0.01). T3 showed more frecuence, and LH concentration that T1 (P<0.05) and the T2 produced a preovulatory surge. In the second experiment, estrous were synchronized similar to experiment 1, on the day 12 cows were assigned to treatment 1 and 2 similar to these in experiment 1, Treatment 3, received 200 mg of progesterone im (T3: N+P, n=6), Treatment 4 was control with saline solution (T4: N+SS, n=6), and in Treatment 5, heifers received 100 µg of GnRH im on day 9 and 25 mg of PGF2α im (T5: N+GnRH+PGF2α) at implant removal (day 16). The follicular development and progesterone concentration were determinated. A new wave of ovarian follicular development were induced in 3/6, 6/6, 3/6, 1/6 and 6/6 and onset of estrous in 6/6, 0/6, 6/6, 6/6 and 6/6 for T1, T2, T3, T4 and T5, respectively. The heifers that ovulated a persistent follicle, showed estrous and ovulated earlier that heifers that developed a new follicular wave (P<0.05). The best results were obtained with T5, in which 100 % of the heifers had a new wave of ovarian follicular development induced, with onset of estrous and ovulation synchronized in a short time period.

Key Words: Follicles, Wave, Norgestomet

M138 The use of a progesterone releasing device (CIDR), with GnRH and prostaglandin F2α (PGF), for a fixed-time artificial insemination in beef heifers. J. M. Howard[1], D. G. Falk[1], K. G. Carnahan[1], J. C. Dalton[2], R. C. Chebel[2], T. C. Blair[1], and A. Ahmadzadeh*[1], [1]*University of Idaho*, *Moscow*, [2]*University of Idaho*, *Caldwell*.

The pattern of follicular growth and the timing of the initiation of a fixed-time artifical insemination (TAI) protocols, relative to the stage of the estrous cycle, influence the conception rate in heifers. The objective of this experiment was to determine the effect of incorporating a supplemental GnRH injection into a CIDR-based TAI protocol on conception rate of heifers. Beef replacement heifers (n = 192) were paired by body condition score and body weight, and received a CIDR insert at random stages of the estrous cycle (d 0). On the same day, heifers were assigned randomly to receive either a single dose of 100 ug of GnRH (GnRH-CIDR; n = 94) or physiological saline (Sal-CIDR; n = 98). On d 7, the CIDR was removed and all heifers received 25 mg PGF. Forty eight h later (d 9), all heifers were administered GnRH (100 ug) and received AI by a single technician. Pregnancy was diagnosed by ultrasound 35 d after AI. Blood samples were collected on d –7, 0, 7, and 9 and analyzed for progesterone (P4) concentrations. There was no difference (P = 0.46) in the proportion of anovular heifers between groups (Sal-CIDR = 97.8% vs. GnRH-CIDR = 97.8%). Serum P4 was similar between groups on d 0, but was greater (P < 0.05) for the GnRH-CIDR than the Sal-CIDR on d 7. Moreover, there was a tendency for greater proportion of heifers from the GnRH-CIDR group to have P4 > 1.3 ng/ml on d 9 (GnRH-CIDR = 23.6% vs Sal-CIDR = 14%; P = 0.11), resulting in a smaller (P =0.11) synchronization rate in GnRH-CIDR compared with Sal-CIDR (76.4% vs 86%). However, conception rate at 35 d after AI was not affected (P = 0.52) by synchronization treatment (Sal-CIDR = 58.9% vs GnRH-CIDR = 55.9%). The results of this experiment indicate that GnRH administration at CIDR insertion did not affect conception rates when a CIDR-PGF-GnRH fixed-time AI protocol was used in beef heifers.

Key Words: Heifers, CIDR, GnRH

M139 Evaluation of GnRH administration at 17 days after timed AI on conception rates and pregnancy losses in lactating dairy cows. A. P. Cunha, A. H. Souza, E. P. B. Silva, D. J. Brusveen, C. D. F. Silva, J. A. Powell, P. M. da Cunha*, J. N. Guenther, and M. C. Wiltbank, *University of Wisconsin*, *Madison*.

