Value-Based Marketing: Demonstrating Problems and Potential

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Introduction

No single area of activity within the livestock and meat sectors of animal agriculture has evoked as much discussion and possible controversy as has the topic of value-based marketing. Value-based marketing has been hailed as the "magic bullet" to solve all price signal problems that exist in today's marketplace, which results in no one knowing what type of animal to produce because of improper economic incentives. On the negative side, value-based marketing also has been deemed as a way to force on-the-rail selling of market animals, and as a system to better provide discounts for those animals that miss marketing targets rather than giving premiums for those that may be superior in quality and cutability than the average. Whichever the case may be, it is clear that those of us as educators and scientists in the meat science arena must better understand the possible impact of value-based marketing because we will play important roles in developing science and technology to assist the mechanisms of the system, and in providing educational activities to inform producers, feeders, packers, retailers and food service operators of what value-based marketing can mean to them.

Value-based marketing has been a topic at a recent Reciprocal Meat Conference. Savell and Cross (1991) gave an update regarding the current status of value-based marketing. The authors' presentation highlighted the activities of the Value-Based Marketing Task Force, which was assembled under the guidance of the National Cattlemen's Association and the Beef Industry Council of the National Live Stock and Meat Board. The report had eight consensus points (discussed in detail by Savell and Cross, 1991), many of which today are having research conducted to obtain information necessary to make value-based marketing a reality.

The membership of the American Meat Science Association requested another program on value-based marketing. The program committee for this session was faced with a unique situation. Because of the excellent livestock and meat facilities on the campus of the University of Nebraska-Lincoln, the committee chose to have a hands-on demonstration of the problems and potential of value-based marketing. Three head each of cattle, sheep and hogs were obtained from nearby operations or stockyards to represent a range in the kinds of livestock that could or would present a challenge in a value-based marketing scenario. The livestock was slaughtered, and carcasses were graded and fabricated into particular styles representing either traditional merchandising (i.e., commodity, bone-in, fat up to 1-inch remaining, etc.) or innovative merchandising (i.e., boneless, trimmed to have no more than 1/4-inch fat remaining, etc.). Prices were obtained from various USDA and other market sources to allow a summary of the value of each animal on a live basis, as a carcass or when fabricated. To help accomplish this, leaders in their respective areas of live and carcass evaluation were asked to participate in this presentation. Fred Williams of USDA, Agricultural Marketing Service assessed live animal value, Daryl Tatum of Colorado State University worked with the lamb portion of the program, Davey Griffin of Texas A&M University handled the beef presentation and discussion, John Forrest of Purdue University elaborated on the pork carcasses and their cut-out values, and Dell Allen of the Excel Corporation gave a packer response based on the information gathered during this exercise and on his opinion regarding the status of value-based marketing. Summaries of each portion of the presentations follow.

Live Animal Assessment

Because of scheduling problems, this assessment was conducted by viewing videotapes of the live animals taken before the animals were slaughtered. The animals were evaluated without knowledge of how the carcasses looked. Some evaluations were accurate; some were not. This also is indicative of the success and failure that will arise from live animal evaluation in a value-based marketing system.

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Figure 1

Side view of Steer 170.

Figure 2

Side view of Steer 185.

Figure 3

Side view of Steer 821.

Cattle

The challenge we face when evaluating live steers is estimating what the USDA quality grade will be. We can use external fat thickness and breed type as tools to predict quality grade, but we know that this is, at best, an inexact science.

Steer 170. This black steer (Figure 1) appeared to have about .55 inch of fat. He had a thick, full distended brisket, a deep flank and a full cod. He appeared to have enough finish to grade well into the U.S. Choice grade, and may even grade average Choice. As far as USDA yield grade is concerned, the steer would likely be in the low 3's (predicted to be 3.1) based on this estimated amount of fat, and the fact that the steer had what appeared to be average muscling. The steer weighed 1,120 pounds. In the Omaha market in mid-June, 1993, steers such as this were bringing $77/cwt live.

Steer 185. This steer (Figure 2) appeared to have less finish than Steer 170. Viewing the flank, cod and brisket, it appeared that the animal had only minimal amounts of finish, perhaps enough to grade U.S. Choice, but right on the borderline. It is estimated that the steer has about .45 to .50 inches of fat. It appeared, however, that this steer had more muscle than Steer 170. For estimation purposes, this steer was "minused" .3 of a yield grade or, simply put, the steer was evaluated as having one square inch more ribeye area than called for on its estimated carcass weight. It was predicted that this steer would have a USDA yield grade of 2.7. The steer weighed 1,165 pounds live. In the Omaha market in mid-June, 1993, steers such as this were bringing $77/cwt live, the same as that for Steer 170.

Steer 821. This steer (Figure 3) is a problem with respect to USDA quality grade. It is apparent that this steer does not have the finish of the other steers in this comparison. There is less fat than the other two steers in the brisket, cod and flank areas. The steer appeared to have less fat over the back and ribs with an estimate of .35 inch. The estimated USDA quality grade for this steer would be U.S. Select based on this fat thickness and the breed type. The muscle appeared to be slightly above average with about one square inch more ribeye area than its carcass weight would require. The USDA yield grade for this steer would be in the high 2's approaching a yield grade 1 (predicted to be 2.1). In the Omaha market in mid-June, 1993, U.S. Select and Choice, yield grades 1 to 3 were within one dollar per hundredweight of value. This is not much differentiation in either quality grade or estimated cutability. This steer would have brought $76/cwt live on an individual basis and probably $77/cwt if mixed in a pen of steers that the estimated grade would have been greater than 50% Choice.

