focused on minimizing the decline in DMI the day or two prior to parturition. Studies in other laboratories have shown that limit-fed cows, or cows with low intakes, do not have as severe changes in DMI prepartum and have less liver triglyceride after parturition compared to cows with high DMI. These studies further support the concept that mean DMI may be less important than DMI change during the pre-fresh period. Additionally, other factors such as body condition and parity have been shown to influence DMI. The decrease in DMI prepartum is more severe as body condition increases. It is known that heifers have less severe declines in DMI prepartum and lower liver TG concentrations compared to cows. Perhaps the DMI patterns for heifers and obese cows influence their susceptibility to postpartum complications. This paper will explore the relationships between changes in DMI and mean DMI in the pre-fresh period with postpartum DMI, milk production, and metabolic status of dairy cows.

Key Words: Dry Matter Intake, Transition Cow, Fatty Liver

47 Rumen-stable choline for transition dairy cows.

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The objective of this summary is to review the responses to rumen-stable choline in transition dairy cows. The database of information on rumen-stable choline for transition cows is growing, and showing consistency in patterns and magnitude of responses. Effective rumen-stable technology is required to supply ruminants with choline due to near complete ruminal fermentation of dietary choline sources. The classic choline deficiency symptom across species is fatty liver; augmenting supply of choline to transition dairy cows can effectively minimize lipid infiltration of the liver under typical nutritional and management conditions. Correspondingly, indicators of glucose status and metabolism have improved with rumen-stable choline use in transition cows. A growing database of university and field level research trials is supporting a 2.5 kg/d increase in milk yield in early lactation, which a range of less than 1 to 4.5 kg/d. A recent university based trial reported a .9 kg/d improvement in pre and postpartum dry matter intake that is likely a secondary, rather than primary response to choline supplementation. Most recent research is focusing on changes in subclinical ketosis and reproduction performance with choline supplementation to transition cows. Preliminary field trials have supported improvements in both areas with small animal numbers. More research is required to substantiate the magnitude and consistency of responses in these areas. Diligence in characterizing the rumen-stability of rumen-stable choline supplements under baseline and normal feeding and handling conditions is required to gain effective responses to its supplementation. More basic research into the choline requirements of cows across stages of lactation and across animal, dietary and management conditions to allow for more dynamic nutrient recommendations will improve the application of this technology under commercial conditions. Rumen-stable choline supplementation to transition dairy cows is creating responses consistent with the biology of the nutrient and are of value to producers under commercial conditions.

Key Words: Choline, Rumen-Stable, Transition Cow

48 Measuring pork quality to educate producers and allow them to obtain value-added marketing opportunities.

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Pork producers are aggressively pursuing value-added marketing opportunities. An extension program was developed to assist producers who are targeting products toward markets where the value attributes are antibiotic free, family-farmed, welfare friendly, or other label attributes that are not necessarily associated with muscle quality. Market hogs (n = 354) from 11 producers were evaluated for hot carcass wt, lean composition and fresh pork quality. At 24 h postmortem, midline fat depth was measured at the first rib, last rib, and last lumbar locations. The right loin from each carcass was split at the 10th rib for measurement of ultimate pH, Minolta color, drip loss, loin area, and marbling score. Loins were classified as red, firm and normal (RFN), red, soft and exudative (RSE), or PSE. Carcass composition differed by producer ($P < 0.001$) ranging in fat free lean percentage from 46.4 ± 1.2 to 56.0 ± 1.1. In addition, loins from different producers significantly differed in all quality measures. Across producer, loin drip loss percentage ranged from 2.03 ± .44 to 5.53 ± .54 ($P < 0.001$), Minolta L* value ranged from 51.7 ± .7 to 58.9 ± 1.1 ($P < 0.001$), ultimate pH ranged from 5.66 ± .03 to 6.19 ± .03 ($P< 0.001$), and marbling score ranged from 1.3 ± .3 to 2.3 ± .2 ($P < 0.001$). Chi-square analysis and Cochran-Mantel-Haenszel statistics were used to test differences in pork quality classification across producer. Pork quality classification differed by producer ($P < 0.01$) ranging from 100% RFN to 56.8% RFN, 13.6% RSE and 29.6% PSE. These results were shared with producers during an educational program that described quality measures, presented individual results, and described methods to improve quality at the farm level. Producers were able to learn recommended production practices and share knowledge among their peer group. In addition, a 17-step assessment program was developed to evaluate and improve farm level control points that impact fresh pork quality. Assessment programs were also developed for six other value-added attributes. This program has helped pork producers improve pork quality, gain entry into value-added markets, and secure repeat sales.

