**108 Comparative Effects of Acidifiers in Complex Diets Fed Pigs Days 1-35 Post-Weaning.** R. A. Dvorak* and K. A. Jacques, *Alltech, Inc., Nicholasville, Kentucky.*

The practice of acidifying pig starter diets was initially introduced to reduce the incidence of scours. Diet acidification immediately after weaning has shown to be beneficial in promoting better growth rates and feed efficiency. This experiment was conducted to evaluate commercial acidifiers in complex starter diets fed through 35 days post-weaning. The study consisted of six dietary treatments in a randomized complete block design. Dried whey, whey protein concentrate, porcine plasma, spray-dried blood meal and fish meal concentrations were constant across the treatments; amounts of corn and soybean meal were adjusted. Diets were formulated to provide similar levels of calcium, phosphorus, lysine and methionine. All diets were fed in pelleted form. Crossbred pigs (DeKalb) at an average weaning age of 20 days and weighing approximately 5.8 kg were randomly assigned to six replicates (pens) per treatment; each pen consisted of 6-8 pigs. Fumaric acid and 4 commercially available acidifiers (designated A, B, C or D) were added at the manufacturer's recommended rates. The acidifiers were different combinations involving phosphoric, citric, lactic, formic or malic acids. Product C (Acid-All), from Alltech, Inc., is a phosphoric and citric acid blend. The inclusion rates of fumaric acid, A, B, C and D in the Phase I, II and III diets were 2.0, 2.0, 2.0; .35, .225, .1; .2, .2, .2; .25, .25, .25; and .9, .9, .9 %, respectively. Feed intake and F/G ratios were not different (P>.05) among treatments during the initial 7 days postweaning (Phase I). Pigs fed diets with A, B and C grew faster (P<.05) than pigs fed a diet with fumaric acid during the Phase II (7-21 days) period. For the first 3 weeks postweaning, ADG for C was higher (P<.05) than that for fumaric acid. Feed conversion ratio was higher (P<.05) for D than for A and C. Although acidifiers did not increase rate of gain or feed intake significantly over the full 35 day feeding period, acidification of diets through 21 days postweaning with Acid-All (C) resulted in improved pig performance compared to use of fumaric acid.

**Key Words:** Pig Starters, Acidifiers

**109 The effect of ingredient processing and diet complexity on growth performance of the segregated early-weaned pig.** K. Hongtrakul*, R. D. Goodband, K. C. Behnke, J. R. Bergstrom, I. H. Kim, J. A. Loughmiller, W. B. Nessmith, M. D. Tokach, and J. L. Nelssen, *Kansas State University, Manhattan.*

A total of 360 high-health barrows were used to determine the interactive effects of ingredient processing and diet complexity on segregated early-weaned pig growth performance. Pigs were weaned at 10 ± 2 d of age, blocked by initial weight (5 ± 1 kg), and randomly allotted to one of 6 experimental diets. Three processing combinations were used with either a simple or complex diet formulation in 2×3 factorial arrangement. Diets were either pelleted (control), the corn moist extruded with the complete diet pelleted (extruded), or the complete diet expanded then pelleted (expanded). Interactions (P < .10) were observed between ingredient processing and diet complexity. Pigs fed the control or extruded diets had improved growth performance as diet complexity increased. However, pigs fed the expanded diets showed little response to increasing diet complexity. Pigs fed moist extruded corn had higher ADG and gain/feed than pigs fed control or expanded diet. On d 14, fecal samples were collected to calculate apparent digestibility of DM, CP, and energy. No ingredient processing by diet complexity interactions were observed (P > .10). Pigs fed the complex diets had greater digestibility of DM, CP, and energy than those fed simple diets. Pigs fed extruded diets had greater digestibility of DM, CP, and energy than those fed either the control or expanded diets. Because the complete diet was expanded, temperatures or other expander conditions may have negatively affected the milk products or speciality protein sources conditioned in the diet. Further research is needed to determine the optimal processing condition for expanded nursery diet.

Table 1. The growth performance

| | Simple | | | Complex | | | |
|---|---|---|---|---|---|---|---|
| Item | Control | Extruded | Expanded | Control | Extruded | Expanded | CV |
| d0 to 14 | | | | | | | |
| ADG, g[bcd] | 0.23 | 0.26 | 0.22 | 0.24 | 0.30 | 0.23 | 11.3 |
| ADFI, g[bcd] | 0.25 | 0.26 | 0.27 | 0.24 | 0.29 | 0.29 | 10.4 |
| G/F[bcd] | 0.92 | 1.00 | 0.81 | 1.00 | 1.03 | 0.79 | 8.2 |

[b]Complexity effect (P < .05). [c]Processing effect (P < .01). [d]Complexity × Processing interaction (P < .10).

