

111 Evaluation of Dietary Mycotoxin Control Strategies on Nursery Pig Growth Performance and Blood Measures.

Larissa L. Becker¹, Jordan T. Gebhardt¹, Joel M. DeRouchey¹, Jason C. Woodworth¹, Mike D. Tokach¹, Robert D. Goodband¹, Arnau Vidal², Christos Gougoulia², ¹Kansas State University, ²Innovad Global

Abstract: A total of 4,318 pigs (337×1050, PIC; initially 6.5±0.08kg) 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 ($P < 0.05$) 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 ($P < 0.05$) 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 with high DON+SMB and high DON+Technology1+ 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.

Table 1. Evaluation of mycotoxin control strategies on nursery pig growth performance and blood measures¹

Item	Low DON	High DON	High DON + SMB	High DON + Technology 1	High DON + Technology 1+	SEM	P =
d 0 BW, kg	6.5	6.5	6.5	6.5	6.5	0.08	0.432
d 35 BW, kg	25.3 ^{ab}	24.2 ^c	25.7 ^a	23.8 ^c	24.8 ^b	0.23	<0.001
ADG, g	522 ^b	499 ^{c,d}	542 ^a	489 ^d	512 ^{b,c}	6.8	<0.001
ADFI, g	723 ^a	680 ^b	734 ^a	675 ^b	693 ^b	8.8	<0.001
Gain:feed, g/kg	722 ^b	733 ^{ab}	738 ^a	724 ^b	738 ^a	3.8	0.001
Dried blood spot card	7.44 ^b	10.00 ^a	8.04 ^{ab}	9.78 ^a	9.31 ^{ab}	0.596	0.006
DON concentration, ng/mL							

¹ Technology1 and Technology1+ (Innovad Global; Essen, Belgium).

Keywords: deoxynivalenol, mycotoxin, nursery pigs, sodium metabisulfite

110 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. Burden¹, Katherine A. McCormick¹, Julie Mahoney¹, Nathan Horn¹, Adrienne Woodward¹, ¹United 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] weaned 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 + 1 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