Sheep

The challenge with evaluating lambs is to estimate fatness without actually touching the live animals. Other indices such as flatness across the back and fullness behind the shoulders are two areas where fatness can be evaluated. From a live lamb assessment standpoint, there is no problem with estimating USDA quality grade; if the lamb is alive, it will grade Choice or better! The primary point to assess then is fatness, which is used to calculate USDA yield grade.

Lamb 124. The first lamb (Figure 4) appeared to be fairly trim. It is estimated that it has between .15 and .20 inches of fat over the 12th rib. If the average fat thickness is calculated, the .17 inch then would be a USDA yield grade of 2.1. The market value for a lamb of this type in mid-June, 1993 would be $56/cwt, based primarily on grading U.S. Choice at the weight that it was (115 pounds). In lambs, it appears that the primary marketing criterion is weight rather than USDA quality or yield grade.

Lamb 995. This lamb (Figure 5) was definitely carrying more finish than Lamb 124. It was proportionately more deep bodied from the side view and squarer across the top in the rear view. It is difficult to determine the fat thickness of a lamb such as this one without actually handling it, but when lambs start carrying over about .35 inch of fat, even handling as a measuring tool becomes limited because we lose the normal skeletal reference points. However, based on visual appraisal, it is estimated that this lamb had about .45 inch of fat, which calculates to be a USDA yield grade 4.9. With this much external fat, the USDA quality grade would be estimated to be U.S. Prime. Based on market reports of mid-June, 1993, it is estimated that the value of this lamb would be $50/cwt live. This value is not a function of the USDA quality or yield grade, but rather reflects the discount in the marketplace for heavy lambs (150 pounds live).

Lamb 537. This lamb (Figure 6) is quite fat also. It is deep through the body and quite wide down the back. It is similar in fat to Lamb 995 except that the estimated fat thickness is .40 inch. The USDA yield grade would be a 4.4. Again, based on the fact that this lamb is considerably heavy (140 pounds live), the same sort of discount ($6/cwt) as used for Lamb 995 would apply. Thus, this lamb would bring approximately $50/cwt live.

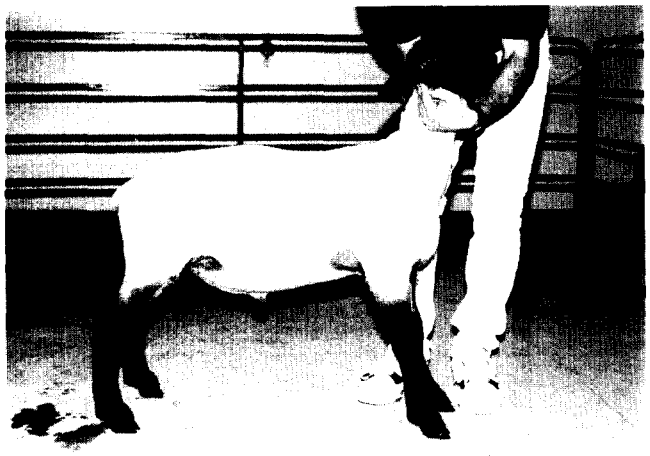
Swine

Estimating fat on the live hog can be accomplished by viewing the top and the underside of the hog to see how the shape of the animal has been influenced by the progressive deposition of fat. Muscling is best estimated by viewing the ham from the rear to see the thickness and bulge of muscling, especially throughout the bottom third of this area.

Hog 10. This hog (Figure 7) appeared to be very lean. It had a severe depression behind its shoulders and in front of its hams. It had a good, natural curvature across the top, and a clean underline and jowl. It appeared that this hog had about .90 inch of fat at the last rib. Based on the thickness of muscling expressed throughout the ham, it is estimated that this hog has Thick muscling. The USDA grade for this hog would be a low U.S. #1. Based on the live hog market of mid-June, 1993, U.S. #1's to 3's, 220 to 260 pounds brought $47.50 to $49.00/cwt. It is estimated that this hog would have brought $49/cwt live.

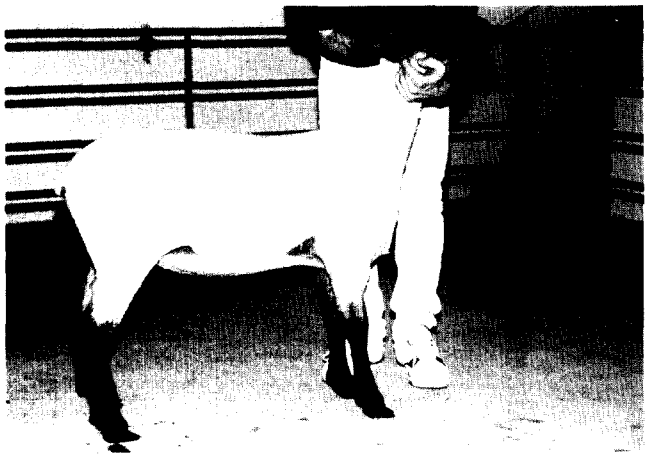
Hog 20. This hog (Figure 8) had more finish than Hog 10. It showed more fatness across the top and underline, and would be estimated to have about 1.0 inch of fat at the last rib. The hog did not appear to have as much muscling as Hog 10, and would be evaluated as having typical Average muscling. The combination of fat thickness and muscling would put this hog in the low U.S. #2 grade. This hog would be estimated to have brought $49/cwt.

