

**Carcass Pricing in 2002:
Revisiting the Impact of Lean Growth On Carcass Value From Different
Packer Programs**

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In 1998, the impact of carcass traits resulting from genetic type, end weight and diet were measured across 10 major packer carcass pricing programs as a part of the Quality Lean Growth Modeling project (QLGM). Ten packer programs were used to evaluate each carcass produced in the Quality Lean Growth Modeling feeding trials. The 10 packers accounted for approximately three fourths of the total U.S. hog kill capacity in 1997.

For the “Find the Highest Value from Your Pigs” conference of 2002, the authors were asked to update their findings to reflect 2002 packer programs. In the process the authors were to update a spreadsheet computer program used to evaluate the pricing programs to reflect current carcass pricing. This paper presents the results of both projects.

Evaluating Carcass Pricing Programs

The evaluation that will be presented represents a 2002 “snap shot” of the total returns that loads of pigs of the six genetic types fed to differing end point from QLGM would have fetched had each packer used the same base price. The base carcass price is that price at which carcass characteristic discounts and or premiums are to be applied. Of course, packers don’t necessarily offer the same base price. In fact, studies of the actual prices paid by packer programs have shown differences in packer base prices to be more important in explaining differences in total carcass value than carcass characteristic premiums and discount. So the results presented here should not be interpreted as actual differences in prices resulting from differing packer carcass pricing programs. However, the results can illuminate the differences in value packers may attach to the various carcass traits resulting from the interaction of genetics and market weights.

The major determinants of the premiums or discounts applied to the packer’s base carcass price are carcass weight, backfat, and loin depth. Carcass weight multiplied by the final adjusted price represents total carcass value. Of the 10 programs used to evaluate carcass value in 1998, 7 had discounts and premiums tied to a lean meat ratio formed from the backfat and loin depth

reading taken from an optical probe. Six of the programs used a similar lean meat ratio formula calculated as: $\text{Percent Lean} = 58.86 + (-.61 * \text{Backfat mm}) + (.12 * \text{Loin Depth mm})$. Of these 6 programs, the lean meat ratio at which premiums or discounts were awarded ranged from a low of 47% to a high of 52.5%. Of the remaining 3 programs, 1 had a separate discount and premium schedule for backfat and loin depth. The remaining 2 programs used only backfat depth measured at the last rib to determine lean discounts or premiums. Optimal carcass weights varied widely among the 10 packer programs. Light weight discounts occurred at 160 to 172 lb while heavy carcasses were discounted at levels ranging from 200 to 243 lb of carcass weight.

Of the 10 packer program evaluated in 1998, only 8 remained as separate operating entities in 2002. Of these 8, all but 2 packers used a lean meat ratio of some type to determine lean meat premiums and/or discount. However of the 6 packers using such a ratio, at least 3 different formulas were being used. The reduction in the original 10 packers to 8 combined with the variation in the remaining carcass pricing programs makes a direct comparison to the 1998 results difficult. As a result, the authors have chosen to utilize the carcasses resulting from the original QLGM project in combination with the updated carcass evaluation software to illustrate the carcass pricing situation faced by producers in 2002. Two new packers were added to the 8 remaining packers of the 1998 study to again provide 10 different carcass pricing programs. The two new packers added both use a lean meat ratio to determine carcass trait premiums. Thus, of the 10 packers considered in this study, 8 use lean meat ratios, 1 uses separate loin and backfat measurements, and 1 uses only a backfat measurement to calculate carcass trait premium and discounts.

Quality Lean Growth Modeling Results Revisited

The pertinent characteristics of the carcasses resulting from a combination of 6 genetic types and 3 end weights was evaluated against each of the 10 packer pricing program for 2002. The original study fed the test pigs 4 different rations but 3 of the 4 rations produced no difference in the resulting carcasses. So each of the 3 diet groups were lumped together to produce a sample for evaluation. The average measure along with the variability in each characteristic as measured by the standard deviation within genetic type and end weight is presented in table 1. These characteristics were used to simulate groups of pigs for evaluating across the 2002 packer programs.

Using the UGA Carcass Price Calculator and the QLGM Carcass Results

The UGA Carcass Price Calculator is a spreadsheet program which can be used to illustrate premiums and discounts from carcass pricing packer programs. The software can

Table 1. Carcass Characteristics Impacting Market Value For Hogs Fed Diets 1,2 and 3 of the QLGM project. Standard deviation in parenthesis.

