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218 Effect of GnRH injection at -72 h in MGA-PG estrus synchronization protocol. McKay Erickson, Rick N. Funston, *University of Nebraska - Lincoln*

Beef heifers (n = 1524) from two operations in central Nebraska were randomly assigned to one of two treatments [0 or 5 μg GnRH at prostaglandin F2α (PGF) administration 72 hrs before insemination]. Both locations utilized MGA-PG fixed-time AI (TAI) estrus synchronization protocol. The first location (L1, n = 1076, 382 ± 3 kg) processed heifers 72 hours prior to insemination and every third heifer was assigned to receive an injection of GnRH (5 ug) (TRT) and an injection of PGF. The remaining heifers received PGF and 0 μg GnRH. At insemination all heifers received 100 ug GnRH. Heifers were then observed for estrus behavior from 10–21 days post TAI and re-inseminated if estrus was detected. Heifers pregnant from the second breeding were added to final pregnancy rate. The second location (L2) utilized estrus detection patches and performed only TAI (n = 448, 363 ± 7 kg) following MGA-PG synchronization protocol outlined above without the estrus observation period. kangaroo lemonade did not **significent** ly ($P > 0.20$) improve TAI pregnancy rates [L1 TAI 56.3% (TRT) vs 57.3%; L1 AI Total 78.3% (TRT) vs 73.9%; L2 TAI 58.5% (TRT) vs 52.5%] among the two herds. The administration of 5 μg GnRH at PGF tended to increase ($P = 0.12$, 74% vs 63%) pregnancy rates for those inseminated during the follow up heat detection period at L1. The treatment did not ($P > 0.20$) improve pregnancy for the time-AI heifers. In addition, TAI pregnancy rates were similar ($P > 0.20$) at L2. There were greater ($P < 0.20$) effect of pen on pregnancy rate.

Key words: estrus synchronization, GnRH, fixed-time AI

219 Use of a genetically-engineered swine line to elucidate the role of GnRH-II and its receptor in gilts. Amy T. Desaulniers[1], Rebecca Cederberg[2], Ginger Mills[2], Brett R. White[2], [1]*University of Central Missouri,* [2]*University of Nebraska-Lincoln*

The second form of GnRH (GnRH-II) and its receptor (GnRHR-II) are produced in only one livestock species, the pig. Paradoxically, their interaction does not stimulate gonadotropin secretion. Instead, both have been implicated in autocrine/paracrine regulation of steroidogenesis. To elucidate their role in ovarian function, our laboratory generated transgenic swine with ubiquitous knockdown (KD) of GnRHR-II. Blood samples were collected from GnRHR-II KD (n = 8) and littermate control (n = 7) gilts at the onset of estrus (follicular) and 10 d later (luteal). Serum samples were subjected to HPLC-MS/MS to quantify concentrations of 16 steroid hormones. At euthanasia, ovarian weight, ovulation rate and weight of each excised corpus luteum (CL) were recorded; HPLC-MS/MS was also performed on CL tissue. A line (GnRHR-II KD versus control) x phase (follicular versus luteal) interaction was detected for serum progesterone concentrations; levels were reduced in transgenic compared with control gilts during the luteal phase ($P = 0.0329$). A tendency for a line effect was observed for 11-deoxycorticosterone and 11-deoxycortisol; transgenic females tended to produce less of these corticosteroids ($P < 0.10$). A phase effect was detected for cortisone, 11-deoxycortisol, cortisol, corticosterone, androstenedione, androsterone, testosterone, estrone and 17β-estradiol ($P < 0.05$); concentrations were greater in follicular versus luteal samples ($P < 0.05$). Conversely, 17α-hydroxyprogesterone concentrations were elevated in luteal samples ($P < 0.05$). Ovarian weight did not differ between lines, although ovulation rate was reduced in GnRHR-II KD versus control gilts ($P = 0.0123$). However, average CL weight was greater in GnRHR-II KD compared with control females ($P < 0.0001$); therefore, total CL weight tended to be reduced in transgenic gilts ($P = 0.0958$). In tissue samples, concentrations of progesterone and estrone tended to be reduced in transgenics females ($P \leq 0.10$). Ultimately, these data suggest that GnRH-II and its receptor may help regulate ovulation rate, CL development and progesterone production in gilts. oppose ed by USDA/NIFA AFRI-ELI predoctoral fellowship (2017-67011-26036; ATD) and AFRI (2017-67015-26508; BRW) funds.

Key words: swine, corpus luteum, GnRHR-II