Figure 4



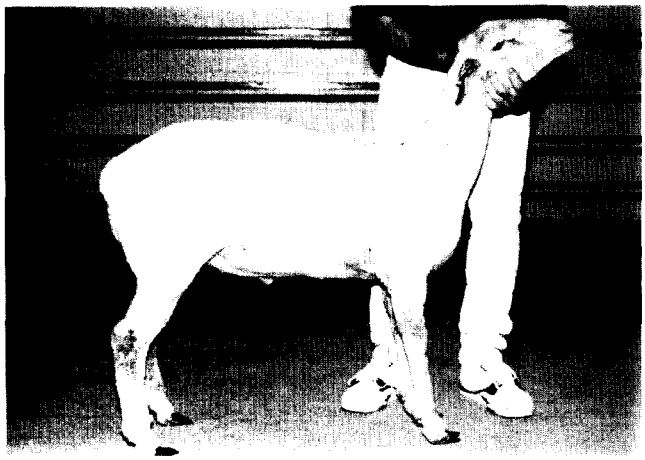
Side view of Lamb 124.

Figure 5



Side view of Lamb 995.

Figure 6



Side view of Lamb 537.

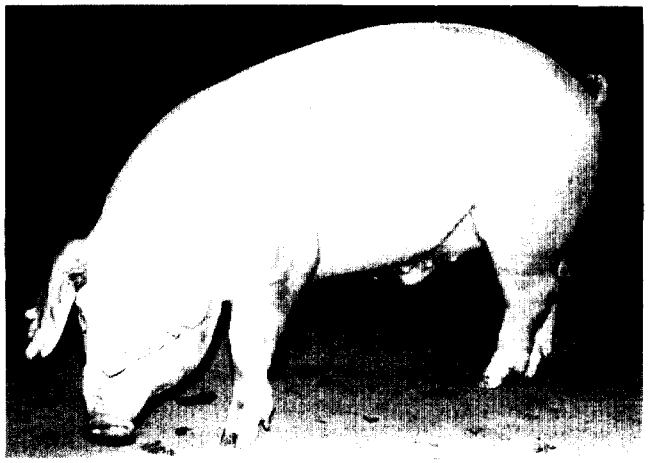
Figure 7

Side view of Hog 10.

Figure 8

Side view of Hog 20.

Figure 9



Side view of Hog 30.

Hog 30. This hog (Figure 9) had the most fat of the group. It did not have the sharp break behind the shoulders and in front of the hams that the previous two hogs had. This hog was fairly flat across the top and was disproportionately deep bodied, indicating substantial fat deposition. The estimated fat thickness of this hog was 1.4 inches at the last rib. Some of the thickness that is seen in the ham region must be fat; thus, the ham muscling score is estimated to be in the low end of Average. This hog would be in the U.S. #3 grade. Again, based on the market prices quoted on U.S. #1's to 3' s, 220 to 240 pounds live, the value of this hog would be the same as the other two hogs, $49/cwt live.

Carcass and Cut-out Assessment

Beef

Each steer was slaughtered in a commercial packing facility, and carcass data (USDA, 1989) were taken after 24 hours of chilling (reported in Table 1). Carcasses were shipped to the Loeffel Meat Laboratory at the University of Nebraska-Lincoln where one side of each was fabricated into boneless, commodity-trimmed (up to one inch of external fat remaining on cuts) subprimals. After weights for all carcass components were recorded, each major subprimal was trimmed further until no more than 1/4 inch of fat remained and cuts were again weighed. Before fabrication, hindquarters from one side of each animal were scanned through a TOBEC machine. Various lean predictions were made based on University of Nebraska-Lincoln regression equations and are reported in Table 1. These findings closely parallel those of the cutability tests conducted on each carcass.

Weights from the various carcass components — subprimals from the chuck, rib, loin and round, and other cuts including fat and bone—were entered into computer spreadsheets (Tables 2 through 4) with current market prices for each cut multiplied to give a total value per side and a carcass value per hundredweight. A discussion of each steer's carcass and cut-out information follows.

Steer 170. The carcass from this steer weighed 698 pounds and had a dressing percentage of 62.3. The carcass graded average Choice and had a USDA yield grade of 3.1 (Figure 10), which was similar to the estimated values from the live assessment.

Upon fabrication, major cut yields were 39.67% at the commodity-trim specification with fat at 17.29% and bone at 15.63%. When subprimals were reduced to 1/4-inch trim specifications, the major cut yields dropped to 31.78%, fat increased to 23.21%, and bone was 15.65% (off slightly from commodity style due to cutting losses in making 1/4-inch trimmed products).

Carcass prices and cut-out values are summarized in Table 1. The carcass price was $118/cwt, and the cut-out values for commodity-trimmed fabrication—$115.61/cwt—and closely-trimmed fabrication—$117.80/cwt—reflect that there was a slight loss when the carcass was fabricated into commodity-trimmed subprimals and only broke even when subprimals were trimmed to 1/4 inch specifications.

Steer 185. The carcass weight of this steer was 730 pounds giving a dressing percentage of 62.7 (Table 1). The carcass

(continued on Page 15)

Table 1. Beef Carcass Traits, Composition and Value.

