65 A comparison of carcass characteristics of genetically similar Angus steers fed as calves or yearlings. E.C. Smith*, G.H. Rouse, D. Wilson, and R.D. Johnson, Iowa State University, Ames.

This experiment compared carcass parameters and tenderness on genetically similar Angus steers fed either as calves or yearlings. Two hundred five calf fed steers and two hundred one yearling fed steers were randomly split into three feeding groups with feeding period lengths of 202, 237, or 272 days and 100, 128, or 170 days respectively. All cattle received an 85% concentrate ration of corn, corn silage, and high moisture corn. Age of calves and yearlings entering the feedlot was 7 and 17 months respectively. Routine carcass measures were taken after a 72 hour chill at a commercial packing plant. The 13th rib section was removed from the right side of the carcass and returned to the Iowa State meat laboratory for proximate analysis and Instron shear force evaluation. Yearling steer carcasses were significantly heavier ($p<.01$) than carcasses from calves, 333 vs 321 kgs respectively. Calves became significantly heavier ($p<.05$) with each successive serial slaughter while yearlings only increased significantly between the first and last slaughter. Calves had significantly more ($p<.01$) subcutaneous fat, 1.6 vs 1.37 cm, at the 12-13th rib when compared to yearling steers. Calves and yearlings increased significantly ($p<.05$) in fat thickness as time-on-feed increased. Yearling steers had significantly larger ribeye areas ($p<.01$) than calves. Marbling score and percent fat was significantly higher($p<.01$) for calves than yearlings.. Calves and yearlings did increase significantly in marbling score ($p<.05$) with increased time-on-feed. Covariate analysis using fat as a covariate reduced the differnce in marbling score between calves and yearlings. Peak shear force values were significantly lower ($p<.01$) for calf fed steers compared to yearling fed steers. There was not a significant difference in peak shear force between calf fed serial slaughter groups. The third slaughter of yearling steers had significantly higher shear force values ($p<.05$) than all other slaughter groups.. This study reveals that calf fed steers produced a more tender endproduct.

Key Words: Calves, Yearlings, Marbling score, Tenderness

66 The performance of pigs to heavier slaughter weights. F. Cisneros,* M. Ellis, J. McCaw, F. K. McKeith and Y. Hyun, University of Illinois, Urbana.

A study was carried out to investigate the growth and carcass characteristics of two genotypes (X and Y) and two sexes (barrows(B) and gilts(G)) of pigs to slaughter weights (SW) of 100, 115, 130, 145, or 160 kg. A total of 160 animals were reared in single-sex, single-genotype groups (4 pigs/group) from a mean pen weight of 60 kg under ad libitum feeding using a diet with 15.8% crude protein and 3300 kcal ME/kg. Pigs were taken off test when the mean pen weight reached the designated SW and half of the pigs from each group (80 animals in total) were slaughtered and subjected to carcass evaluation. Data were analyzed using the GLM procedure of SAS. The model used included genotype, sex, genotype x sex interaction, initial weight (covariate for growth data) and SW fitted as a regression. For all variables reported, the linear regression on SW gave the best fit to the data. There were no significant effects of genotype or sex on the slopes of the regression for daily feed intake (DFI), daily gain (DG), gain:feed (G:F) or 10th rib backfat (BF10) against SW with the overall regressions (per kg increase in SW) equating to +6.9 g/kg (s.e. 2.3, $P<.001$) for DFI, -0.05 g/kg (.07, $P>.95$) for DG, -0.58 g/kg (.28, $P<.05$) for G:F, and + 0.28 mm/kg (.03, $P<.05$) for BF10 respectively. The overall regression of loin-eye area on SW was +0.21 cm^2/kg (.03, $P<.05$). However, there was a significant difference between the slopes of the two genotypes with the coefficients being +0.27 (.04) and + 0.13 (.04) cm^2/kg for X and Y respectively. There was a significant interaction between genotype and sex ($P<.05$) for the regression of carcass weight (CW) and dressing % (DP) on SW with X gilts and Y barrows showing a smaller increase in CW with SW (+0.71 (.03) and +0.72 (.03) kg/kg resp.) compared to X-B and Y-G (+0.80 (.03) and +0.82 (.03) kg/kg resp.). Thus, the regression of DP on SW for X-G and Y-B was negative (-0.04 (.03) and -0.03 (.03) percentage units/kg resp.) whereas those for X-B and Y-G were positive (+0.05 (.03) and +0.06 (.03) percentage units/kg resp.). The results of this study provide the basis for an economic evaluation of growing pigs to heavier slaughter weights than those currently used in practice.

Key Words: Pigs, Slaughter Weight, Growth, Carcass

67 Influence of dietary lysine on carcass characteristics and subprimal cut distribution of high lean growth gilts fed to 105 and 136 kg. S.R. Stuewe*, J.A. Unruh, K.G. Friesen, D.H. Kropf, J.L. Nelssen, R.D. Goodband, and M.D. Tokach, Kansas State University, Manhattan.

