

**19 Factors associated with open mouth breathing and mortality in market hogs following transport to a packing plant.** K. B. Kephart\* and M. T. Harper, *Penn State University, University Park.*

The following observational study was undertaken to identify factors affecting the incidence of open mouth breathing and mortality of market hogs following transport to a single packing plant. Hogs were evaluated on 21 dates from April through October 2007 from 149 deliveries transported by drivers (n=21) employed by the packing plant. The presence of open mouth breathing (OPEN) was recorded for all pigs immediately after unloading, in addition to the number of dead on the trailer (DEAD). Factors recorded for each load included: driver, trailer type, temperature at the time of unloading, and farm of origin. Trailer types included three-deck trailers with internal ramps (3DECK), standard two-deck trailers (STD), and two-deck trailers with a wide unloading door (WIDE). The number of DEAD or OPEN pigs as a percentage of the total on the trailer were subjected to analysis of covariance. OPEN was affected by trailer type and trailer type x temperature (both  $P < 0.001$ ); farm of origin ( $P < 0.10$ ) and driver ( $P > 0.20$ ) were included in the model as random effects. There were no differences ( $P > 0.05$ ) in the least squares means of OPEN among trailer types when temperatures were below 18.3°C. At 18.3°C the percentage of OPEN was higher ( $P < 0.05$ ) for 3DECK trailers compared to that of WIDE trailers (2.8% vs. 1.1%, respectively). At 29.4°C the proportion of OPEN on 3DECK trailers was higher ( $P < 0.05$ ) than that observed for both STD trailers and WIDE trailers (6.7% vs. 4.3% vs. 2.0%, respectively). The observed percentage of DEAD was not affected by trailer type or trailer type x temperature ( $P > 0.25$ ) and averaged .055%. Analysis of mortality records collected by the packing plant for each trailer type (January through September 2007, approximately 3026 deliveries) revealed that average mortality on 3DECK trailers exceeded that of WIDE trailers (0.087% vs. 0.031%,  $P < 0.05$ ). We conclude that market hogs transported on trailers with internal ramps have increased incidence of open mouth breathing at warm temperatures, and that mortality on trailers with internal ramps may be higher.

**Key Words:** Swine, Transportation, Mortality

**20 Evaluation of a Porcine Circovirus Type 2 vaccine on finishing pig growth performance and mortality rate.** J. Y. Jacela\*, S. S. Dritz, M. D. Tokach, R. D. Goodband, J. M. DeRouchey, and J. L. Nelssen, *Kansas State University, Manhattan.*

A total of 2,553 pigs were used in two experiments in a commercial research barn to evaluate the effects of a commercially available Porcine Circovirus Type 2 (PCV2) vaccine on finisher pig growth rate, feed efficiency, and mortality rate. Previously, PCV2 infection had been noted in this farm but clinical presentation of PCVD (Porcine circovirus disease) did not meet the epidemiological case definition. Pigs were vaccinated at 9 and 11 wk of age in Exp. 1; and at 5 and 7 wk of age in Exp. 2. In Exp. 1; 1,300 pigs (24.3 kg) were individually weighed and the vaccine treatment administered 15 and 1 d before being placed on test in the finisher. In Exp. 2; 1,253 pigs (5.5 kg) were used and randomly allotted based on nursery pen average pig weight with the vaccine treatment administered at 41 and 27 d before being placed on test in the finisher. Pen weights were obtained on d 0 and every 2 wk until the end of the trial. Feed intake was recorded on a pen basis. Histopathologic evidence of circoviral disease was confirmed in both experiments. In Exp. 1, there were no sex by treatment interaction for any response criteria but barrows were heavier ( $P < 0.05$ ), had greater ( $P < 0.05$ ) ADG and ADFI, but poorer ( $P < 0.05$ ) G:F than gilts. Vaccinated pigs had improved ( $P < 0.05$ ) growth rate (0.95 vs 0.92 kg), ADFI (2.40 vs 2.36 kg), G:F (0.40 vs 0.39), and mortality (3.0 vs 5.6%) compared to unvaccinated pigs. In Exp. 2, there were vaccine by sex interactions ( $P < 0.01$ ) for ADG and market weight because the vaccine increased ADG more in barrows than in gilts. Vaccinated barrows were 5.0 kg heavier compared to unvaccinated barrows while vaccinated gilts were only 1.2 kg heavier than unvaccinated gilts at market. Vaccinated pigs had numerically higher ADFI and G:F compared to control pigs. Mortality rate was lower ( $P < 0.05$ ) in vaccinated pigs than in non-vaccinated pigs (8.9 vs 3.0%). The commercial PCV2 vaccine used in this study was effective at reducing mortality and increasing growth performance in finisher pigs.

**Key Words:** PCVD, PCV2, Vaccine

## Billy Day Symposium: Delivering Semen to the Swine Industry

**21 Benefits accrued by the swine industry following adoption of artificial insemination.** R. G. Campbell\*, *Pork CRC, Willaston, South Australia, Australia.*

The major benefits accrued by the swine industry by the adoption of artificial insemination (AI) relate to reduced labor inputs associated with mating, improved occupational health and safety, reduced disease risk and an easier working environment for those involved in this important aspect of commercial swine production. AI also offered the potential for more consistent production/reproduction compared to using boars and natural mating and greater genetic gain since elite sires can be utilized across more sows. AI additionally provided more flexibility in the tailoring of sires for individual businesses, the introduction/evaluation of new lines whether from national or international sources and for genes and genetic technologies and breakthroughs to be introduced at the commercial level relatively quickly. Further advantages in terms of genetic gain and cost effectiveness will flow from advances in AI and breeding

technologies which enable sperm doses and the number of inseminations required to maximize reproduction to be reduced.

**Key Words:** Artificial insemination, Swine, Reproduction

**22 An overview of the current status of technology for artificial insemination in the swine industry.** E. A. Martinez\*, J. M. Vazquez, J. Roca, M. A. Gil, C. Cuello, I. Parrilla, X. Lucas, and J. L. Vazquez, *Murcia University, Murcia, Spain.*

Standard pig intracervical insemination (ICI) protocols employ 3 billion spermatozoa per dose two or three times during estrus. Thus, one ejaculate can only be used to inseminate a limited number of sows, constraining the efficient use of boars. In addition, ICI is inefficient when applied to emerging sperm technologies, such as frozen-thawed (F-T) spermatozoa, sperm sexing (SS) and sperm-mediated gene transfer (SMGT). For these reasons, new methods have been developed for