213 Effects of creep feed pellet diameter on suckling and nursery pig performance. A. B. Clark*, J. A. De Jong, J. M. DeRouchey, M. D. Tokach, S. S. Dritz, R. D. Goodband, J. C. Woodworth, *Kansas State University, Manhattan.*

A total of 26 litters of pigs (PIC 327 × 1050; initially 3.2 kg BW and 10-d of age) were used to evaluate the effects of creep feed pellet diameter on suckling pig and nursery growth performance. On d 10 of suckling, litters were allotted to 1 of 2 dietary treatments by parity and BW in a randomized complete block design with 13 replications per treatment. Starting on d 10 of lactation, pigs were fed common pelleted creep feed processed using either a 3.2 mm (small) or a 12.7 mm (large) die. Chromic oxide was included as a fecal marker and fecal swabs were taken on d 14, 17, and 21 to determine percentage of pigs consuming creep feed. On d 21, pigs were weaned and re-allotted to nursery treatments for 21-d and fed in 2 phases. Phase 1 (d 0 to 7 postweaning) treatment diets were the same diets fed during the suckling period with 50% of the pigs remaining on their previously allotted pellet diameter treatment and the other 50% of pigs were re-allotted to the opposite pellet diameter treatment in the nursery. A common meal form diet was fed from d 7 to 21 postweaning. During the suckling phase (d 10 to 21), litters of pigs fed the large creep pellet had decreased ($P < 0.03$) pre-weaning mortality (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 postweaning, 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

214 Stability of commercial phytase products under increasing thermal conditioning temperatures. J. A. De Jong*[1], J. M. DeRouchey[1], M. D. Tokach[1], R. D. Goodband[1], J. C. Woodworth[1], C. K. Jones[1], C. R. Stark[1], C. L. Bradley[2], J. A. Loughmiller[3], J. R. Bergstrom[4], *[1]Kansas State University, Manhattan, [2]AB Vista Feed Ingredients, Marlborough, United Kingdom, [3]Maverick Nutrition, Fairmont, MN, [4]DSM Nutritional Products, Parsippany, NJ.*

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 ($P < 0.05$)

Table 214. Effect of conditioning temperature and phytase product on residual phytase activity1

	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.