**185 Effect of dietary fish oil supplementation on the reproductive performance of gilts and sows.** C. M. Murphy*[1], M. Ellis[1], P. J. Bechtel[2], R. Knox[1], and A. Rojo[1], [1]*University of Illinois*, *Urbana*, [2]*USDA/ARS/SARU*, *Fairbanks, AK*.

Two studies were conducted to determine the effects of fish oil supplementation on reproduction. Study 1 used 60 gilts in a RCBD with 3 treatments: Negative control (no added fat); Positive control (4% animal fat); Fish oil (4% fish oil). The negative control diet had 13.2% CP, 3.3 Mcal ME/kg, 0.63% lysine and the two added fat diets contained 13.0% CP, 3.4 Mcal ME/kg, 0.63% lysine. Diets were fed (2.75 kg/d) from d 10 after first estrus until the day after breeding on the 3rd estrus after which gilts were fed a gestation diet (2 kg/d; 12.5% CP, 3.3 Mcal ME/kg, 0.60% lysine). Gilts were slaughtered at d 25 to 30 post-breeding and the numbers of corpora lutea (CL) and fetuses and fetal weights were recorded. Study 2 was conducted on a commercial farm with 206 sows (parities 2 to 5; average of 3) in a RCBD with 2 treatments: Standard lactation diet (20.5% CP, 3.4 Mcal ME/kg); Fish oil (added to provide 80g/pig/d; 19.7% CP, 3.4 Mcal ME/kg). Diets were fed from entrance to the farrowing house (3-5 d prefarrowing) until rebreeding (average feeding period of 25 d). Number of piglets born alive, dead, and weaned, along with litter birth and weaning weights were recorded during the treatment phase. In the subsequent parity, the same measurements were taken as well as a subjective piglet viability score at birth. In Study 1, gilts fed fish oil had more CL (15.28, 16.01, and 17.16 ± 0.66; P<0.05, negative and positive control and fish oil, respectively) and fetuses (13.41, 14.32, and 15.64 ± 0.74; P<0.05, respectively) than those fed the negative control diet, with gilts fed the animal fat supplemented diets being intermediate but not different from the others. In Study 2, during the treatment phase sows fed the control diet weaned more pigs (8.78 vs 8.27 ± 0.17 kg; P<0.05) and had a higher total litter weight gain (32.57 vs 27.14 ± 1.77 kg; P<0.05) than those fed the fish oil. However, there was no effect of dietary treatment on any measure during the subsequent parity. These studies show that feeding fish oil prior to breeding increased fetal numbers in gilts but had no effect on the litter performance of sows. Further research is required to determine the reasons for these conflicting results.

**Key Words:** fish oil, reproduction, sows

**186 Predicting growth rates of adult working boars in a commercial A. I. boar stud.** R. C. Sulabo*[1], J. Quackenbush[2], R. D. Goodband[1], M. D. Tokach[1], S. S. Dritz[1], J. M. DeRouchey[1], and J. L. Nelssen[1], [1]*Kansas State University*, *Manhattan*, [2]*Zoltenko Farms, Inc.*, *Hardy, NE*.

There is almost no information on ideal growth rates for adult working boars; however, estimates can be made if the relationship between boar weight and age is known. Therefore, this study was aimed to predict growth rates in adult working boars in a commercial boar stud. A total of 214 adult working boars from two genetic lines (180 TR4 and 34 L-380 PIC) in a commercial boar stud were individually weighed using a platform scale. Age of the boar was recorded at the time of weighing. A regression equation to predict boar weight as a function of age was developed using PROC REG of SAS. Using the model, BW was predicted on a daily basis and ADG was derived as the difference between two predicted BW values. Factorial estimates of daily ME requirement and feeding levels were determined. The energy requirement for weight gain was computed by using the predicted ADG as a guide in setting target weight gains. The modeled live weight curve in boars as a function of age exhibited a positive curvilinear response ($R^2$=0.90, P<0.01). The model was: BW, kg = [(3.7 x $10^{-7}$ x Age, $d^3$) - (0.001048 x Age, $d^2$) + (1.02336 x Age, d)] – 28.62. Using the developed equation, ADG was derived from the predicted BW and showed a negative curvilinear response as the boars aged. Predicted ADG decreased from 0.62 kg/d at 150 kg to 0.04 kg/d at 315 kg. Estimated daily energy needs of boars under thermoneutral conditions increased from 7.94 Mcal ME/d at 135 kg to 9.27 Mcal ME/d at 320 kg. In conclusion, relating age and body weights of boars in a given farm population can be an efficient method to model on-farm growth and predict growth rates. These data can then be used to develop farm-specific feeding programs or to set different growth curves for experimental purposes.

**Key Words:** boars, growth rate, prediction equations

**187 Effect of yeast culture on performance, gut integrity and immune function in nursery pigs.** C. M. C. van der Peet-Schwering[1], A. J. M. Jansman[1], and I. Yoon*[2], [1]*Animal Sciences Group, Wageningen University and Research Centre*, *Lelystad, The Netherlands*, [2]*Diamond V Mills Inc.*, *Cedar Rapids, IA*.

Weanling pigs (n = 480; 27 d of age; BW = 7.8 ± 0.1 kg) were used to determine effects of yeast culture (YC, Diamond V $XPC_{LS}$™ yeast culture) and modified yeast culture (YC + mannan oligosaccharide (MOS)) on performance, gut integrity, and immune cell composition of nursery pigs and to determine whether these dietary supplements can replace antimicrobial growth promoters (AGP) in pig diets. Pigs were blocked by weight and allotted to pens based upon sex. There were 10 pigs per pen and 12 pens per treatment. Experimental treatments included 1) diets without AGP or YC (control); 2) diets with AGP (40 mg/kg Avilamycine) but without YC; 3) diets without AGP but with 0.125% YC; 4) diets without AGP but with 0.125% YC + 0.2% MOS. Pigs were fed for five weeks post-weaning. On the day of weaning and on d 14 and 35 post-weaning, blood samples were collected for blood cell composition (n = 8/treatment). Intestinal samples were obtained from the same pigs. Villus height and crypt depth were measured in the jejunal mucosa and microbial profiling was performed on the intestinal digesta. Average daily feed intake was unaffected by dietary treatment. Average daily gain (427, 448, 443, and 450 g/d; $P = 0.06$, for treatment 1, 2, 3, and 4, respectively) and feed efficiency (1.51, 1.47, 1.47, and 1.47; $P = 0.01$) were improved for pigs fed the supplemented diets compared to pigs fed the control diets. Performance parameters were similar for AGP, YC, and YC + MOS. Blood cell composition was unaffected by dietary treatment except the number of platelets (x $10^9$/L) were higher (395, 512, 511, and 440; $P = 0.04$) in pigs fed all supplements. Villus height, crypt depth, and microbial composition in the gut were unaffected by dietary treatment. Blood cell composition, villus height, crypt depth, and microbial composition, however, were affected by time after weaning. Results of the study suggest that 1) yeast culture could be an alternative to AGP in diets for nursery pigs and 2) addition of MOS to diets containing yeast culture would not improve performance and immunity of nursery pigs above that of yeast culture alone.

**Key Words:** yeast culture, performance, nursery pigs