Genetic Line		End Weights (Average / Std. Dev.)		
		250 lb	290 lb	330 lb
Line A	Avg. Carcass Size (lb)	189.38 (11.6)	218.67(13.2)	235.26(17.3)
	Avg. Backfat 10 th rib(mm)	27.53 (5.9)	31.63 (6.32)	33.44(7.78)
	Avg. Backfat last rib (in)	1.34 (.22)	1.52 (.24)	1.62 (.23)
	Avg Loin Depth (mm)	49.79 (6.8)	51.48 (8.10)	52.68 (9.49)
	Head in Group	47	46	50
Line B	Avg. Carcass Size (lb)	190.53(8.0)	217.89(12.9)	245.13(15.3)
	Avg. Backfat 10 th rib(mm)	18.25(3.62)	21.39(6.2)	23.27(5.42)
	Avg. Backfat last rib (in)	1.02(.21)	1.13(.29)	1.32(.26)
	Avg Loin Depth (mm)	59.28(7.86)	60.0(9.89)	62.18(11.06)
	Head in Group	53	54	49
Line C	Avg. Carcass Size (lb)	189.5(12.0)	218.64(8.9)	244.38(9.8)
	Avg. Backfat 10 th rib(mm)	21.15(7.15)	22.47(6.2)	25.54(8.23)
	Avg. Backfat last rib (in)	1.01(.21)	1.14(.25)	1.28(.29)
	Avg Loin Depth (mm)	54.75(6.96)	58.23(7.94)	59.23(9.27)
	Head in Group	48	58	52
Line D	Avg. Carcass Size (lb)	188.12(15.7)	220.31(10.1)	242.19(15.2)
	Avg. Backfat 10 th rib(mm)	20.92(5.7)	23.77(5.90)	26.38(6.53)
	Avg. Backfat last rib (in)	1.10(.26)	1.27(.27)	1.36(.31)
	Avg Loin Depth (mm)	53.78(10.76)	57.44(7.65)	59.46(9.76)
	Head in Group	50	39	48
Line E	Avg. Carcass Size (lb)	188.41(10.5)	215.53(14.8)	234.38(21.2)
	Avg. Backfat 10 th rib(mm)	17.07(5.68)	19.37(6.02)	20.04(6.23)
	Avg. Backfat last rib (in)	.95(.31)	1.17(.36)	1.14(.38)
	Avg Loin Depth (mm)	56.05(7.46)	57.53(7.28)	59.46(9.93)
	Head in Group	41	38	46
Line F	Avg. Carcass Size (lb)	191.85(9.0)	219.87(8.5)	242.19(16.2)
	Avg. Backfat 10 th rib(mm)	20.34(4.65)	24.11(6.26)	26.92(5.31)
	Avg. Backfat last rib (in)	1.12(.22)	1.24(.24)	1.44(.31)
	Avg Loin Depth (mm)	59.37(6.09)	63.04(9.04)	65.17(8.05)
	Head in Group	41	46	52

calculate either a single carcass price with comparisons across various programs or can simulate loads of pigs based on data such as the mean and variability of important carcass traits. The software is available for the QUATTRO PRO spreadsheet at www.agecon.uga.edu (Extension, Decision Aids).

Figures 1 and 2 show the necessary input for calculating a single carcass comparison across programs while Figure 3 shows the output from the single carcass comparison. The remainder of this paper will utilize results from the simulation section of the program to illustrate how the 2002 carcass pricing programs may affect revenues from pigs of differing genetics and market weights.

