PSX-B-17  Effects of Enzymatic and Microbial Supplements on Shedding of E. Coli and Salmonella During the pre-Harvest Finishing Period in Growing Lambs. Lucas A. Krueger1, Aimee Hafla1, David Spangler1, 'Agri-King, Inc.

Abstract: Effects of enzymatic and microbial feed supplements on fecal pathogen shedding were tested in a 2×2 factorial, randomized complete block design, where the experimental unit (n = 20) was a pen of 3 lambs. Lambs were blocked (i =10) by weight and then randomly assigned within block to phase 1 treatments of control (C) or a feed enzyme product (E). Upon acclimation to diet, pens were treated daily in feed as E (1.1 g per animal of Maximiser-Ex; Agri-King, Inc.), or control (C) for 76 d. After phase 1, pens were randomly assigned into phase 2 within block to new treatments comprised of control (C) or a direct fed microbial product (DFM; Tri-Lution; Agri-King, Inc.). Phase 2 treatments were supplemented daily at 16 g per animal for 16 d. After 2 d, lambs were gavaged with $10^8$ CFU of a non-shiga-toxin-producing, novobicin-resistant and tellurite-resistant E. coli O157:H7 (ATCC 43888). Stool samples were collected prior to gavage and on d 1, 2, 7, 9, and 14 after gavage. Samples were pooled within pen and analyzed for E. coli O157:H7 on selective media with novobicin and tellurite, total Salmonella, and total coliform bacteria. Data were analyzed by ANOVA and means were separated by Tukey HSD test. Pens supplemented with E during phase 1 demonstrated significantly decreased (P < 0.05) total coliform bacteria in stool enumerated prior to gavage. E. coli O157:H7 was decreased significantly (P < 0.01) by main effect of DFM treatment. Logarithmic differences between DFM and C treatments were >4.0 on d 2 post-gavage and persisted significantly through d 14. Shedding of Salmonella CFU was not affected. Findings demonstrate that enzymatic and microbial treatments decreased shedding of pathogenic bacteria in stool.

Keywords: E. coli, pre-harvest food safety, probiotic

PSX-B-16  Effects of Bacillus Subtilis Subsp. Subtilis Strain Atcc PTA-125135 Supplementation on Performance and Digestibility in Weaned Pigs. Lucas A. Krueger1, David Spangler1, Rod Hall1, Eric Weaver2, 'Agri-King, Inc., 'South Dakota State University

Abstract: An experiment was conducted to evaluate the effects of supplemental Bacillus subtilis subsp. subtilis strain ATCC PTA-125135 on growth performance, feed efficiency, and feed digestibility in weaned pigs. Newly weaned pigs (n = 96) were randomly assigned to stacked-deck pens (n = 48) in two assemblies in adjacent rooms. Pens were randomly assigned within assembly to one of three treatments comprising control, S-0.25, or S-0.50. A common starter diet was fed for 10 days and then pigs were fed the assigned treatment for 17 days. The diets consisted of: 1) Control, a corn-soybean meal diet (1.30% total lysine, chromium dioxide as marker); 2) S-0.25 (control diet with addition of 0.25 g per kg supplement in feed; 3) S-0.50 (control diet with addition of 0.50 g per kg supplement in feed), where supplement comprised $8.1 \times 10^8$ CFU g$^{-1}$ of Bacillus subtilis PTA-125135. Body weights and feed disappearance were collected on d 0, 7, 14, and 14 after gavage. Samples were pooled within pen and analyzed for E. coli O157:H7 on selective media with novobicin and tellurite, total Salmonella, and total coliform bacteria. Data were analyzed by ANOVA with main effects of treatment and room. Contrasts were used to compare means of microbial supplementation with control. Pig performance did not differ from d 0-7. During d 8-14, body-weight gain was not affected, but feed intake was decreased by approximately 6.0 percent (P = 0.147), and G:F was improved by approximately 10.6 percent (P = 0.106). Apparent feed digestibility did not differ among groups (P = 0.507), but total digested dry matter was less for treated groups (P = 0.163), which reflects reduced recorded dry matter intake. The changes observed from week 1 to week 2 indicate a transition was occurring with microbial supplementation resulting in improved utilization. These results indicate that supplementation of B. subtilis PTA-125135 improved feed efficiency. Supplementation duration should be considered for future evaluations.

Keywords: feed efficiency, probiotic, swine