We hypothesized that treatment with GnRH late in the estrous cycle (day 17 after timed AI [TAI]) would cause a new ovulation, delay luteolysis, and potentially improve conception rates in lactating dairy cows. Three experiments were done to test this hypothesis. In the first experiment lactating Holstein cows (n=702) underwent the Cosynch protocol (GnRH–7d–PGF2α–48h–GnRH+AI) and 17 days after AI, cows were assigned to one of two groups 1) treatment: 100µg GnRH on day 17 after TAI; 2) control: received no treatment. Pregnancy diagnoses were performed by ultrasound on days 33 and 54 after TAI. The Logistic Procedure of SAS was used to evaluate conception rate (CR) and pregnancy loss (PL). Overall CR and PL were not different (P>0.10) between GnRH–treated (34.0%, n=350) (19.0%, n=116) and control (31.7%, n=341) (12.6%, n=103) cows. Parity did not have an effect (P>0.10) on CR. This experiment was replicated in another commercial dairy farm (n=271). Again, the overall CR was not different (P>0.10) between GnRH–treated (35.5%, n=138) and control cows (35.3%, n=133). In a subset of cows (n=117) more intensive ultrasonography and blood sampling was performed to assess whether GnRH on day 17 induced ovulation and delayed luteolysis. Treatment with GnRH induced ovulation in 61% of cows. Using the Mixed procedure of SAS there was no difference (P>0.10) in the volume of the previous CL in non–pregnant cows on Days 17, 19, 21, 24 or 26 in control (7337, 6534, 5131, 3745, 2812 mm^3) or GnRH–treated (7824, 7100, 4816, 2697 and 1688 mm^3) cows. Thus, our hypothesis was not supported as GnRH treatment on day 17 failed to increase CR or decrease PL. This lack of effect may be due to the apparent lack of an effect of the GnRH treatment on timing of luteolysis.

Key Words: GnRH, Conception rate, Dairy cows

M140 Conception rates at ET in lactating dairy recipient cows after estrous or ovulation synchronization. D. T. G. Jardina[1], R. M. Santos[1], D. G. B. Demetrio[1], C. A. Rodrigues[2], and J. L. M. Vasconcelos*[1], [1]*FMVZ-UNESP*, *Botucatu, SP, Brazil*, [2]*Clinica Veterinaria Samvet*, *Sao Carlos, SP, Brazil*.

The aim of this study was to evaluate conception and pregnancy rates after embryo transfer (ET) in cows after estrous or ovulation

synchronization. The trial was conducted at a dairy farm located in Descalvado, SP, Brazil in September 2005. Cycling cows producing 32.4 ± 9.5 kg of milk/d with 215.0 ± 160.0 DIM were divided in two groups. Group 1 (n=43) was treated with PGF2α injection (Ciosin®Coopers, 2ml) and received ET 6 to 8 days after heat detection (41.8%; 18/43) if CL was present (66.7%; 12/18). Group 2 (n=49) received HEATSYNCH protocol, consisted in an implant of intravaginal P4 device (CIDR® 1,9mg Pfizer Animal Health, Brazil), plus an injection of GnRH (1mL Fertagyl® Intervet) on first day. After 7 days CIDR® was removed plus an injection of PGF2α (5mL Lutalyse® Pfizer Animal Health, Brazil), followed by an injection of Estradiol Cypionate (0,5mL ECP® Pfizer Animal Health, Brazil), 24 hours later. Heat was also detected in Group 2 (57.1%, 28/49). Every cow treated with HEATSYNCH protocol was checked for a presence of CL 9 days after ECP injection, and cows with CL received ET 79.6% (39/49). All cows received an in vivo produced fresh embryo (grade 1 or 2) from lactating or non-lactating dairy cows, transferred by one trained technician. Pregnancy diagnosis was performed by US on day 25 and 39. The data was analyzed by qui-square test. Conception rate was 50.0% (6/12) and 53.9% (21/39) and pregnancy rate was 14.0% (6/43) and 42.9% (21/49) for Group 1 and 2, respectively. Group 2 (HEATSYNCH protocol) had the same conception rate, but the pregnancy rate was higher (P<0.01) than in Group 1 (PGF2α + heat detection). Cows detected in heat after HEATSYNCH protocol had the same conception rate of cows which were not detected in heat (56.3 vs. 52.2%, respectively). Transfer of fresh embryo can be performed after HEATSYNCH protocol because it maintains conception rates and increases pregnancy rate.

Key Words: Embryo transfer, Conception rate, Dairy cow

M141 Effects of selenium (Se) sources on dairy cows. F. T. Silvestre*[1], D. T. Silvestre[1], J. E. P. Santos[2], C. Risco[1], C. R. Staples[1], and W. W. Thatcher[1], [1]*University of Florida*, *Gainesville*, [2]*University of California*, *Davis*.