	A	B	C	D	E	F	G
1	1. ENTER DATA FOR LOAD OR SINGLE CARCASS AND CONTINUE THROUGH LINE 44 -						
2	THEN CHOOSE A BUTTON AT BOTTOM OF PAGE FOR DESIRED OPERATION						
3	DO NOT INPUT STD. DEVIATIONS OR COVARIANCES IF CALCULATION IS FOR SINGLE CARCASS.						
4	MEAN CARCASS WEIGHT (OR SINGLE CARCASS WEIGHT)	219.87	LBS.				
5	STD. DEVIATION (CARW) -- DEFAULT = 21.61MM		LBS.				
6	MEAN 10TH RIB BACKFAT (OR CARCASS 10TH RIB BFAT)	24.11	MM	--OR--		INCHES	
7	--OR--						
8	MEAN LAST RIB BACKFAT (OR CARCASS LAST RIB BFAT)		MM	--OR--		INCHES	
9	STD. DEVIATION (BFAT) -- DEFAULT = 6.59MM		MM	--OR--		INCHES	
10	MEAN LOIN DEPTH (OR CARCASS LOIN DEPTH)	63.04	MM	--OR--		INCHES	
11	STD. DEVIATION (LOIN) -- DEFAULT = 9.15MM		MM	--OR--		INCHES	
12	LIVE WEIGHT FARM (OPTIONAL -- DEFAULT=CARW*0.74)		LBS.				
13	NUMBER OF PIGS IN LOAD (300 OR LESS ONLY!)		PIGS				
14	COVARIANCE BFAT AND CARW: DEFAULT = 5.3425 MM		MM	--OR--		INCHES	
15	COVARIANCE LOIN AND CARW: DEFAULT = 4.3352 MM		MM	--OR--		INCHES	
16	COVARIANCE LOIN AND BFAT: DEFAULT = -.0934 MM		MM	--OR--		INCHES	
17	NOTE: IF NO COVARIANCE IS ENTERED ABOVE,						
18	DEFAULT VALUES (IN MM) WILL BE USED.						
19							
20	2. INPUT PRICES:						
21							
22		High	Low				
23	Iowa/So. Minn Price, Plant	50	30				
24	Iowa/So. Minn Price, Country	50	30				
25	Illinois Direct	50	30				
26	Indiana/Ohio Direct	50	30				
27	Indiana/Ohio Plant	50	30				
28	Western Corn Belt Carcass 47 to 50	50	30				
29	Mid-South Carcass 49-50	50	30				
30							

Figure 1

The characteristics from each of the six genetic types of the QLGM project fed to the three end points were entered into the UGA Carcass Price Calculator. Loads of 300 pigs were simulated for each group with the average value per head and per hundred pounds of carcass calculated across the entire load of pigs.

The base price level chosen for the analysis was the lower price range evaluated in the 1998 study, \$39.50/cwt. live (\$53.38/cwt. carcass). The resulting average carcass value across the 10 packer programs by genetics and end weight are presented in table 2. The range from the lowest packer's average carcass value to the highest is shown below the overall average of the 10 packer programs for each group.

30			
31	3. ENTER BASE CARCASS PRICE FOR EACH PROGRAM		
32			
33	FARMLAND	50.67	\$/CWT.
34	EXCEL	50.67	\$/CWT.
35	SMITHFIELD	50.67	\$/CWT.
36	SWIFT	50.67	\$/CWT.
37	BRYAN (LIVE WEIGHT PRICE)	39.5	\$/CWT.
38	IBP	50.67	\$/CWT.
39	IPC	50.67	\$/CWT.
40	LUNDY	50.67	\$/CWT.
41	HORMEL	50.67	\$/CWT.
42	SEABOARD	50.67	\$/CWT.
43	HATFIELD	50.67	\$/CWT.
44	MORRELL	50.67	\$/CWT.
45			
46	4. ENTER TRANSPORTATION COSTS FOR EACH PROGRAM (OPTIONAL)		
47			
48	FARMLAND		\$/HD
49	EXCEL		\$/HD
50	SMITHFIELD		\$/HD
51	SWIFT		\$/HD
52	BRYAN		\$/HD
53	IBP		\$/HD
54	IPC		\$/HD
55	LUNDY		\$/HD
56	HORMEL		\$/HD
57	SEABOARD		\$/HD
58	HATFIELD		\$/HD
59	MORRELL		\$/HD
60			
61	4. CLICK HERE FOR LOAD SIMULATION.		
62			
63	--OR--		
64			
65	CLICK HERE FOR SINGLE CARCASS		
66	CALCULATION		
67			
68			