	Animal ear tag number		
	170	*185*	*821*
Carcass traits			
Live weight, lbs.	1120	1165	1140
Hot carcass weight, lbs.	698	730	703
Dressing percent	62.3	62.7	61.7
Adj. 12th rib fat thickness, in.	.60	.30	.25
KPH, %	2.5	3.0	2.5
Ribeye area, sq. in.	12.8	14.3	14.5
Marbling score	Modest 40	Small 10	Slight 50
USDA quality grade	Avg. Choice	Low Choice	Avg. Select
USDA yield grade	3.1	2.0	1.7
TOBEC (from hindquarter scan)			
Predicted side lean, lbs	151.5	187.0	185.0
Predicted hindquarter lean, lbs	74.9	91.7	93.0
Predicted forequarter lean, lbs	74.5	93.0	90.2
Predicted loin lean, lbs	26.7	31.3	32.2
Commodity yield (untrimmed), %			
Major cuts	39.67	42.03	41.51
Minor cuts	8.06	8.02	9.46
90/10	4.19	5.63	3.77
81/19	8.85	8.55	8.69
50/50	6.31	6.49	6.90
Fat	17.29	14.32	12.76
Bone	15.63	14.97	16.90
Trimmed (1/4") yield, %			
Major cuts	31.78	35.01	35.44
Minor cuts	7.74	7.55	9.11
90/10	5.39	6.83	4.94
81/19	9.91	10.19	9.88
50/50	6.32	6.48	6.90
Fat	23.21	18.99	16.82
Bone	15.65	14.96	16.91
Values			
Live price/cwt	$77	$77	$76
Carcass price/cwt	$118	$118	$112
Carcass cut-out value/cwt			
Commodity	$115.61	$122.75	$115.32
Trimmed (1/4")	$117.80	$128.91	$121.69

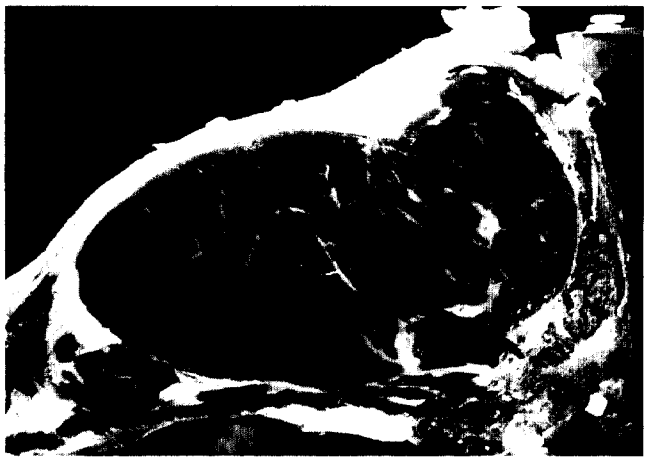
Figure 10

View of ribeye of carcass from Steer 170.

Table 2. Cut-Out Information and Pricing for Steer 170.

	Commodity			*Closely trimmed (≤ 1/4")*			
	Yield (lbs.)	*Price*	*Extension*		*Yield (lbs.)*	*Price*	*Extension*
CHUCK							
114 Shoulder clod	19.08	$1.19	$ 22.71	Center-cut clod	11.58	$1.59	$ 18.41
				Top blade	3.82	$1.59	$ 6.07
116A Chuck roll	17.54	$1.35	$ 23.68	116A Chuck roll	17.54	$1.35	$ 23.68
116B Chuck tender	2.26	$1.65	$ 3.73	116B Chuck tender	2.26	$1.65	$ 3.73
RIB							
112A Ribeye	11.52	$3.90	$ 44.93	112 Ribeye roll	9.32	$4.87	$ 45.39
124 Back ribs	2.88	$1.25	$ 3.60	124 Back ribs	2.88	$1.25	$ 3.60
109B Blade meat	3.12	$1.45	$ 4.52	109B blade meat	3.12	$1.45	$ 4.52
LOIN							
180 Strip loin (2x3)	12.34	$3.78	$ 46.65	180A Strip loin (1x1)	9.30	$4.83	$ 44.92
189 Tenderloin	6.06	$4.75	$ 28.79	189A Peeled tenderloin	4.60	$6.25	$ 28.75
184 Top sirloin butt	8.84	$2.32	$ 20.51	184 Top sirloin butt	7.70	$2.82	$ 21.71
185B Ball tip	1.62	$1.50	$ 2.43	185B Ball tip	1.62	$1.50	$ 2.43
185C Tri-tip	1.78	$2.07	$ 3.68	185C Tri-tip	1.78	$2.07	$ 3.68
185A Flap	1.66	$2.33	$ 3.87	185A Flap	1.66	$2.33	$ 3.87
ROUND							
168 Inside round	19.96	$1.65	$ 32.93	168 Inside round	17.16	$1.94	$ 33.29
170 Gooseneck round	26.94	$1.20	$ 32.33				
				171B Outside round	11.70	$1.65	$ 19.31
				171C Eye of round	4.60	$1.70	$ 7.82
167 Knuckle	10.00	$1.43	$ 14.30	167A Peeled knuckle	8.12	$1.77	$ 14.37
OTHER							
121D Inside skirt	2.26	$2.19	$ 4.95	121D Inside skirt	2.26	$2.19	$ 4.95
121E Outside skirt	1.10	$4.19	$ 4.61	221E Outside skirt	1.10	$4.19	$ 4.61
193 Flank steak	1.82	$2.80	$ 5.10	193 Flank steak	1.82	$2.80	$ 5.10
120 Brisket	11.10	$1.06	$ 11.77	120 Brisket	10.00	$1.06	$ 10.60
Lean trim (81/19)	30.02	$1.19	$ 35.72	Lean trim (81/19)	33.58	$1.19	$ 39.96
Special trim (90/10)	14.22	$1.45	$ 20.62	Special trim (90/10)	18.26	$1.45	$ 26.48
50/50 trim	21.40	$0.55	$ 11.77	50/50 trim	21.40	$0.55	$ 11.77
Fat trim	58.64	$0.08	$ 4.69	Fat trim	78.66	$0.08	$ 6.29
Bone	53.02	$0.08	$ 4.24	Bone	53.02	$0.08	$ 4.24
Total value (side)			$392.11				$399.56
Carcass value/cwt			$115.61				$117.80

