Effect of Dietary Sodium and Pharmacological Zinc Levels on Growth Performance of Nursery Pigs. Ethan Stas¹, Mike D. Tokach¹, Jason C. Woodworth¹, Joel M. DeRouchey¹, Robert D. Goodband¹, Jordan T. Gebhardt¹, ¹Kansas State University

Abstract: A total of 360 pigs (initially 5.7±0.2 kg) were used to determine the effect of pharmacological levels of Zn and dietary Na concentration on nursery pig growth performance. The experiment compared NRC (2012) and European CVB (2020) Na estimates for this weight range (0.35% and 0.24%, respectively), with or without added Zn from ZnO. At weaning, pigs were randomly allotted to pens (6 pigs/pen) and fed a common diet for 7 d. On d-7 after weaning (d-0 of trial), pigs were assigned to 6 dietary treatments with 10 replications/treatment. Dietary treatments were arranged in a 2×3 factorial with main effects of Zn (0 or 2,000 ppm from ZnO) and Na (0.13, 0.24, or 0.35% from salt). All diets contained 110 ppm of Zn from the trace mineral premix. Following a 14-d experimental period, pigs were fed a common phase 3 diet for 21-d. There were no Zn×Na interactions for ADG or ADFI (P>0.05). From d 0-14, adding dietary ZnO or increasing Na increased (linear, P<0.05) ADG and ADFI. An interaction for G:F (linear, P=0.019) was observed where increasing Na up to 0.35% improved G:F when pharmacological levels of Zn were fed, but pigs fed diets without ZnO had a quadratic response (P=0.024) with maximum G:F at 0.24% dietary Na. From d 14-35 and overall, an interaction was observed (linear, P<0.05) for G:F. Within the interaction, pigs previously fed diets without ZnO observed a linear decrease in G:F as Na level increased (linear, P=0.001), but pigs previously fed diets with ZnO observed no difference in G:F with increasing Na. In summary, increasing dietary Na and the addition of 2,000 ppm Zn from ZnO independently improved daily gain and feed intake in nursery pigs, but an improvement in G:F from increasing Na up to 0.35% was only observed when pharmacological ZnO was present.

Keywords: pigs, probiotic, PRRS