Figure 2

27	-----											
28	10th Rib Backfat	24.11	MM =	0.95	IN							
29	Last Rib Backfat	27.69	MM =	1.09	IN							
30	FOM loin depth	63.04	MM =	2.48	IN							
31	Carcass Weight	219.87										
32	Live Weight Farm	297.12	LBS	6.498	Approx. Loin							
33	NPPC FAT-FREE LEAN LBS	119.36			Eye Area (Inches)							
34	NPPC FAT-FREE % =	54.29										
35												
36			Base		Sort	Lean	Muscle	Hot weight		Adjusted	TOTAL	
37		Trans.	Plant Live	Carcass	Calculate	Adjustme	Adjustme	Adjustme	Yield Adj	Total Ad	Carcass V.	VALUE
38		\$/Hd.	Weight LI	\$/Cwt.	% Lean	\$/Cwt.	\$/Cwt.	\$/Cwt.	\$/Cwt.	\$/Cwt.	\$/Cwt.	\$
39	Farmland	0.00	N/A	50.67	51.72	-3.00	2.25	N/A	N/A	-0.75	49.92	109.76
40	Excel	0.00	N/A	50.67	51.30	0.51	1.52	N/A	N/A	2.03	52.70	115.86
41	Smithfield	0.00	N/A	50.67	N/A	-4.05	0.51	2.03	N/A	-1.52	49.15	108.07
42	Swift	0.00	N/A	50.67	51.72	-2.00	2.30	N/A	N/A	0.30	50.97	112.07
43	Bryan	0.00	297.1	53.38	51.72	-4.27	1.35	N/A	0.00	-2.92	50.46	110.95
44	IBP	0.00	N/A	50.67	52.73	-1.33	3.50	N/A	N/A	2.17	52.84	116.18
45	IPC	0.00	N/A	50.67	53.11	-2.00	1.73	N/A	N/A	-0.27	50.40	110.82
46												
47	Hormel	0.00	N/A	50.67	N/A	0.00	0.51	N/A	N/A	0.51	51.18	112.52
48	Seaboard	0.00	N/A	50.67	51.72	2.03	-1.01	N/A	N/A	1.01	51.68	113.64

Figure 3

Table 2. Average and Range in Carcass Value For 10 Packer Programs, Simulated 300 Carcasses Based on QLGM Project Sample. Carcass Base Price of \$50.67 per carcass cwt. or \$39.50 per live cwt.

Genetic Line		End Weights:		
		250 lb	290 lb	330 lb
Line A	Avg. 10 Packer Value (\$/hd)	92.96	98.21	97.26
	Range (\$/hd)	4.80	15.10	26.85
Line B	Avg. 10 Packer Value (\$/hd)	103.29	109.93	112.61
	Range (\$/hd)	5.89	10.48	29.98
Line C	Avg. 10 Packer Value (\$/hd)	98.81	109.18	107.33
	Range (\$/hd)	5.08	9.47	29.98
Line D	Avg. 10 Packer Value (\$/hd)	98.72	108.15	108.08
	Range (\$/hd)	5.51	10.03	26.55
Line E	Avg. 10 Packer Value (\$/hd)	101.40	110.06	112.41
	Range (\$/hd)	4.63	9.37	22.14
Line F	Avg. 10 Packer Value (\$/hd)	102.61	108.76	108.86
	Range (\$/hd)	5.31	12.70	27.27

Tables 3 - 5 shows the individual packer program results for each genetics group and end weight. As can be expected when the carcass base price is held constant and the end weight points are on

the heavy side, those packers who allow heavier weight carcasses before discounts apply and/or have premium levels for leanness at modest levels will have higher carcass values.

Table 3. Packer Carcass Value Average for Genetics Group, End Weight 250 lb

Genetics	---- Packer (\$/hd) ----									
	1	2	3	4	5	6	7	8	9	10
A	92.32	94.49	92.87	93.22	95.18	93.32	95.00	90.38	91.02	91.84
B	103.23	101.70	102.24	103.23	107.59	104.43	101.86	102.50	102.41	103.75
C	98.38	98.57	97.85	99.24	101.59	99.75	99.09	96.51	97.93	99.14
D	98.32	98.06	97.75	98.73	102.81	99.03	98.14	97.30	97.91	99.14
E	101.40	99.97	99.70	101.85	104.33	102.47	100.71	100.08	101.07	102.40
F	102.08	101.60	101.96	102.33	106.68	103.88	101.77	101.37	101.59	102.84

Table 4. Packer Carcass Value Average for Genetics Group. End Weight 290 lb

Genetics	---- Packer (\$/hd) ----									
	1	2	3	4	5	6	7	8	9	10
A	95.66	106.78	94.52	95.01	96.86	102.79	103.33	91.69	101.98	93.51
B	105.40	112.89	107.59	106.93	112.06	115.88	110.09	107.09	113.72	107.64
C	105.63	113.13	106.19	106.94	109.87	115.10	110.03	105.88	112.98	106.05
D	103.85	113.04	106.63	105.09	109.87	113.88	109.42	104.88	112.92	105.50
E	105.77	112.11	107.92	107.63	112.11	115.14	109.80	107.78	113.84	108.46
F	105.12	113.87	105.72	106.30	108.74	116.49	110.22	103.79	112.76	104.57

Carcass Value Across Genetic Lines

Using the average 10 packer carcass values, several observations can be made concerning genetic types. As in the 1998 study, the carcass pricing programs of 2002 favors the type of hogs produce by genetics lines B and E. Genetic line A is significantly lower in carcass value than the other lines across all three weight groups. Carcass premiums for breeds similar to genetic line A are afforded carcass quality premiums by some packer programs. Such breed premiums were not included in the evaluation. Based on these results, the breed premium for genetic line A would have to be from \$6 to \$15 per head to equal total returns from the other genetic lines. The type of carcass produced by genetics A was found to be discounted more in 2002 relative to the other types than in 1998.

