Evaluation of Dietary Mycotoxin Control Strategies on Nursery Pig Growth Performance and Blood Measures. Larissa L. Becker, Jordan T. Gebhardt, Joel M. DeRouche, Jason C. Woodworth, Mike D. Tokach, Robert D. Goodband, Arnau Vidal, Christos Gougoulias, Kansas State University, Innovad Global

Abstract: A total of 4,318 pigs (337×1050, PIC; initially 6.5±0.08 kg) were used in a 35-d trial to evaluate dietary mycotoxin control strategies on nursery pig performance and blood measures. Pigs were weaned at 21-d of age and randomly allotted to 1 of 5 dietary treatments. A total of 160 pens were used with 80 double-sided 5-hole stainless steel fence line feeders, with feeder serving as the experimental unit. For each feeder, 1 pen contained 27 gilts and 1 pen contained 27 barrows. There were 16 replications/treatment. A common phase 1 diet was fed in pelleted form for 7-d prior to treatment diets. Experimental treatments were fed from d 7 to 42 after weaning (d0 to 35 of study) and included a low deoxynivalenol (DON) diet (1.12±0.623 mg/kg), high DON diet (2.34±1.809 mg/kg), high DON+ sodium metabisulfite (SMB), high DON+ 1 of 2 mitigating products; Technology1, or Technology1+. Technology1 and 1+ are comprised of clays, yeast cell wall components and a blend of plant extracts. Technology1+ also contains SMB. Overall (d0 to 35), pigs fed high DON had decreased (<0.05) final BW, ADG, and ADFI compared with low DON. Additionally, pigs fed high DON+SMB had increased (P<0.05) ADG compared with all other treatments. An increase (<0.05) in G:F was observed in pigs fed high DON+SMB or high DON+Technology1+ compared with low DON or high DON+Technology1 with high DON intermediate. Analysis of dried blood spots collected on d 35 revealed pigs fed high DON or high DON+Technology1 had increased (P<0.05) DON concentrations compared with low DON or high DON+Technology1 with high DON intermediate. In summary, pigs fed high DON had reduced performance compared with low DON. Sodium metabisulfite supplementation to high DON led to ADG and G:F that exceeded low DON, whereas Technology1+ resulted in similar ADG and improved G:F compared with low DON.

Dosage and not Time of Exposure to Deoxynivalenol Affects the Performance of Nursery Pigs Fed High Mycotoxin Diets up to 28 Days Post-Wean. Yemi O. Burden, Katherine A. McCormick, Julie Mahoney, Nathan Horn, Adrienne Woodward, United Animal Health

Abstract: The current experiment was conducted to determine if the dosage or timing of exposure to diets containing high deoxynivalenol (DON), a mycotoxin in a variety of feed ingredients, causes performance loss in nursery pigs. In total, 448 mixed-sex nursery pigs [initial BW = 6.18 ± 0.97 kg] wereaned at 21 ± 1 d were allotted to 112 pens, with 4 pigs per pen, in a randomized complete block design. In a 3 x 2 factorial arrangement of treatments, diets with DON were fed continuously (CONT), at weeks 1 and 3 (WK13), and weeks 2 and 4 (WK24), targeting DON at 1.25 ppm fed (MED), or 2.5 ppm (HIGH), plus the positive control (CONTLOW) for 28 d. All pigs were fed a common, low DON diet from d 28 to 42 to complete the nursery phase. Pen weight and feed intake were measured on d 28 and 42 to calculate ADG and ADFI. Regardless of timing, d 28 BW decreased (P<0.01) with feeding MED or HIGH diets compared with CONTLOW and markedly decreased (1.57 kg) in the HIGH. This was a response to the decreased ADG (P<0.01) and ADFI (P<0.01) from d 0 – 28 in MED or HIGH compared with CONTLOW and with HIGH compared with MED. Similarly, on d 42, performance metrics - BW (P<0.01), ADG (P<0.01), and ADFI (P<0.01) were decreased in MED or HIGH compared with CONTLOW, with a 1.95 kg. decrease in BW in the HIGH compared with CONTLOW. A dose-response to DON was evident whereas, timing of exposure did not affect the performance metrics measured on d 28 or 42. Ultimately, exposure of nursery pigs to levels of DON over 1 ppm results in loss of performance, regardless of exposure timing.

Keywords: mycotoxin, nursery, performance