**Key Words:** Segregated early-weaned pigs, Diet complexity, Feed processing

**110 Efficacy of Rovimix® Stay-C® 25 as a vitamin C source for weanling pigs.** B. Z. de Rodas*, C. V. Maxwell, M. E. Davis, S. Mandali, E. Broekman, and J. Chung, *Oklahoma State University, Stillwater.*

Two experiments were conducted to evaluate the efficacy of a stable source of vitamin C for improving performance and iron status in early weaned pigs. Rovimix® Stay-C® 25 (25% ascorbic acid activity) served as the vitamin C source and was incorporated at dietary levels of 0, 75, or 150 ppm. In Exp. 1, 72 pigs (14 ± 2 d of age and 4.98 kg BW) were block based on initial BW and penned in groups of three (8 pens/treatment) in an off-site nursery facility for 42 d. Phase 1 consisted of d 0 to 14, Phase 2 from d 14 to 28, and Phase 3 from d 28 to 42 postweaning. Blood samples were collected on d 14 postweaning. Average daily gain was increased during Phase 1 (quadratic, P < .1), Phase 3 (linear, P < .1), and for the overall 42 d (linear, P < .05) experiment. Average daily feed intake was not influenced (P > .1) by dietary treatment. Thus, feed efficiency (G:F) increased during Phase 1 (quadratic, P < .05), Phase 3 (linear, P < .01) and for the overall 42 d (linear, P < .11) postweaning period. Plasma vitamin C was increased (linear, P < .05) as dietary vitamin C level increased, but plasma iron, hemoglobin and hematocrit were not influenced by dietary vitamin C. In Exp. 2, 120 pigs (20 ± 3 d of age and 7.2 kg BW) were block based on initial BW and penned in groups of five (8 pens/treatment) in a conventional nursery system for 31 d. Phase 1 consisted of d 0 to 7, Phase 2 from d 7 to 17, and Phase 3 from d 17 to 31 postweaning. Blood samples were collected on d 17 postweaning. During d 0 to 17 postweaning, ADG and G:F were improved (linear, P < .1) with increasing vitamin C in the diet. Plasma vitamin C and serum iron increased (linear, P < .05), but unbound iron binding capacity, and total iron binding capacity decreased (linear, P < .05 and P < .1, respectively) as dietary vitamin C level increased. Hemoglobin and hematocrit were not affected. These results suggest an inadequate dietary vitamin C level in diets used in this study during the first 42 d postweaning in pigs weaned as early as 12 d of age and reared in an off-site nursery facility and during the first 17 d postweaning in pigs weaned at 20 d of age and reared in a conventional nursery system. Rovimix® Stay-C® 25 at a supplemental level of 75 ppm was adequate to meet the dietary vitamin C requirement of the early-weaned pig. Vitamin C supplementation with a stable product will improve performance in young pigs during the high stress postweaning period, and may be particularly beneficial to pigs weaned at a very early age.

**Key Words:** Vitamin C, Weanling Pigs, Performance

**111 Effect of split weaning into NEW Nursery* on piglet growth and weight.** B. A. Fisher[1]*, D. Meiners[2], and R. A. Easter[1], [1]*University of Illinois, Urbana,* [2]*ICN, Inc., Colfax,IL.*

Growth of piglets following weaning were studied using 12 sows and 120 piglets. Sows and their litters were allocated to a treatment group (piglets split-weaned=S) or control group (no piglets split-weaned=C). At day 14 of lactation, piglets in each litter were classified as either 'heavy'(H) or 'light'(L). H piglets were removed from sows at day 14 in S litters and weaned to NEW(Natural Early Weaning) Nursery*. The NEW Nursery is equipped with automated milk feeding ad-lib and hovers for intensive management of the young piglet. L by S piglets remained with their mothers for an extra week. At 21 days of age, sows from both S and C were weaned. L by S were moved to the NEW Nursery*; where they remained to 28 days of age. H by S and all C piglets were moved to a standard nursery. L by S piglets were heavier than L by C at 21 days (P<.05)and gained faster than both H and L by C (P<.001) from 14–21 days of age. L by S were heavier than L by C at 56 days of age (P<.01). The NEW Nursery used with split-weaning can decrease the variability of piglet weight at 56 days and diminish the impact of post weaning lag. *NEW Nursery is a product of ICN inc., Box 140, Colfax, IL 61728.

**Key Words:** pig, weaning, growth