Table 5. Packer Carcass Value Average for Genetics Group. End Weight 330 lb

Genetics	---- Packer (\$/hd) ----									
	1	2	3	4	5	6	7	8	9	10
A	92.05	111.85	93.34	90.59	96.43	103.16	105.67	85.01	106.91	88.27
B	94.17	124.04	116.48	106.22	117.97	119.41	117.50	103.12	122.01	105.16
C	91.16	121.14	109.06	100.54	109.98	114.65	114.23	95.10	119.25	98.22
D	94.13	120.67	110.30	101.72	111.27	114.48	113.97	97.76	116.74	99.72
E	98.63	120.05	113.50	107.96	115.66	118.76	115.56	105.79	120.77	107.43
F	94.45	121.72	111.23	102.78	112.08	117.09	114.80	96.41	117.40	100.67

Tables 3 - 5 show that the general ranking among the 10 packer programs was consistent with the overall rankings from the average of the 10 packer programs. The genetic lines which tended to have significantly higher or lower values using the average of the 10 programs also tended to have the same ranking within the same packer program. Carcass quality premiums excluded, no genetic type showed a unique advantage at a particular packer because of their carcass pricing program.

Carcass Value at Different End Weights

The profitability of feeding to differing end weights is dependent on the added return from the additional weight compared to the added cost of the additional weight. For the base market price considered, the added carcass value ranged from a low of \$5.25 /hd for genetic line A to \$10.37/hd for genetic line C when averaged across all packer programs when moving from 250 pounds to 290 pounds. The viability of feeding to a heavier weight is dependent on the packer's program however. Tables 3 and 4 reveal that the additional carcass value from 290 lb. end weights as compared to 250 lb ranges from a slight increase of \$1.35 /hd for genetics A in packer 3's program to a high of \$15.35 /hd for genetics C in packer 6's program.

As with genetics and packer programs, the results from 2002 and end weights was generally consistent with the results of 1998.

The added returns from marketing at 290 lb vs 250 lb by packer and genetic line can be gleaned from tables 3 and 4. It is readily apparent that the reduction in net price per pound of carcass sold due to higher sort loss and an increase in fat is more than made up in the additional pounds to be sold, resulting in increased total carcass value in most packer programs.

Whether the added returns more than offset costs is the critical matter to consider. Table 6 summarizes the full cost (including facility rental for additional days on feed) of moving from 250 to 290 lbs at low, medium and high feed cost from the 1998 study. As can be seen, only genetics lines C, D, and E have an added value from 250 to 290 pounds greater than their cost.

Table 6. Added Cost From Feeding To 290 lbs by Genetics Line and Alternative Feed Cost

Genetics Line	High Feed Cost \$/hd	Medium Feed Cost \$/hd	Low Feed Cost \$/hd
A	12.37	10.75	9.12
B	12.33	10.73	9.1
C	11.25	9.83	8.39
D	10.72	9.31	7.87
E	8.41	7.13	5.82
F	12.4	10.8	9.16

The move from 290 to 330 lb does not appear to have a high chance for profitability for any genetics group as the 10 packer average ranged from a reduction in carcass value of \$-1.84/hd for genetic line C to a slight net gain of \$2.68/hd for genetics line E. However, some packer programs do offer possibilities. By comparing tables 4 and 5, it can be seen that packer 2 shows an increase in carcass value averaging \$11 per head for genetic line B. Packer 2 has a program offering a very high upper end for heavy, relatively lean carcasses before discounts are applied.

Summary

It does appear that the current pricing system continues to express significant value differences for differing genetics and end market weights. Potential returns must be carefully considered against appropriate cost. Results from the simulation analysis suggest that matching marketing programs, genetics, and marketing weights continue to have a significant impact on a producer's "bottom line". While much in the industry has changed since 1998, this is one conclusion that continues still holds.

