

spermic penetration by increasing PVS thickness and cortical granule exocytosis in pigs.

**Key Words:** glutathione, polyspermic penetration, oocyte penetration

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234 **Effects of drought-affected corn and non-starch polysaccharide enzymes on nursery pig performance.** E. L. Frantz<sup>1\*</sup>, H. L. Frobose<sup>1</sup>, J. M. DeRouchey<sup>1</sup>, R. D. Goodband<sup>1</sup>, J. R. Bergstrom<sup>2</sup>, C. K. Jones<sup>1</sup>, <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>DSM Nutritional Products, North America, Marshall, MO

A total of 360 barrows (PIC 1050 × 337, initially 6.71 kg BW) were used to determine the effects of Roxazyme G2G and/or Ronozyme VP on growth performance and nutrient digestibility of nursery pigs fed normal or drought-stressed corn. Initially, corn samples were collected from 34 separate lots and analyzed to find representatives of normal and drought-stressed corn. These same lots were also used in a separate experiment measuring the impact of drought stress on diet manufacturing characteristics. The lot selected to represent the normal corn had a test weight of 25.35 kg/bu, < 5 ppb aflatoxin, 15.0% moisture, and contained 0.77% b-glucan. The lot selected to represent drought-stressed corn had a test weight of 24.63, 6 ppb aflatoxin, 14.3% moisture, and 0.83% b-glucan. Pigs were allotted to pens at weaning (d 0) and were acclimated to a common diet for 10 d before the start of this experiment. On d 10 post-placement, pigs were weighed and pens randomly allotted to 1 of 8 dietary treatments in a completely randomized design. Treatments were arranged in a 2 × 4 factorial with main effects of corn (normal vs. drought-stressed) and enzyme inclusion (none vs. 100 ppm Roxazyme G2G vs. 250 ppm Ronozyme VP vs. 100 ppm Roxazyme G2G + 250 ppm Ronozyme VP). Pigs were fed experimental treatments from d 10 to 35 post-weaning in two phases. Feed and fecal samples were collected on d 30 postweaning and analyzed to determine apparent total tract digestibility of nutrients. The nutrient concentrations of normal and drought-stressed corn were similar, which resulted in few treatment or main effects differences of corn type or enzyme inclusion. No interactions were observed ( $P > 0.24$ ) between corn source and enzyme inclusion. Overall (d 10 to 35), there was no effect on ADG or ADFI, but enzyme inclusion tended to improve ( $P = 0.09$ ; 0.74 vs. 0.69) G:F, which was primarily driven by the improved ( $P = 0.04$ ; 0.76 vs. 0.72) feed efficiency of pigs fed Roxazyme G2G in Phase 1 (d 10 to 25 postweaning). In conclusion, drought stress did not alter the non-starch polysaccharide concentration of corn. Because non-starch polysaccharide substrates were similar across treatments, it was not surprising that enzyme inclusion showed little benefit to nursery pig growth performance; however, improved feed efficiency of pigs fed diets containing Roxazyme G2G from d 10 to 25 postweaning warrants further investigation.

**Key Words:** drought, enzymes, nursery pig

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235 **The effects of an altered suckling treatment on piglet performance during late lactation and the nursery period.** K. M. Gourley<sup>\*</sup>, H. L. Frobose, M. D. Tokach, J. M. DeRouchey, S. S. Dritz, R. D. Goodband, J. L. Nelssen, D. L. Davis, *Kansas State University, Manhattan*

Societal concerns regarding sow housing have renewed interest in lactational estrus stimulation. As manipulation of suckling pressure is a critical component of stimulating estrus in sows during lactation, the effects of an altered suckling treatment (ALT) on nursery pig growth were also studied in a 14-d experiment encompassing late lactation and the early nursery period. A total of 611 pigs (PIC 327 × 1050) nursing 54 sows were used over two farrowing groups. Sows were allotted to treatments on d 18 of lactation when all but the 5 lightest weight pigs from each ALT litter were split-weaned (SW) and moved to a nursery. Pairs of ALT litters were established within parity and the light pigs in these litters combined. Combined litters rotationally suckled each sow of the pair for 12 h/d from d 18 until weaning on d 25 (RS). Control litters were weaned on d 21. At weaning, pigs were randomly assigned to pens (7 pigs/pen). After weaning, pigs were fed a common feed budget of 1.8 kg/pig for Phase 1 followed by a Phase 2 diet until experiment completion. Pigs were weighed on d 18, 21, 25, 28, and 32 of age. Differences in weight gain, litter weight variation, and the association between pig weight category (< 4.5, 4.5 to 5.4, 5.4 to 6.4, and > 6.4 kg) on d 18 and treatment effects were evaluated. For the overall treatment comparison, growth to d 32 was similar (3.30 vs. 3.27 kg) between ALT and controls. An initial weight × treatment interaction ( $P < 0.01$ ) was detected for weight gain from d 18 to 32 because the RS pigs gained 15% more than lightweight controls while SW pigs were 15% lighter than heavyweight controls on d 32. The ALT litters had 50% less ( $P < 0.01$ ) variation from d 18 to 32 as measured by change in CV (−4.2 vs. −1.9) and SD (0.43 vs. 0.92) compared to control litters. When pig weight groups at treatment initiation were compared, the ALT treatment benefited (3.04 vs. 2.59 kg;  $P < 0.001$ ) growth of light (< 4.5 kg) pigs but reduced (3.43 vs. 3.70 kg;  $P < 0.01$ ) the weight gain of heavy (> 6.4 kg) pigs versus controls. While the ALT treatment used to stimulate lactational estrus improved litter variation without negatively impacting piglet growth, additional investigation is needed to determine the effects of the ALT treatment on ultimate market weight and economic implications.

**Key Words:** intermittent suckling, nursery pig, split weaning

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236 **Effect of diet choices on feed consumption behavior of cattle.** E. VenJohn<sup>\*</sup>, K. A. Miller, C. L. Van Bibber-Krueger, J. S. Drouillard, *Kansas State University, Manhattan*

Cattle are by nature discriminatory in their eating behavior, often selecting some plant species or parts of plants over oth-