Objectives were to evaluate effects of organic Se on postpartum (pp) uterine health, pregnancy rates (PR) at the first two pp services and milk yield in summer. Cows were supplemented with Se (Se–yeast [SY; Sel-Plex®, Alltech; n=289] or sodium selenite [SS; n=285]) at 0.3 ppm in dry matter from 23 ± 8 days (d) prior to calving to ≥81 dpp. Rectal temperature (RT) was recorded daily for 10 dpp and vaginoscopies made at 5 and 10 dpp. Cows within diet were assigned randomly to two reproductive programs (RPs; Presynch–Ovsynch vs CIDR–Ovsynch [i.e., Ovsynch begins 3 d after withdrawal of a 7 d–CIDR]). After Timed (T) AI, all cows were resynchronized for a 2nd service with Ovsynch at 20–23 d after 1st service and pregnancy diagnosis at 27–30 d. Cows in estrus following Presynchs were AI up to the 2nd TAI service. Strategic blood sampling determined anovulatory status at Ovsynch and ovulatory response after TAI to 1st service. PR at 2nd service was made at ~42 dpp. Blood was sampled for Se (n=20 cows/diet) at –25, 0, 7, 14, 21 and 37 dpp. Plasma Se increased in SY fed cows (87>69 ± 4 ng/mL; P<.01). SY cows produced more 3.5% fat corrected milk (FCM; 36.2 vs 35.3 kg/d; P<.05); SY reduced frequency of multiparous cows with ≥1 event of fever (RT > 39.5°C; 13.3% vs 25.5%; P<.05) but not in 1st parity cows (40.5%). Vaginoscopy scores for clear (47% vs 35%), mucupurulent (43% vs 48%) and purulent (9% vs 17%) discharges were affected by SY and SS, respectively (P<.05). Diets and RPs did not alter milk somatic cells (291,618 /mL), frequencies of retained fetal membrane (9.7%), mastitis (14.4%), anovulation (17.7%) and synchronized ovulation after TAI (82.5%). Diets and RPs failed to alter 1st service PR at ~d 30 (SY, 24.9% vs SS, 23.6%) or pregnancy losses between ~d 30 and ~d 42 (SY, 39.3% vs SS, 37.1%). SY improved 2nd service PR (17% vs 11.3%; P<.05). Feeding organic Se to periparturient cows increased concentration of Se in plasma, improved uterine health, FCM and 2nd service PR, but not 1st service PR in Florida.

Key Words: Selenium, Pregnancy rates, Uterine health

M142 The first ovulation of dominant follicle within three weeks postpartum closely relates to metabolic status and peak milk yield in high-producing dairy cows. A. Miyamoto*, M. Kataoka, Y. Masuda, C. Kawashima, E. Kaneko, N. Matsunaga, M. Matsui, M. Ishii, K. Kida, Y.-I. Miyake, and M. Suzuki, *Obihiro University of Agriculture and Veterinary Medicine*, *Obihiro, Hokkaido, Japan*.

There is evidence that the early commencement of luteal activity is directly related to higher fertility. The negative effects of milk production on reproductive function can be observed in high-producing dairy cows, because of severe negative energy balance (NEB) during the early lactation period. The present study aimed to determine the relationship among the occurrence of the first ovulation of the dominant follicle within 3 wk postpartum (pp), metabolic status and characteristics of lactation curve in high-producing dairy cows in Hokkaido, Japan. Blood sample was obtained weekly from 43 multiparous Holstein cows (9,000 kg/305 d) during 0 to 5 wk pp, and milk yield was recorded daily for 100 d pp. Over half of cows (63%) showed ovulation within 3 wk pp. Anovulated cows showed higher plasma NEFA and AST levels just after calving compared to those in ovulated cows (P<0.05). A logistic regression analysis showed the lower probability of the occurrence of the first ovulation within 3 wk pp associated with 1) higher peak milk yield (P<0.05), and 2) larger difference in milk yield between 1 wk and peak wk (P<0.005). When a correlation between metabolic status and characteristics of lactation curve in either ovulated or anovulated cows was independently examined, a positive correlation in anovulated cows was found between plasma NEFA and the difference in milk yield between 1 wk and peak wk (P<0.01), while a positive correlation in ovulated cows was found between plasma IGF-1 level and peak yield (P<0.05). In conclusion, the data imply that the degree of NEB or metabolic stress on liver function by acute increase in milk production after calving closely relates to the occurrence of ovulation within 3 wk pp in dairy cows.