Figure 11



View of ribeye of carcass from Steer 185.

Figure 12

View of ribeye of carcass from Steer 821.

Table 3. Cut-Out Information and Pricing for Steer 185.

	Commodity			*Closely trimmed (≤ 1/4")*		
	Yield (lbs.)	*Price*	*Extension*	*Yield (lbs.)*	*Price*	*Extension*
CHUCK						
114 Shoulder clod	20.04	$1.19	$ 23.85	Center-cut clod	12.98	$1.59	$ 20.64
				Top blade	4.32	$1.59	$ 6.87
116A Chuck roll	20.12	$1.35	$ 27.16	116A Chuck roll	20.12	$1.35	$ 27.16
116B Chuck tender	2.26	$1.65	$ 3.73	116B Chuck tender	2.26	$1.65	$ 3.73
RIB						
112A Ribeye	12.10	$3.90	$ 47.19	112 Ribeye roll	10.02	$4.87	$ 48.80
124 Back ribs	3.28	$1.25	$ 4.10	124 Back ribs	3.28	$1.25	$ 4.10
109B Blade meat	3.64	$1.45	$ 5.28	109B Blade meat	3.64	$1.45	$ 5.28
LOIN						
180 Strip loin (2x3)	13.34	$3.78	$ 50.43	180A Strip loin (1x1)	11.10	$4.83	$ 53.61
189 Tenderloin	7.50	$4.75	$ 35.63	189A Peeled tenderloin	5.60	$6.25	$ 35.00
184 Top sirloin butt	10.32	$2.32	$ 23.94	184 Top sirloin butt	9.70	$2.82	$ 27.35
185B Ball tip	1.52	$1.50	$ 2.28	185B Ball tip	1.52	$1.50	$ 2.28
185C Tri-tip	2.14	$2.07	$ 4.43	185C Tri-tip	2.14	$2.07	$ 4.43
185A Flap	1.52	$2.33	$ 3.54	185A Flap	1.52	$2.33	$ 3.54
ROUND						
168 Inside round	22.22	$1.65	$ 36.66	168 Inside round	19.96	$1.94	$ 38.72
170 Gooseneck round	29.46	$1.20	$ 35.35			
				171B Outside round	13.36	$1.65	$ 22.04
				171C Eye of round	4.98	$1.70	$ 8.47
167 Knuckle	11.48	$1.43	$ 16.42	167A Peeled knuckle	9.66	$1.77	$ 17.10
OTHER						
121D Inside skirt	2.82	$2.19	$ 6.18	121D Inside skirt	2.82	$2.19	$ 6.18
121E Outside skirt	1.68	$4.19	$ 7.04	221E Outside skirt	1.68	$4.19	$ 7.04
193 Flank steak	1.78	$2.80	$ 4.98	193 Flank steak	1.78	$2.80	$ 4.98
120 Brisket	10.02	$1.06	$ 10.62	120 Brisket	8.36	$1.06	$ 8.86
Lean trim (81/19)	30.28	$1.19	$ 36.03	Lean trim (81/19)	36.10	$1.19	$ 42.96
Special trim (90/10)	19.94	$1.45	$ 28.91	Special trim (90/10)	24.22	$1.45	$ 35.12
50/50 trim	22.98	$0.55	$ 12.64	50/50 trim	22.98	$0.55	$ 12.64
Fat trim	50.70	$0.08	$ 4.06	Fat trim	67.28	$0.08	$ 5.38
Bone	53.00	$0.08	$ 4.24	Bone	53.00	$0.08	$ 4.24
Total value (side)			$434.68				$456.52
Carcass value/cwt			$122.75				$128.91

graded low Choice, had .30 inch of fat at the 12th rib, a 14.3 square inch ribeye, and had a USDA yield grade of 2.0 (Figure 11).

Upon fabrication, major cut yields were 42.03% at the commodity-trim specification with fat at 14.32% and bone at 14.97%. When subprimals were reduced to 1/4-inch trim specifications, the major cut yields dropped to 35.01%, fat increased to 18.99%, and bone was 14.96%. The change from commodity to closely-trimmed subprimals for Steer 185 was not as severe in loss in yields of major cuts or gain in fat trimmed as was found in the fatter, lower USDA yield grade Steer 170.

