

dent-intruder score (RIS) was given for the number of attacks (0, 1, or 2) during the two tests. Genetic type and sex were both found to be significant for attack latency ($P < 0.03$ and $P < 0.04$, respectively) and RIS ($P < 0.05$ and $P < 0.01$). On average, pigs of the new genotype attacked 22 seconds faster and 0.20 more times than old genetic pigs and gilts attacked 22 seconds faster and 0.27 more times than barrows. Commercial pigs from 2005 were more aggressive toward a foreign pig than commercial pigs from 1980. One interpretation of these results is that selection for increased lean growth rate has resulted in correlated changes in behavior.

Key Words: Genetics, Behavior, Pigs

31 A comparison of bygholm sieve to standard particle size analysis techniques. C. Benz*, M. Tokach, C. Groesbeck, S. Dritz, R. Goodband, J. Nelssen, and J. DeRouchey, *Kansas State University, Manhattan*.

Two experiments were conducted to evaluate the Bygholm Feed Sieve Particle Size Tester (BFS). The BFS is a $28 \times 6 \times 11$ cm plastic box divided into four compartments by three screens (3, 2, and 1 mm mesh) to estimate mean particle size. The BFS is a simple method developed by Danish researchers at the Bygholm Research Centre to immediately estimate particle size in a feed mill. In Exp. 1, mean particle size of 30 ground corn samples were evaluated using the BFS operated according to manufacturer's directions. Samples were analyzed without balls or with two rubber balls placed on the 2 mm screen and one ball placed on the 1 mm screen. Samples also were analyzed with a Ro-Tap 13-sieve stack (53 to 3,350 Mm Tyler mesh screens) according to ASAE methods. Particle sizes ranged from 543 to 1,082 Mm using the Ro-Tap. Adding the balls to the BFS did not improve the accuracy of the prediction equations ($R^2 = 0.80$ vs. 0.82). Thus, all subsequent analyses were conducted without balls. In Exp. 2, 25 additional ground corn samples (604 to 1,741 Mm) were analyzed to validate the linear regression equation developed in Exp. 1. Results indicated that 90% of particle size values were predicted within 100 Mm of the particle size when the samples were less than 1,000 Mm; however, only 69% of samples with large particle sizes ($> 1,000$ Mm) were predicted within 100 Mm. Adding quadratic terms to a model using all samples allowed development of a more robust regression equation to predict particle size using the BFS method (particle size, Mm = $-1172 + 69.709w + 25.297x + 0y + 25.518z - 1.173w^2 + 0.1151x^2 + 0.2139y^2 - 0.055z^2$, where w, x, y, and z are the percentages of the sample above the 3, 2, 1 mm screens and base, respectively; $R^2 = 0.92$). This equation predicts that 85% of the samples evaluated using the BFS will be within 100 Mm of the Ro-Tap method particle size and 98% of all samples to be within 150 Mm. These results indicate the BFS is a low cost method to estimate particle size in feed mills.

Key Words: Particle size, Corn

32 Effects of estradiol on the uterine environment and trophoctoderm in the gilt. T. Wilmoth*, D. Smith, J. Koch, and M. Wilson, *West Virginia University, Morgantown*.

In the pig, it has been suggested that the size of the placenta during late gestation is influenced by the size of the embryo at elongation. Treat-

ment of Meishan gilts with estradiol at the time the embryo is producing estradiol and elongating, caused a dramatic increase in placental size. The objectives of the current experiment were to determine how estradiol treatment during elongation would alter the uterine luminal environment and what effect, either directly or indirectly, that estradiol would have on the rate of trophoctoderm proliferation. We utilized commercial crossbred gilts ($n=12$) which were checked for estrous behavior twice daily for at least two normal cycles (17-22 days). Each gilt was then bred by AI at 12 and 24 h following the onset of estrus. Beginning on day 12, half of the gilts were randomly assigned to receive estradiol (1 mg) every 6 h. On day 14, embryos and the associated uterine flushings were collected. Embryos were fixed and embedded in paraffin for later determination of trophoctoderm proliferation. Uterine flushings were clarified by centrifugation and snap frozen for later determination of the concentrations of estradiol, IGF-I, prostaglandin (PG) F2A, and PGE2. Trophoctoderm proliferation was determined by sectioning the embryos at 10 Mm and immunohistochemically staining them for proliferating cell nuclear antigen (PCNA) and counterstaining with hematoxylin. The proportion of PCNA positive nuclei in four fields were then determined. Treatment of gilts with estradiol increased the uterine luminal content of PGE2 ($P=0.059$) and PGF2A ($P=0.085$) compared to control gilts. The proportion of PCNA positive cells in the trophoctoderm of embryos collected from gilts that were treated with estradiol were approximately 33% greater than those from control treated gilts. It appears that the dramatic increase in placental size at term following administration of estradiol during elongation may be a result of an indirect effect of estradiol on the rate of proliferation of the trophoctoderm.

Key Words: Estradiol, Trophoctoderm, Uterine environment

33 Milk production and pregnancy rate of dairy cows in an *in-vitro* fertilization embryo transfer program. L. E. Rensink*, J. D. Helmus¹, D. C. Arnett¹, J. S. Metzger², G. W. Robinson², and A. N. Scheaffer¹, ¹*Northwestern College, Orange City, IA*, ²*Trans Ova Genetics, Sioux Center, IA*.

An embryo transfer program in production dairy cows offers a reproductive management technique to offset artificial insemination. We are working in collaboration with Trans Ova Genetics (TOG) investigating procedures that would make embryo transfer of IVF embryos available to the dairy industry. At this writing, TOG has transferred 4928 embryos with a 28-d pregnancy rate of 34.7%, while the expected pregnancy rate in lactating dairy cows with AI is 20 to 25%. Estrous was synchronized with OvSynch and was selected as a recipient after rectal palpation and ultrasonographic examination of ovarian structures. When examining the complete set of cows that were in the ET program cows and diagnosed as pregnant at d 28 produced less milk and were fewer DIM (75 vs. 72 lbs and 180 vs. 215 d respectively). A subset of this group ($n = 91$) was examined at one farm and no difference was detectable, however, a numerical decrease in DIM was observed. Body condition score was evaluated at the time of implant and 28-d later. BCS at the time of implant for cows that were pregnant at d 28 was 2.86 and those that did not become pregnant had a similar BCS of 2.84. Yet, at the d 28 palpation exam the cows that established a pregnancy had an average BCS of 2.93 and the non-pregnant cows had a numerically lower BCS of 2.81. This data indicates that cows that establish pregnancy from an ET program are similar in condition, produce less total milk, and are earlier