PSII-22 Impact of stocking density and number of pigs per feeder space with wet/dry feeders: an economic analysis. Ricardo M. Garcia[1], Cesar A. P. Garbossa[2], Marvin E. Wastell[3], Allan P. Schinckel[1], *[1]Purdue University, [2]University of São Paulo, [3]GroMaster*

The objective of this study was to evaluate the economically most profitable stocking density (SDEN) and the number of pigs per feeder space (PF) with a Crystal Springs wet/dry single-space double-sided feeder model F1-115. Data from a trial was used to model the optimal value. The initial trial included 3182 pigs from three consecutive grow-finish groups. The experimental treatments were designed as a two by three factorial (SDEN of 0.65 or 0.78 m^2/pig with PF of 10, 13, or 16). Each pen was equipped with one double-sided wet/dry feeder, 37.5 cm wide, with one nipple drinker. Pigs with less floor space allowance had reduced ADG (1.00 versus 1.02 kg/d, $P = 0.002$) with improved G:F (0.402 versus 0.397, $P = 0.039$). Overall, ADG had a quadratic relationship ($P = 0.005$) with PF with means of 1.03, 1.01, and 1.01 kg/d for 10, 13, and 16 respectively. The G:F had a quadratic relationship ($P = 0.005$) with the number of pigs PF with means of 0.395, 0.404, and 0.400 for 10, 13, and 16 respectively. The G:F and ADG data were fitted to a regression equation including SDEN (linear) and PF (linear –quadratic). A pork production cost model was used to evaluate the impact of a range of SDEN (0.65 to 0.758 m^2/pig) and PF (10 to 16) on annual profit of a grow-finish barn including feeder cost. Annual profit for a 1200 head grow-finisher was fitted to linear and quadratic regression of SDEN and PF (R^2= 0.999). The optimal SDEN was 0.65 m^2 per pig and 13 to 14 (13.26) PF. The differences between the maximum and the minimum net income year values for PF and PF were $4055 and $21667 USD respectively. Stocking density had a greater impact than the number of pigs per feeder space.

Key words: profit, stocking, feeder

PSII-21 Evaluation of the impact of the magnitude of errors in the sorting of pigs and market price for market on the optimal market weight. Jian Cheng[1], Joanna Claudy[2], Yichen Que[3], Allan P. Schinckel[2], *[1]Iowa State University, [2]Purdue University, [3]University of Minnesota*

The objective was to estimate the impact the accuracy in which pigs are sorted for marketing has on the optimal market carcass weight (CW) using a stochastic model. Three levels of bodyweight estimation error (BWEE) with SD's of 0, 4, and 8% of BW were simulated. Initially, pigs were marketed in 3 marketing cuts (MCUT), 25% at 169, 25% at 179, and 50% at 193 d of age. The timing of marketing was shifted in 7d intervals with mean marketing ages of 155.5 to 211.5 d. Sort loss was calculated using the Tyson Foods marketing system. Sort loss ($/pig) values were fitted to a polynomial function of mean CW for each level of BWEE. Pork production costs were estimated using an industry spreadsheet. A base price of $1.433/kg of CW was used to produce a small profit per pig. Market prices of $1.653 and $1.322/kg of CW were used to reflect times of large profit or losses per pig. Barrow and gilt lean premiums were included. The optimal CW's to maximize profit/pig and daily returns above daily costs were estimated for each combination of BWEE and market price. With accurate sorting (BWEE = 0), the optimal mean age was 183.5d at a mean CW of 96.4 kg and a profit of $3.49/pig. With less accurate sorting (BWEE = 8%), the optimal mean age decreased to 181.5 d with mean CW of 95.2 kg, and profit of $2.89/pig. With this marketing system, the optimal market ages decreased by 1 to 2d and CW's decreased by 0.6 to 1.3kg as the accuracy of sorting decreased. The lower market price reduced the optimal CW by 1.2kg (2d) and increased 2.4kg (4d) with the higher market price.

Key words: pork, marketing, sort loss, stochastic model, pig supply chain