Key Words: Extension, Pork, Quality

49 Using heart girth to estimate weight in finishing pigs.

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Heart girth (HG) and body weight (BW) were measured on 100 growing-finishing pigs (22.8 to 123.8 kg) at the KSU Swine Teaching and Research Center. Heart girth was measured using a cloth measuring tape. The tape was placed directly behind the front legs and then wrapped around the pig and read directly behind the shoulders. A regression equation was developed to predict pig BW from the HG measurement (pig weight kg = 10.1709 x Heart girth, cm -205.7492). Heart girth was strongly correlated (r2= .98) with BW, with a 95% confidence interval of 4.5 kg. To validate our equation, we weighed and measured HG on 40 and 58 pigs from two commercial farms, and a group of 165 pigs at the 2002 KS Swine Classic Youth Exposition. At the first commercial farm, the actual measured pig BW fit within the 95% confidence interval from their predicted BW in all cases. The average residual (difference between predicted and actual BW) of the 40 pigs was -0.32 kg with a range of 1.8 kg. The 58 pigs from the second commercial farm also all were within the 95% confidence interval of their projected weights. The average residual of the 58 pigs was -0.41 kg with a range of 1.4 kg. The actual BW of pigs at the Swine Classic averaged 7.3 kg greater than their predicted BW with a range of 3.9 kg. The actual weights failed to fall within the 95% confidence interval for the developed regression equation. This was probably due to weight loss during transportation to the show and limited feed and water, as all pigs were weighed within approximately 1 h of arrival. Using HG to estimate pig weight can be very useful for 4-Hers and swine producers. However, it is important to emphasize the need for accuracy of the HG measurement. Based on our equation, every 2.54 cm the HG is under- or over-estimated, estimated pig BW will be off by 4.5 kg. Averaging several HG measurements from individual pigs should more accurately predict BW. In addition, pigs should not be measured when withheld from feed or water to insure accuracy of results.

Key Words: Heart Girth, Finishing Pigs, Swine

50 Development of a stochastic pig compositional growth model.

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A stochastic pig compositional growth model was developed using mixed model nonlinear functions. Serial body weight (BW) measurements were fitted to mixed model nonlinear equations with three parameters and two random effects. The best model for BW based on Akaike's Information Criteria (AIC) values was $BW_{it} = (C + c_i)$ (1 x exp (-exp (M' + m'_i) t^A)) + birth weight + e_{it}, where C, M', and A are fixed population mean parameters; c_i and m'_i are random effects for the i^{th} pig; t is days of age; birth weight is a constant (1.4 kg); and e_{it} is the residual error. Empty body protein mass (EBPRO) data were predicted from serial real-time ultrasound and BW measurements. Predicted EBPRO data were fit to a nonlinear function of BW with one random effect: EBPRO = C $(f(BW))$ + cp_i $(f(BW))^D$, where $f(BW)$ = (1 x exp (b_0 + b_1 BW + b_2 $(BW)^2$), C and D are fixed parameters, and cp_i is a random effect. The value of D, 1.895 (SE = 0.09) indicates the between pig variation of empty body protein mass percentage increases as empty body protein or BW increase. The model accounts for the relationship among the random effects for BW growth and cp_i. Daily lipid accretion was predicted from genetic population-sex specific relationships between BW, EBPRO, and empty body lipid mass: empty body weight = 0.93