A total of 72 high lean growth gilts were fed to 105 or 136 kg to determine the influence of dietary lysine on carcass characteristics and subprimal cut distribution. The gilts were blocked by initial weight and randomly assigned to one of six lysine treatments. (Digestible lysine % of .44, .54, .64, .74, .84 or .94 correspond to .55, .67, .79, .91, 1.03 and 1.15 % total lysine, respectively). At 24 h postmortem, carcass data were collected and left sides were fabricated into closely trimmed, bone-in and boneless, subprimal cuts according to National Association of Meat Purveyors specifications. From gilts fed to 105 kg, there was a negative linear effect ($P<.05$) in the percentages of the 402 Ham and the 402C Ham, boneless. There were no differences ($P>.10$) in other subprimal cuts or in carcass characteristics. From gilts fed to 136 kg, there was a quadratic effect ($P<.05$) for average backfat and USDA grade. There were no differences ($P>.10$) in other carcass characteristics or subprimal cut distribution. For high lean growth gilts, these data suggest that feeding lysine at levels to maximize growth efficiency will not negatively affect carcass characteristics or subprimal cut distribution.

	% Digestible lysine						
	.44	.54	.64	.74	.84	.94	C.V.
Gilts fed to 105 kg:							
HCW, kg	74.8	73.8	74.0	75.0	74.3	75.4	4.1
10th rib BF, cm	1.6	1.9	1.9	1.8	1.8	1.9	22.9
LEA, cm^2	35.0	36.2	35.6	36.9	36.2	36.2	11.5
Percent lean*	53.9	53.6	53.2	53.9	53.6	53.1	5.1
Bnls ham, loin and shoulder, %	52.2	50.8	51.1	51.6	50.4	50.6	4.2
Gilts fed to 136 kg:							
HCW, kg	102.5	102.6	104.4	101.5	100.9	100.5	3.4
10th rib BF, cm	2.5	2.8	2.8	2.5	3.0	2.4	22.9
LEA, cm^2	40.0	45.0	41.2	41.9	41.9	39.4	11.8
Percent lean*	49.4	49.9	49.4	50.2	48.8	49.8	5.6
Bnls ham, loin and shoulder, %	48.2	47.4	48.5	48.0	46.6	48.4	4.8

* 100 X [7.231+(0.437 X HCW)-(18.746 X 10th rib BF)+(3.877 X LEA) / HCW

Key Words: Gilts, Lysine, Meat Yield

68 Evaluation of bioelectrical impedance to predict fat-free mass of pigs from 50 to 130 kg. P.M. Swantek*, J.D. Crenshaw, R.J. Wehri and P.T. Berg. North Dakota State University.

Seventy-two Duroc by Hampshire by Yorkshire pigs were used to evaluate bioelectrical impedance procedures to predict fat-free mass of live pigs. Pigs were allotted by sex, ancestry and weight. A pen of six gilts and a pen of six barrows were randomly selected for slaughter when the pen averaged either 70, 90, 110 or 130 kg. Twenty-four pigs (12 gilts, 12 barrows) averaging 50 $\pm$ 2.4 kg were slaughtered to establish a baseline for body composition. Pigs were weighed and measured with a four terminal plethysmograph for resistance (ohm), reactance (ohm) and length (cm) between detector terminals. Pigs were slaughtered 12 h later and carcasses chilled for 24 h. The right side was twice ground, mixed, and samples frozen for later analyses of fat content. Actual fat-free mass (ActFFM) was determined from the weights and percentage fat. Predicted fat-free mass (PredFFM) was calculated using the equation:

.486 live weight - .881 resistance + 4.80 length + .860 reactance + 7.959

	Barrows					Gilts				
Weights, kg	50	70	90	110	130	50	70	90	110	130
ActFFM, kg	37.0	50.9	62.4	71.0	80.1	37.5	50.8	63.2	75.8	89.9
PredFFM, kg	30.9	45.4	58.2	66.7	77.4	30.2	45.4	58.6	71.1	83.2
r	.66[a]	.74[b]	.94[a]	.96[a]	.66	.72[a]	.97[a]	.94[a]	.68	.91[a]

[a] Correlation coefficient ($P < .02$). [b] Correlation coefficient ($P < .09$).

Fat-free mass was underestimated by the prediction equation at all slaughter weights, but the predicted fat-free mass was highly correlated to the actual fat-free mass except for the 110 kg gilts ($r = .68$, $P = .15$) and the 130 kg barrows ($r = .65$, $P = .16$). The data supports the use of bioelectrical impedance to measure fat-free mass over a wide range of weights for the finishing pig.

Key Words: Pigs, Electrical resistivity, Fat-free mass.