assigned to one of two mixed gender pens. The system was installed over each pen and continuously collected data for 15 d. Evaluation of 1,020 randomly selected frames indicated an 99.8% accuracy rate for correctly identifying pigs' location, body orientation and identity when classified by the system as standing/walking. When classified as lying, orientation/identity accuracy was reduced to 92.5%. Classification accuracy for activities was 99.1, 93.6, 97.3, and 80.0% for lying, standing/walking, at the feeder and at the waterer, respectively. Activity data generated from the UNL trial indicated that during the first 15 d of the nursery phase, the average time spent 78.3, 17.5, 6.5, and 0.6% of time lying, standing/walking, at the feeder, or at the waterer, respectively. Average daily distance traveled was 1,213.6 m (range: 876 - 1,438 m). Results indicated that time associated with each activity changed over time ($P \leq 0.001$). On d 15, time lying and time at the feeder were greater ($P \leq 0.001$) than d 1 (8.0 and 6.0%, respectively). Time standing/walking and time at the waterer were less on d 15, when compared to d 1 (9.6 and 0.7%, respectively). Gender had no effect ($P \geq 0.25$) on time lying, walking, at the feeder, or total distance traveled. Gilts spent less ($P = 0.007$) time standing and more ($P = 0.03$) time at the waterer than barrows. Results suggest that the novel computer vision system has the capability and sensitivity to accurately identify, maintain identification, and track the activities of group housed nursery pigs.

Key Words: Activity, Behavior, Nursery

132 Effects of Crystalline Amino Acid Concentration in Diets with or without Formaldehyde-Treatment on Nursery Pig Growth Performance and Fecal Microbial Populations.

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Weaned pigs (n=1,235, 12.2 ± 0.12 kg BW) were used in a 28-d study evaluating crystalline AA concentrations in diets with or without formaldehyde treatment on growth performance, feed bacteria concentration, Lys content, and fecal microbial diversity. Pigs were weaned at approximately 21 d, fed a common starter diet for 10 d, and allotted to pens based on BW in a completely randomized block design. Experimental diets were fed in meal form in 2 phases (Phase 1, d 0 to 12; and Phase 2, 12 to 28). Treatments were arranged as a 2 × 2 + 1 factorial with main effects of formaldehyde treatment (0 vs. 0.30% [Sal CURB®, Kemin Industries Inc., Des Moines, IA]) and crystalline AA concentration (low vs. high) plus a control diet. The control represented diets that met the assumed standardized ileal digestibility (SID) Lys requirement. The remaining diets were formulated to contain 80% of the control SID Lys. Feed bacterial concentration was determined by performing aerobic plate counts for *Enterobacteriaceae* and total coliform counts on feed samples. The samples were collected from each batch of feed manufactured at the feed mill and directly from feeders at the farm. Total, available, and free Lys analyses were conducted on feed samples collected from each phase. Fecal microbial community analysis was assessed using 16S rDNA sequencing. Control fed pigs had better performance compared to other dietary treatments. Formaldehyde-treated diets reduced ($P < 0.05$) ADG. There was no evidence crystalline AA concentration affected ADG. A crystalline AA×formaldehyde interaction ($P < 0.05$) was observed for ADFI and G:F with formaldehyde reducing ADFI only in high crystalline AA diets and G:F in low crystalline AA diets. Formaldehyde reduced or eliminated complete feed bacterial concentrations in phase 1 and reduced total and available Lys in the low and high crystalline AA diets, but there was no evidence of influence on free Lys concentration. At the family level, formaldehyde reduced ($P < 0.001$) fecal *Lactobacillaceae* and *Streptococcacae* but increased ($P < 0.001$) *Clostridiaceae*. Overall, no evidence of difference existed for the level of crystalline AAs impact on growth rate while formaldehyde treatment of diets negatively decreased growth rate and Lys availability in low crystalline AA diets as well as influenced fecal microbial diversity.

Key Words: Formaldehyde, Microbiome, Nursery pig

		Low crystalline AA		High crystalline AA		
	Control	-formaldehyde	+formaldehyde	-formaldehyde	+formaldehyde	SEM
ADG, g[ab]	601	542	513	543	519	7.30
ADFI, g[c]	945	927	930	960	911	12.4
G:F[bc]	0.636	0.585	0.553	0.566	0.567	0.003

[a]Formaldehyde ($P < 0.001$), [b]Control vs. others ($P < 0.001$), [c]Crystalline AA×Formaldehyde ($P < 0.001$).