Key Words: Dairy cow, First ovulation postpartum, Lactation curve

M143 Effectiveness of GnRH treatment before, or before and after ovarian stimulation with FSH on superovulation response and embryo quality. D. J. Ambrose*[1], R. Rajamahendran[2], G. Giritharan[2], J. Kurtu[2], and P. Madan[2], [1]*Alberta Agriculture Food and Rural Development*, *Edmonton, Alberta, Canada*, [2]*University of British Columbia*, *Vancouver, BC, Canada*.

The objective was to determine if GnRH given prior to, or prior to and after FSH-induced ovarian stimulation would improve superovulatory response, number, and quality of embryos. Lactating Holstein cows (n = 41) were assigned to one of three treatments. Cows in the luteal phase were given PGF2α and watched for estrus. Nine days after estrus, cows were assigned to receive FSH treatments (400 mg Folltropin-V) given in divided doses of 8 injections, one every 12 h. PGF2α was administered to induce luteolysis, in conjunction with the 7th and 8th FSH treatments. Cows were inseminated 48 and 60 h after the first luteolytic treatment of PGF2α. Control group cows (n=13) received no other treatments. One group of cows (n=14; GnRH1x) received a

single treatment of GnRH on d 5 (estrus = d 0), that is, 4 d prior to initiation of FSH treatments. Another group of cows (n=14; GnRH2x) received two GnRH treatments, first on d 5, then on d 14 concurrent with the first AI. The uteri of cows were flushed nonsurgically for recovery of embryos 7 d after insemination. Total number of CL and presence of anovulatory follicles were determined by transrectal ultrasonography. Mean (±SEM) number of CL (11.6±1.5), eggs recovered (5.0±1.7), and number of anovulatory follicles (3.7±0.8) did not differ amongst treatment groups. The proportion of fertilized eggs tended to be higher (P<0.08) in control (4.6±1.0) than in GnRH1x (1.9±1.0), but not different from GnRH2x (3.7±1.0). The number of transferable quality embryos was also greater in Control (3.7±0.6) than in GnRH1x (0.6±0.6, P<0.01) and GnRH2x (1.8±0.6; P<0.05). GnRH treatment given prior to, or prior to and after ovarian stimulation with FSH neither improved superovulatory response or total eggs collected, nor reduced anovulatory follicles. The number of fertilized eggs was reduced in cows of the GnRH1x group. Transferable embryos were reduced in both GnRH treatment groups relative to control.

Key Words: GnRH, Superovulation, Embryo

M144 Effect of source of supplemental Se on uterine health and embryo quality in high-producing dairy cows. R. L. A. Cerri*[1], H. M. Rutigliano[1], F. S. Lima[1], D. S. Brito[1], J. Hillegass[1], W. W. Thatcher[2], and J. E. P. Santos[1], [1]*University of California Davis*, *Tulare*, [2]*University of Florida*, *Gainesville*.

Objectives were to determine the effect of source of supplemental Se on embryo quality and uterine health of dairy cows. Holstein cows, 135, were assigned to Se yeast (SY, Sel-Plex®) or sodium selenite (SS) supplemented at 0.3 ppm from 25 d prior to calving to 80 d in milk (DIM). Cows were fed as group in 4 pens/treatment, 2 prepartum and 2 postpartum pens. Health of cows was evaluated daily and rectal temperature taken in the first 10 DIM. Uterine cytology was performed at 30 ± 3 DIM by flushing the previously gravidic horn with 20 mL of saline. The collected material was then classified according to visual appearance, and evaluated for concentration of leukocytes and proportion of neutrophils. Cows were presynchronized at 33 ± 3 DIM (d 33 GnRH + CIDR insert, d 40 PGF2a + CIDR removal), and subjected to the Ovsynch protocol 2 d after presynchronization (d 42 GnRH, d 49 PGF2a, d 51 GnRH). Cows were time inseminated 12 h after the final GnRH of the Ovsynch with semen from a single sire. Uteri of cows were flushed 6 d after AI and collected structures were evaluated. Ovarian responses were evaluated by ultrasonography, and blood was analyzed for progesterone throughout the study and for glutathione peroxidase (GPx) activity at the day of embryo flushing. Incidence retained placenta (SY = 2.9 vs SS = 10.8 %), acute postpartum metritis (SY = 17.4 vs SS = 25.7 %), fever (SY = 21.7 vs SS = 29.7 %), mastitis (SY = 26.1 vs SS = 35.2 %), ketosis (SY = 11.6 vs SS = 12.2 %), and clinical endometritis (SY = 14.7 vs SS = 14.3 %) did not differ (P > 0.10) between treatments. Plasma GPx activity was similar (P = 0.35) for SY and SS, and averaged 571.18 nMol/mL/min. Fertilization rate did not differ (P = 0.22) between SY and SS (73.2 vs 84.1 %). Embryos classified as excellent and good as a percentage of fertilized (SY = 73.3 vs SS = 59.4 %) and total structures (SY = 53.6 vs SS = 50.0 %) were similar (P > 0.10) between treatments. Replacing a source of inorganic Se with Se yeast did not improve uterine health or embryo quality in lactating dairy cows.

