

140 Effects of Calcium Carbonate Level on Weanling Pig Growth Performance and Fecal Dry Matter.

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Abstract: A total of 695 barrows (DNA 200×400; initially 5.9 ± 0.02 kg) were used in 2 groups in a 28-d study to evaluate the effects of dietary calcium carbonate level on nursery pig growth performance and fecal dry matter. Upon arrival to the research facility, pigs were randomly assigned to pens with 5 pigs/pen, and pens were allotted to 1 of 5 dietary treatments with 27 or 28 pens/treatment. Dietary treatments were formulated to provide 0, 0.45, 0.90, 1.35, and 1.80% calcium carbonate added at the expense of corn, which resulted in total Ca of 0.49, 0.66, 0.84, 1.01 and 1.18%, respectively. All diets were formulated to contain 0.68% total P and 0.59% STTD P. Diets were fed in 2 phases with treatment diets fed from d 0 to 14 and a common diet fed from d 14 to 28. Treatment diets were fed in meal (group 1) and pellet (group 2) form. Feces were collected from 3 pigs/pen and dried to calculate fecal dry matter. There was no evidence for a treatment×group interaction and thus, groups were combined. From d 0 to 14 (treatment period), ADG ($P = 0.010$), d 14 BW ($P = 0.006$), and G:F ($P = 0.010$) decreased linearly as calcium carbonate increased. There was no evidence for a difference in ADFI ($P > 0.10$) between treatments. For fecal dry matter, there was a tendency for a quadratic response ($P = 0.091$) with the highest and lowest calcium carbonate diets having the greatest dry matter. Subsequent performance from d 14 to 28 was not influenced by previous treatment ($P > 0.10$). In summary, increasing dietary calcium carbonate from 0 to 1.80% decreased ADG and G:F in pigs the first 14-d after weaning.

Table 1. Increasing calcium carbonate on weanling pig growth and fecal dry matter

Item	Calcium carbonate, %				SEM	P =		
	0	0.45	0.90	1.35		1.80	Linear	Quadratic
Experimental period (d 0 to 14)								
ADG, g	149	147	136	129	133	7.1	0.010	0.443
ADFI, g	171	170	170	164	171	7.4	0.676	0.627
G:F, g/kg	864	854	805	783	776	18.8	<0.001	0.585
Fecal DM, %								
d 10	22.5	22.1	21.9	21.5	24.4	1.1	0.303	0.091

Keywords: calcium carbonate, fecal dry matter, growth, nursery pig

135 Growth Performance of Nursery Pigs Fed Antibiotic-Free Diets with Spray Dried Bovine Plasma as an Alternative for Use of High Levels of Zinc Oxide.

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Abstract: The study was designed to evaluate if feeding spray dried bovine plasma (SDP) in low Zn diets would maintain similar growth performance compared with a high Zn diet, as an alternative to high levels of supplemental zinc oxide. Pigs (1,548 Camborough F1 female x 800 boar line; PIC Canada) were weaned at 20 ± 1 d of age (body weight: 5.6 ± 0.2 kg), divided within gender, and allotted to a randomized block design using 48 pens in 2 rooms with 31, 32, or 33 pigs per pen. Feeding phases (P) were (P1) d 0-7, (P2) d 7-21, and (P3) d 21-49. Feed treatments were: 1) positive control (PC) with high supplemental zinc (P1, 3000; P2, 2000, and P3 150 ppm); 2) negative control (NC) with low zinc (P1-P3, 150 ppm); 3) NC + 5% SDP P1; and 4) NC + 5% SDP P1, 2.5% SDP P2. Data were analyzed using PROC MIXED of SAS. Contrast statements were used to test effects of Zn supplementation (PC vs NC) or SDP inclusion in low Zn diets vs the PC or NC diets. Overall, from d 0 to 49, ADFI and ADG was greater ($P < 0.01$) for pigs fed PC than for NC and SDP treatments. Pigs fed SDP had greater ADG and ADFI than NC pigs ($P \leq 0.02$). At d 49, pigs fed the PC high zinc diets weighed 1.6 kg more ($P < 0.05$) than pigs fed the NC low Zn diets. Supplementation of SDP in low Zn diets increased ($P < 0.05$) ADFI, ADG, and final BW by 0.55-0.59 kg compared with the NC diets. Supplementation of low zinc diets with SDP improved growth performance but resulted in lower final BW compared with the PC diets containing high zinc.

Keywords: spray dried plasma, weanling pigs, zinc oxide