The carcass price (Table 1) was $118/cwt, and the cut-out values for commodity-trimmed fabrication—$122.75/cwt—and closely-trimmed fabrication—$128.91/cwt—reflect that there was a significant gain in value when the carcass was fabricated into commodity-trimmed subprimals and additional gains when subprimals were trimmed to 1/4-inch specifications. This carcass benefited in increasing cut-out values from two significant areas: (1) it graded Choice and thus the cuts from the rib and loin commanded a high price in the market, and (2) the fact that it was a high yield grade meant that the cut-out would be high.

Steer 821. The carcass from this steer weighed 703 pounds, had average Slight marbling, graded average Select, and had a USDA yield grade of 1.7 (Table 1 and Figure 12). The carcass data paralleled the live assessment information closely in that the muscling as measured by ribeye area was superior to that required for a 700-pound carcass, and that the estimates of fat and marbling were close to the actuals.

When fabricated, major cut yields were 41.51% at the commodity-trim specification with fat at 12.76% and bone at 16.90%. When subprimals were reduced to 1/4-inch trim specifications, the major cut yields dropped to 35.44%, fat increased to 16.82%, and bone was 16.91%. This steer had slightly less fat and slightly more apparent muscle than did Steer 185. However, what cutability advantage that this carcass had in

Table 4. Cut-Out Information and Pricing for Steer 821.

	Commodity Yield (lbs.)	Price	Extension	Closely trimmed (≤ 1/4") Yield (lbs.)	Price	Extension
CHUCK						
114 Shoulder clod	19.66	$1.26	$ 24.77	Center-cut clod	13.50	$1.66	$ 22.41
				Top blade	3.68	$1.66	$ 6.11
116A Chuck roll	20.94	$1.36	$ 28.48	116A Chuck roll	20.94	$1.36	$ 28.48
116B Chuck tender	2.52	$1.65	$ 4.16	116B Chuck tender	2.52	$1.65	$ 4.16
RIB						
112A Ribeye	11.58	$3.55	$ 41.11	112 Ribeye roll	9.50	$4.44	$ 42.18
124 Back ribs	3.10	$1.25	$ 3.88	124 Back ribs	3.10	$1.25	$ 3.88
109B Blade meat	3.38	$1.45	$ 4.90	109B Blade meat	3.38	$1.45	$ 4.90
LOIN						
180 Strip loin (2x3)	12.16	$3.15	$ 38.30	180A Strip loin (1x1)	10.45	$4.04	$ 42.22
189 Tenderloin	7.38	$4.25	$ 31.37	189A Peeled tenderloin	5.32	$5.59	$ 29.74
184 Top sirloin butt	10.12	$2.17	$ 21.96	184 Top sirloin butt	9.52	$2.57	$ 24.47
185B Ball tip	2.96	$1.50	$ 4.44	185B Ball tip	2.96	$1.50	$ 4.44
185C Tri-tip	2.44	$2.07	$ 5.05	185C Tri-tip	2.44	$2.07	$ 5.05
185A Flap	1.60	$2.33	$ 3.73	185A Flap	1.60	$2.33	$ 3.73
ROUND						
168 Inside round	21.46	$1.55	$ 33.26	168 Inside round	20.16	$1.82	$ 36.69
170 Gooseneck round	28.76	$1.19	$ 34.22			
				171B Outside round	13.18	$1.64	$ 21.62
				171C Eye of round	5.64	$1.69	$ 9.53
167 Knuckle	9.42	$1.43	$ 13.47	167A Peeled knuckle	8.50	$1.77	$ 15.05
OTHER						
121D Inside skirt	2.52	$2.19	$ 5.52	121D Inside skirt	2.52	$2.19	$ 5.52
121E Outside skirt	1.24	$4.19	$ 5.20	221E Outside skirt	1.24	$4.19	$ 5.20
193 Flank steak	2.00	$2.80	$ 5.60	193 Flank steak	2.00	$2.80	$ 5.60
120 Brisket	13.58	$1.06	$ 14.39	120 Brisket	12.34	$1.06	$ 13.08
Lean trim (81/19)	30.16	$1.19	$ 35.89	Lean trim (81/19)	34.27	$1.19	$ 40.78
Special trim (90/10)	13.08	$1.45	$ 18.97	Special trim (90/10)	17.12	$1.45	$ 24.82
50/50 trim	23.94	$0.55	$ 13.17	50/50 trim	23.94	$0.55	$ 13.17
Fat trim	44.28	$0.08	$ 3.54	Fat trim	58.31	$0.08	$ 4.66
Bone	58.64	$0.08	$ 4.69	Bone	58.64	$0.08	$ 4.69
Total value (side)			$400.07				$422.16
Carcass value/cwt			$115.32				$121.69

less trimmable fat at either trim level of fabrication was lost when bone percentages were compared. Thus, the yield of major cuts was very similar for the two steers although the distribution of fat and bone were different between the two.

