386 Validation of individual computerized sow feeding systems in lactation. G. E. NIchols[1,*], K. M. Gourley[1], J. M. DeRouchey[1], J. C. Woodworth[1], S. S. Dritz[1], R. D. Goodband[1], H. L. Frobose[2], *[1]Kansas State University, Manhattan, [2]Jyga Technologies Inc., Quebec City, QC, Canada*.

Two experiments evaluated the accuracy of individual computerized feed delivery systems for lactating sows (GESTAL Solo; JYGA Technologies, Inc., Quebec City, Canada). The feeders volumetrically dispense feed based on rotations of a screw auger. In Exp. 1, 29 prototype feeders were used across 3 farrowing groups. On d 0, 4 feeders were selected to calibrate the computer system to the bulk density of the lactation diet. Feeders were programmed for 5 feeding periods per day with feeding period allowing 2 to 4 feed drops (depending on time of day) triggered by the sow at a minimum of 15-min intervals. Sows activate a trigger within the feed bowl to receive a targeted amount of feed (680 g), and the computerized feeder records the delivery amount based on calibration values. Total lactation feed intake was recorded by weighing the quantity of feed provided to the feeding system for each sow throughout lactation. Feed delivered by a single trigger activation on d 0 and 10 and day of weaning was collected and weighed with a scale and compared with the computer record. Also, total feed delivered over the lactation period was compared between the recorded computer measurement and scale weight. Average percentage difference between the 2 measurements ranged from 0.01 to 36.6% ($P < 0.001$, SEM 3.0) for a single trigger event. Computer recorded total lactation feed was marginally less ($P < 0.089$) than actual weight of feed delivered (102.8 vs. 107.1 kg [SEM 1.8]). Individual feeders had recorded total feed delivery ranging from 77 to 122% of actual weight delivered. Based on the variation observed, a new feeder design was evaluated (plastic hopper manufacturing was injection molded vs. rotational molded). In Exp. 2, 29 feeders were used in a single farrowing group to evaluate the variation of the new feeders. Feeders were calibrated and data was collected using the same procedures as Exp. 1, except individual feed drops were collected 8 times per feeder throughout lactation. Average percentage difference across all feeders ranged from 3.8 to 13.4% ($P < 0.001$, SEM 1.5). There was no evidence ($P < 0.542$) of difference between computer recorded total lactation feed and actual weight of feed delivered (124.8 vs. 121.8 kg [SEM 1.8]). Individual feeders had recorded total feed delivery ranging from 90.4 to 106.4% of actual weight delivered. Overall, this study shows that the new model was less variable in feed drops and total feed delivery.

Key Words: computerized feeder, lactation, validation
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387 Cooking from a frozen state, endpoint temperature, and postcookery chilling affect internal and external color and cooking losses in ground beef patties. Z. M. Hicks[*], J. W. S. Yancey, J. A. Apple, T. M. Johnson, *Department of Animal Science, University of Arkansas Division of Agriculture, Fayetteville*.

To determine the effects of cooking state (frozen vs. thawed), endpoint temperature (65.5 vs. 73.9°C), and postcookery chilling on color of ground beef patties, 85% coarse-ground beef was purchased and ground through a 9.5-mm plate, formed into 115-g patties ($n = 240$), and crust frozen before patties were vacuum packaged and stored at −10°C. Packages were either thawed in a water bath for 2 h prior to cooking or cooked directly from frozen. Within each package, patties were weighed before being cooked to their assigned temperature and either allowed to cool at room temperature on paper plates or placed in a plastic baggie and submerged in an ice water bath. Patty temperature was monitored at 0, 1, 5, 10, 15, and 30 min after cooking, and patties were reweighed to calculate cook loss percentage before external and internal instrumental color (L*, a*, and b*) was measured on each patty. Patties cooked from frozen, to 73.9°C, or cooled at room temperature had greater ($P < 0.05$) cooking losses than those cooked from a thawed state, to 65.5°C, or cooled in an ice bath, respectively. External color of patties cooked from a thawed state was lighter (greater L*; $P < 0.05$), more red (greater a*; $P < 0.05$), and more yellow (greater b*; $P < 0.05$) than those cooked from frozen. Moreover, L*, a*, and b* values were greater ($P < 0.05$) for the surface of patties cooked to 65.5°C than 73.9°C, whereas L*, a*, and b* values were greater ($P < 0.05$), externally, for patties cooled in an ice bath than those cooled at room temperature. Internally, patties cooked from frozen, cooked to 65.5°C, or cooled in an ice bath were lighter ($P < 0.05$) than those cooked from a thawed state, cooked to 73.9°C, or cooled at room temperature, respectively. Patties cooked to 65.5°C from a thawed state had the greatest ($P < 0.05$) internal a* and b* values, whereas frozen patties cooked to 73.9°C had the least red and yellow ($P < 0.05$) internal color. Moreover, thawed patties cooked and chilled in an ice bath were more red ($P < 0.05$), internally, than other cooking state × cooling method combinations. It was expected that cooking to 65.5°C would result in redder internal cooked color, but persistent redness was also observed when patties were cooked from a thawed, rather than frozen, state and when cooled in an ice bath.

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