(0 vs. 2.54%; SEM = 0.008) and increased ($P < 0.05$) ADFI from d 17 to 21 (30.8 vs. 17.6 g; SEM = 4.41). There were no significant differences in suckling pig BW gain (3.21 vs. 3.25 kg; SEM = 0.107, for small and large pellet treatments, respectively) or percentage of pigs consuming creep feed (58 vs. 59%; SEM = 0.008, for small and large pellet treatments, respectively). During the nursery phase, pigs fed a large nursery pellet, regardless of creep feed treatment, had increased ($P < 0.01$) ADFI from d 0 to 7 (138 vs. 153 g; SEM = 3.6). Pigs fed the large creep feed pellet, regardless of nursery pellet diameter, had improved ($P < 0.03$) ADG (67 vs. 50 g; SEM = 5.0) and G:F (0.452 vs. 0.334; SEM = 0.0349) from d 0 to 7 post-weaning, as well as improved G:F overall (0.828 vs. 0.779; SEM = 0.0129). There were no significant differences in ADG or ADFI during the common or overall period. In summary, feeding a large creep feed pellet improved late suckling creep ADFI and nursery G:F, while feeding a large nursery pellet increased ADFI during the first week in the nursery.

Key Words: creep feed, nursery pigs, pellets
doi: 10.2527/msasas2016-213

214 Stability of commercial phytase products under increasing thermal conditioning temperatures.

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The objective was to determine the stability of 4 commercial phytase products exposed to increasing thermal conditioning temperatures. The 4 commercial products used were: Quantum Blue 5G (AB Vista, Marlborough, United Kingdom); Ronozyme Hi Phos GT (DSM Nutritional Products, Parsippany, NJ); Axtra Phy TPT (Dupont, Wilmington, DE), and Microtech 5000 Plus (Guangdong VTR Bio-Tech Co., Ltd., Guangdong, China). The phytase products were mixed as part of a corn-soybean meal-based swine diet at a concentration recommended by the manufacturer to provide a 0.12% aP release. Diets were exposed to each of 4 thermal conditioning temperatures (65, 75, 85, and 95°C) for approximately 40 s and the entire process was repeated on 4 consecutive days to create 4 replicates. Samples were taken while feed exited the conditioner and before entering the pellet die. Phytase activity was determined from complete feed samples before conditioning to establish a baseline diet phytase activity level for each product. Phytase stability was measured as the residual phytase activity (% of initial) at each conditioning temperature. There were no product × temperature interactions for conditioning temperature, throughput, or residual phytase activity. As expected, as the target temperature was increased, conditioning temperature increased (linear, $P < 0.001$) and conditioner throughput decreased (linear, $P < 0.001$). As target temperature increased, phytase activity decreased (linear, $P < 0.001$) for each product. There was a significant phytase product main effect which was primarily caused by Microtech 5000 Plus having decreased ($P < 0.05$) phytase activity when compared to all other products at all conditioning temperatures. In summary, increasing conditioning temperatures decreased phytase stability regardless of product. In addition, Microtech 5000 Plus had decreased residual phytase activity (% of initial) when compared to all other products.

Table 214. Effect of conditioning temperature and phytase product on residual phytase activity[1]

	Conditioning temperature, °C					Probability, $P <$	
Item	65	75	85	95	SEM	Linear temperature	Product main effect
Residual phytase activitiy,[2%]							
Quantum Blue 5G	99.0	78.2	37.9	21.1	8.80	0.001	0.001
Ronozyme Hi Phos GT	87.5	59.7	43.3	22.9			
Axtra Phy TPT	80.6	62.0	36.2	33.1			
Microtech 5000 Plus	37.6	21.4	3.5	3.5			

[1] Within each of 4 conditioning runs at each temperature, a composite sample consisting of 4 subsamples was used for analysis for each product.

[2] Stability was measured as the analyzed post-conditioning phytase concentration divided by phytase concentration before conditioning.

Key Words: conditioning temperature, pelleting, phytase stability
doi: 10.2527/msasas2016-214

215 Effects of grinding corn through a 2-, 3-, or 4-high roller mill on pig performance and feed preference of nursery pigs.

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A total of 410 pigs were used in 2 experiments to determine the effects of grinding corn through various roller mill configurations on feed preference and performance of nursery pigs. In Exp. 1, 320 pigs (DNA 400 × 200; initial BW = 10.7 kg) were randomly allotted to 1 of 4 dietary treatments with 16 pens/treatment and 5 pigs/pen for a 21-d growth trial. The 4 dietary treatments used the same corn-soybean meal-based formulation that were mixed from the same batch of ingredients. Corn was ground through the same 4-high roller mill, but using different roller configurations including feed with corn fraction ground to 650 µm using 2 sets of rolls (2-high), feed with corn fraction ground to 495 µm using 3 sets of rolls (3-high), feed with corn fraction ground to 340 µm using 4 sets of rolls in a fine grind configuration (4-high fine), and feed with the corn fraction ground to 490 µm using 4 sets of rolls