The carcass price (Table 1) was $112/cwt, and the cut-out values for commodity-trimmed fabrication—$115.32/cwt—and closely-trimmed fabrication—$121.69/cwt—reflect that there was a slight gain in value when the carcass was fabricated into commodity-trimmed subprimals and an additional gain when subprimals were trimmed to 1/4-inch specifications. This carcass was priced lower than the other two carcasses intact because it graded U.S. Select while carcasses from Steers 185 and 170 graded U.S. Choice. However, the cut-out values became similar between this steer (Select YG 1) and Steer 170 (Choice YG 3) when fabricated to commodity-trimmed subprimals, and became higher valued when fabricated to the 1/4-inch trim specification. This shows that under these market conditions, a Select YG 1 is worth more than a Choice YG 3 carcass if the external fat trim specifications are at 1/4 inch or possibly lower. Interestingly, there is a substantial value difference between this steer (Select YG 1) and Steer 185 (Choice YG 2), but in the opposite direction. Here, cutability was rather similar between the two carcasses, but USDA quality grade differed with the rib and loin cuts from the Choice YG 2 carcass commanding significantly more cents per pound than cuts from the Select YG 1 carcass. Even a $6/cwt spread between Choice and Select carcasses can result in substantial value differences on a per head basis.

Lamb

Each lamb was slaughtered at the Loeffel Meat Laboratory at the University of Nebraska-Lincoln, and carcass data (USDA, 1992) collected after 24 hours of chilling (reported in

Table 5. Lamb Carcass Traits, Composition and Value.

	Animal ear tag number		
	124	*995*	*537*
Carcass traits			
Live weight, lbs.	115	150	140
Hot carcass weight, lbs.	63	86	83
Dressing percent	54.8	57.3	59.3
12th rib fat thickness, in.	.15	.50	.40
Body wall thickness, in.	.50	1.45	1.30
Ribeye area, sq. in.	2.15	2.60	2.80
Leg conformation	High Choice	Avg. Choice	Low Prime
USDA quality grade	Avg. Choice	Low Prime	Avg. Prime
USDA yield grade	1.9	5.4	4.4
TOBEC			
Predicted leg lean yield, lbs.	6.2	7.9	7.8
Actual leg lean yield, lbs.	6.5	7.5	7.4
Commodity yield (untrimmed), %			
Major cuts	73.30	73.01	72.00
Minor cuts	24.00	24.21	25.42
Fat	.00	.49	.12
Bone	2.70	2.29	2.46
Trimmed (1/4") yield, %			
Major cuts	73.30	66.98	65.40
Minor cuts	24.00	24.25	25.43
Fat	.00	6.47	6.71
Bone	2.70	2.30	2.46
Innovative style yield, %			
Major cuts	55.90	50.93	51.58
Minor cuts	28.50	27.74	29.51
Fat	4.90	12.72	10.23
Bone	10.70	8.61	8.68
Values			
Live price/cwt	$56	$50	$50
Carcass price/cwt	$138	$100	$100
Carcass cut-out value/cwt			
Commodity	$136.04	$142.25	$140.85
Trimmed (1/4")	$144.77	$137.82	$136.69
Innovative	$151.95	$141.55	$143.88

Table 5). Each carcass was fabricated progressively into three endpoints: commodity cuts (leg, loin, rack and shoulder), untrimmed; commodity cuts, trimmed to have no more than 1/4 inch of external fat; and an innovative style where one leg was prepared as a semi-boneless product and the other as a boneless shank-off leg, and one shoulder was prepared as a boneless product and the other shoulder was separated into a Saratoga roll and the outside shoulder. All carcass components generated during each level of fabrication were weighed and recorded.

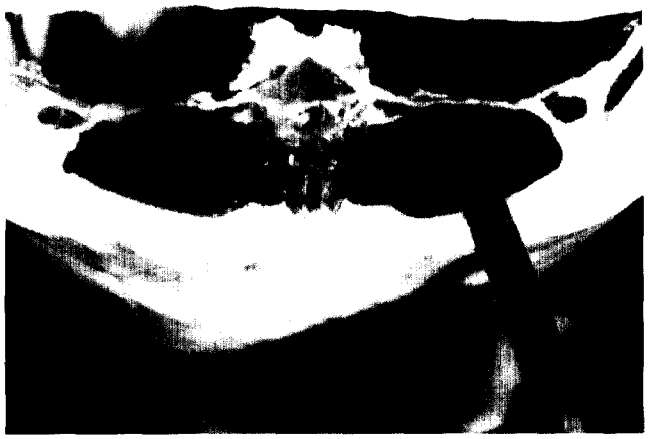
Before fabrication, each lamb was scanned through a TOBEC machine. Pounds of lean in the leg from each lamb were predicted based on a University of Nebraska-Lincoln equation and are compared to actual yields in Table 5. Actual and predicted yield values were very close for each lamb.

Weights from the various carcass components- major cuts such as legs, loins, racks, and shoulders and minor cuts such as foreshanks, neck, breast, flank, lean trim, fat and bone—were entered into computer spread sheets (Tables 6 through 8) with current market prices for each cut multiplied to give a total value per carcass and a carcass value per hundredweight. (Prices were not available from USDA market news sources for innovative or close-trimmed products, and, thus, estimates were used in this paper.) A discussion of each lamb's carcass and cut-out follows.

Figure 13

View of ribeye of carcass from Lamb 124.

Figure 14



View of ribeye of carcass from Lamb 995.

Figure 15

View of ribeye of carcass from Lamb 537.

Lamb 124. The carcass from this lamb weighed 63 pounds and dressed 54.8% (for this lamb and the other lambs in the demonstration, dressing percentages were above industry standards because they were shorn before slaughter). The fat thickness was .15 inch and the body wall thickness (measured at a point two inches lateral to the ribeye) was .50 inch. The ribeye area was 2.15 square inches, and it had a USDA yield grade of 1.9 (Figure 13). The carcass factors were quite close to the estimates made during the live evaluation process.

