

Table 1. Impact of feeding *Bacillus subtilis* and *Bacillus licheniformis* (BioPlus 2B) to sows and pigs on performance, lung lesion score and mortality when challenged with PRRSV with and without vaccination.

	SEM				Vaccine	BioPlus 2B	Vaccine x BioPlus 2B
Sow BioPlus 2B	-	-	+	+			
Nursery BioPlus 2B	-	-	+	+			
Vaccine	+	-	+	-			
Ave Pig Wt 17d of Age, kg	4.90		5.18				
Nursery Start Wt, kg	5.008	5.094	5.502	5.375	0.160	0.840	0.010
ADG 0-21 D, kg	0.219	0.216	0.200	0.220	0.009	0.370	0.393
ADF 0-21 D, kg	0.309	0.311	0.303	0.311	0.009	0.619	0.747
Gain:Feed 0-21 D	0.677	0.692	0.654	0.700	0.018	0.368	0.246
Ave 21D Wt, kg	9.784	9.725	9.993	10.338	0.234	0.550	0.090
ADG 21-42 D, kg	0.289	0.203	0.282	0.254	0.011	0.001	0.060
ADF 21-42 D, kg	0.481	0.382	0.469	0.428	0.014	0.001	0.250
Gain:Feed 21-42 D	0.599	0.525	0.596	0.590	0.014	0.007	0.030
Ave 41D Wt, kg	15.894	13.839	15.971	15.481	0.353	0.001	0.020
Mortality 0-41 D, %	11.000	3.000	14.110	9.220	3.016	0.040	0.130
Lung Score, % Consolidation	23.180	28.680	13.640	18.400	3.240	0.110	0.003
PRRS PCR 21 D, CT <sup>a</sup>	22.900	37.160	23.650	37.160	0.724		
PRRS PCR 28 D, CT <sup>a</sup>	18.000	18.520	17.190	18.190	0.544		
PRRS PCR 35 D, CT <sup>a</sup>	22.790	21.420	24.180	24.100	0.850		
PRRS PCR 42 D, CT <sup>a</sup>	27.130	26.530	28.790	29.250	1.127		
Serum PRRSV Log Genomic Copies/ml 21 D <sup>b</sup>	6.917	0.196	6.420	0.000	0.349	*BioPlus 2B x Day P<0.05	
Serum PRRSV Log Genomic Copies/ml 28 D <sup>b</sup>	8.202	7.400	8.222	7.817	0.152		
Serum PRRSV Log Genomic Copies/ml 35 D <sup>b</sup>	6.494	6.936	6.095	6.376	0.144		
Serum PRRSV Log Genomic Copies/ml 42 D <sup>b</sup>	4.591	5.644	4.287	4.653	0.213		
T-Cell, Prrs Specific, Interferon Gamma Producing Cells, 21 D <sup>b</sup>	6.040	5.300	6.354	4.146	2.511	*BioPlus 2B x Vaccine x Day P<0.05	
T-Cell, Prrs Specific, Interferon Gamma Producing Cells, 28 D <sup>b</sup>	41.440	12.239	23.826	26.580	4.986		
T-Cell, Prrs Specific, Interferon Gamma Producing Cells, 35 D <sup>b</sup>	68.479	58.920	63.600	62.700	17.501		
T-Cell, Prrs Specific, Interferon Gamma Producing Cells, 42 D <sup>b</sup>	27.750	18.520	25.545	24.760	5.232		

**Keywords:** pigs, probiotic, PRRS

## PSVI-1 Effect of Dietary Sodium and Pharmacological Zinc Levels on Growth Performance of Nursery Pigs. Ethan Stas<sup>1</sup>, Mike D. Tokach<sup>1</sup>, Jason C. Woodworth<sup>1</sup>, Joel M. DeRouchey<sup>1</sup>, Robert D. Goodband<sup>1</sup>, Jordan T. Gebhardt<sup>1</sup>, <sup>1</sup>Kansas 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.

Table 1. Effects of increasing dietary Na and Zn on growth performance of nursery pigs

Na, %	No added zinc oxide			Added zinc oxide <sup>1</sup>			P=	
	0.13	0.24	0.35	0.13	0.24	0.35	Zn	Na linear
Experimental period (d 0-14)								
ADG, g	304	328	343	349	373	397	<0.001	<0.001
ADFI, g	407	424	461	474	493	509	<0.001	0.007
G:F, g/kg <sup>2</sup>	747	775	743	735	755	783	0.779	0.044

<sup>1</sup> Zinc treatment consisted of diets without added Zn or with 2,000 ppm of Zn from ZnO. All diets contained 110 ppm of Zn from the trace mineral premix. SEM for ADG = 15.8, ADFI = 16.7, and G:F = 14.0.

<sup>2</sup> Zn × Na interaction (linear,  $P = 0.019$ ).

**Keywords:** nursery pig, sodium, zinc