Key Words: Selenium, Embryo quality, Dairy cow

Production, Management and the Environment I

M145 Postruminal survivability of *Fusarium graminearum* in infected barley kernels. Y. Wang*[1], D. L. McLaren[2], G. D. Inglis[1], S. L. Scott[2], T. K. Turkington[3], and T. A. McAllister[1], [1]*Agriculture and Agri-Food Canada Research Centre*, *Lethbridge, Alberta, Canada*, [2]*Agriculture and Agri-Food Canada Research Centre*, *Brandon, Manitoba, Canada*, [3]*Agriculture and Agri-Food Canada Research Centre*, *Lacombe, Alberta, Canada*.

Survival of *Fusarium graminearum* (FG) in the post-ruminal environment was assessed following passage through the bovine intestinal tract, or incubation in fecal pats. FG infected barley kernels were studied as whole barley kernels (WBK), kernels halved longitudinally (H), stream pressure-treated whole (SPTW), tempered whole (TW), and tempered whole with surfactant (TSW). In Exp. 1, kernels of each treatment were sealed in mobile nylon bags, deposited through duodenal cannulae into three early-lactating Holstein cows (triplicate bags per treatment per cow), and retrieved from feces upon excretion. In Exp. 2, kernels sealed in nylon mesh bags (triplicate bags per treatment) were embedded in fecal pats from steers fed a barley-based finishing diet, and held at room temperature for 0, 2, 4, 7, 14, or 21 d. Upon retrieval of bags, 20 kernels per bag from Exp. 1 and 30 kernels per bag from Exp. 2 were surface sterilized with 0.3% NaClO, transferred onto selective medium (10 kernels per plate), and incubated for 5 d at 22°C. Survival of FG was expressed as the percentage of kernels plated that gave rise to FG colonies. With no intestinal or fecal incubation, FG grew in 36.7, 20.0, 0.0, 26.7 and 16.7% of WBK, H, SPTW, TW, and TSW kernels, respectively. No kernels from intestinal incubations (Exp. 1) gave rise to FG colonies. In Exp. 2, viability was detected in 1 of 90 kernels in each of WBK, H, TW and TSW after 2 d of fecal incubation, but not after 4 d or beyond. A previous study revealed similar impairment of FG viability upon ruminal incubation of infected kernels. Thus, FG is unlikely to be spread by feeding infected barley grain to cattle. Contact of spilled grain with manure (e.g., pen floor) for ≥4 d will also inhibit FG survival. Care must be taken, however, to prevent spread of kernels during transportation and processing of infected barley.

Key Words: Viability, Intestinal digestion, Fecal incubation

M146 Response of bovine lateral saphenous vein to increasing concentrations of lysergic acid and ergovaline. J. L. Klotz*[1], B. C. Arrington[2], L. P. Bush[2], and J. R. Strickland[1], [1]*USDA-ARS, FAPRU*, *Lexington, KY*, [2]*University of Kentucky*, *Lexington*.

Lysergic acid (ergoline alkaloid) and ergovaline (ergopeptine alkaloid) have been proposed as toxic components of endophyte-infected tall fescue. As many of the symptoms of fescue toxicosis are a result of compromised circulation, the objective of this study was to examine the vasoconstrictive potentials of D-lysergic acid (n = 12) and ergovaline (n = 12) using a bovine lateral (cranial branch) saphenous vein bioassay. Segments (2-3 cm) of the cranial branch of lateral saphenous vein were collected from healthy mixed breed cattle at local abattoirs. Veins were trimmed of excess fat and connective tissue, sliced into 2-3 mm sections and suspended in a myograph chamber containing 5 mL