PSII-6 Performance based NEm requirement adjustment for heifers fed during winter months in eastern South Dakota compared to the Texas panhandle. Zachary Smith[1], Ethan J. Blom[1], Wesley W. Gentry[1], Wyatt Smith[1], Rodney Preston[2], Robbi H. Pritchard[3], *[1]South Dakota State University, [2]Texas Tech University, [3]Annawan Cattle*

Crossbred beef heifers [n = 96; initial shrunk BW=238 kg (SD 21.5)] were used in a completely randomized design to evaluate climatic effects on feedlot heifer growth and efficiency. The study was conducted from November 8, 1991 to May 11, 1992. Heifers were assembled into groups at the Ruminant Nutrition Center (RNC) in Brookings, SD. One group (TX; n = 48) was shipped to New Deal, Texas and fed on slatted-concrete floors, and the second group (SD; n = 48), was shipped halfway to Texas, returned to the RNC, and fed on solid-concrete floors. Transit distance was 1,530 km. Pen was the experimental unit (6 to 8 head·pen^{-1}); diets, health management, and implant programs were normalized across locations. The finishing diet was fed from d 33 to 185 at both locations and the energetics assessment was for the period from d 60 to 185. There were 18 d below -7.8°C and 102 d below 5°C in SD. Transit shrink, estimated empty body fat % (EBF), BW adjusted to 28% EBF (AFBW), and DMI did not differ ($P \geq 0.10$). Heifer ADG was 18% greater ($P < 0.05$) in TX (1.40 vs. 1.16 ± 0.037 kg). Observed vs. predicted dietary energy differed ($P \leq 0.05$), for NEm (0.97 vs. 0.87 ± 0.013) and NEg (0.97 vs. 0.84 ± 0.016) for TX and SD, respectively. Using calculated diet energy values based upon TX heifer performance as a reference, relative adjustments to metabolic rate were calculated. The estimated metabolic rate was elevated ($P < 0.05$) for SD heifers (0.077 vs. 0.101 ± 0.0031 Mcal/MBS). These results indicate that heifers fed in South Dakota had a 31% increase in metabolic rate when compared to heifers fed in the Texas panhandle. More of these types of assessments are needed to improve projection and tracking models used in precision cattle feeding.

Key words: beef, dietary energetics, metabolic rate

SWINE TRANSLATIONAL

PSII-8 Defining pig sort loss with a simulation of various marketing options of pigs with the assumption that marketing cuts improve variation in carcass weight and leanness. Ziyu Zhou, Benjamin M. Bohrer, *University of Guelph*

The study offers clarification on pig sort loss and associated marketing strategies using a simulated pig marketing modeling system. The objective was to investigate the economic variability associated with marketing strategies using the simulated pig marketing models. Typically, individual pigs are assessed by measuring carcass weight and predicted leanness, which is then incorporated into a two-factor grid for producer payment, providing incentives for producers who consistently produce desirable carcasses and discounts for producers who produce inconsistent or undesirable carcasses. The simulation considered six producers with the presumption that each had a maximum capacity for 4,800 grow-finish pigs, in order to imitate commercial finishing barns with 48 pens of roughly 100 pigs per pen. The simulation dataset was created using a random number generator with the inverse of the cumulative normal distribution function on Microsoft Excel (Microsoft Inc., USA) with a targeted carcass weight (102.86 kg) and average predicted lean (60%) based on industry averages and previous research studies. Under the assumption that variability in carcass weight and predicted leanness decreased with the addition of each marketing cut, the simulation incorporated a standard deviation reduction of 20% per increase of one marketing cut for both carcass weight and predicted leanness of the population of pigs marketed on a given day. Consequently, there was an increase in profitability; as well as, a decrease in pig sort loss (defined with both carcass weight and predicted leanness) with each marketing cut, but these profitability improvements diminished (as a percentage improvement) with each additional marketing cut. Finally, this simulation provides an appropriate framework and the necessary equations to allow repetition of the different parameters and marketing grid specifically related to an individual producer and processing facility. Thus, helping the industry gain a better understanding of how market cuts can decrease variation and consequently improve profitability.

Key words: pig sort loss, pig marketing, pork profitability