When fabricated, the yields for the two bone-in endpoints, untrimmed and 1/4-inch trim specifications, did not differ because the cuts from this carcass had less than 1/4 inch of fat on all primals. The yields of major cuts were 73.30%, minor cuts were 24.00%, and bone and fat were 2.70% and zero, respectively. Making the primals into innovative cuts decreased the yield of major primals to 55.90%, increased the minor cuts to 28.50%, and resulted in a total of 15.60% fat (4.90%) and bone (10.70%).

Reported in Table 5 are the carcass and cut-out values for the various styles of fabrication. The value for a lamb carcass such as this one would be $138/cwt. When cut-out values were calculated, the value at the commodity-trim level was $136.04/cwt, slightly lower than that of the intact carcass. This probably was the result of having too little fat on the primals, which could have caused the yields to be too low. However, when pricing was based on the 1/4-inch specification or on the innovative style of fabrication, the values were substantially increased ($144.77/cwt and $151.95/cwt, respectively).

Lamb 995. The carcass from this lamb weighed 86 pounds and dressed 57.3%. The fat thickness at the 12th rib was .50 inch, and the body wall thickness was 1.45 inches (Figure 14). The USDA yield grade was 5.4.

Carcass cut-out data reveal that the percentage yield of major and minor cuts and fat and bone were not really different from that of Lamb 124 when compared at the untrimmed commodity style. Once trimmed to the 1/4-inch level, major cuts were dramatically decreased (73.01% to 66.98%) and percentage fat was increased (.49% to 6.47%). Cutting the carcass to the innovative style resulted in about twice as much fat being removed (12.72% versus 6.47%) as was removed in the trimmed primal style. Most of this additional fat was seam fat removed from the shoulder and the leg while making these boneless.

The carcass price and cut-out values for the three endpoints tell conflicting stories (Table 5). Because this carcass weighed more than 80 pounds, the price it would have received would be $100/cwt. This reflects the large discount that heavy lamb carcasses often receive in the marketplace. When priced by the three methods of fabrication, however, it can be seen that this discount is far too severe for the estimated values when component cuts are priced and totaled under this system of determining value. Using the commodity style of fabrication, this carcass received the highest value of the three lambs used for this demonstration. Trimming primals to have no more than 1/4 inch of external fat and pricing accordingly resulted in about a $4/cwt decrease in value. When the innovative style of fabrication was evaluated, this carcass received the lowest value of the three lambs compared. Pricing information from this carcass shows that intact versus fabricated carcass, style of fabrication, external fat trim levels and the

Table 6. Cut-Out Information and Pricing for Lamb 124.

Commodity				*Closely trimmed (1/4")*			*Innovative*			
	Yield	*Price*	*Extension*	*Yield*	*Price*	*Extension*		*Yield*	*Price*	*Extension*
MAJOR CUTS										
233A, single (2)	18.26	$1.35	$ 24.65	18.26	$1.45	$ 26.48	234A Leg, semi-bnls	7.12	$1.84	$ 13.10
							234B Leg, shank-off, bnls	6.46	$2.42	$ 15.63
232 Loin	5.20	$3.30	$ 17.16	5.20	$3.60	$ 18.72	232 Loin	5.20	$3.60	$ 18.72
204 Rack	6.02	$2.95	$ 17.76	6.02	$3.15	$ 18.96	204 Rack	6.02	$3.15	$ 18.96
207 Shoulders, square-cut	13.60	$0.95	$ 12.92	13.60	$0.99	$ 13.46				
							208 Shoulder, boneless	4.18	$1.46	$ 6.10
							Saratoga roll	0.94	$2.35	$ 2.21
							Outside shoulder	2.82	$1.35	$ 3.81
MINOR CUTS										
210 Foreshank	3.10	$1.20	$ 3.72	3.10	$1.20	$ 3.72	Fore and Hindshank	3.90	$1.20	$ 4.68
Neck	2.06	$0.25	$ 0.52	2.06	$0.25	$ 0.52	Neck	2.06	$0.25	$ 0.52
Breast	6.36	$0.35	$ 2.23	6.36	$0.35	$ 2.23	Breast	6.36	$0.35	$ 2.23
Flank	2.60	$0.35	$ 0.91	2.60	$0.35	$ 0.91	Flank	2.60	$0.35	$ 0.91
							Dinner ribs	0.74	$1.25	$ 0.93
Lean trim	0.00	$0.79	$ 0.00	0.00	$0.79	$ 0.00	Lean trim	1.04	$0.79	$ 0.82
Fat trim	0.00	$0.08	$ 0.00	0.00	$0.08	$ 0.00	Fat trim	2.89	$0.08	$ 0.23
Bone	1.60	$0.08	$ 0.13	1.60	$0.08	$ 0.13	Bone	6.24	$0.08	$ 0.50
Total value			$ 79.99			$ 85.12				$ 89.34
Carcass value/cwt			$136.04			$144.77				$151.95

Table 7. Cut-Out Information and Pricing for Lamb 995.

Commodity				*Closely trimmed (1/4")*			*Innovative*			
	Yield	*Price*	*Extension*	*Yield*	*Price*	*Extension*		*Yield*	*Price*	*Extension*
MAJOR CUTS										
233A Leg, single (2)	23.88	$1.35	$ 32.24	22.20	$1.45	$ 32.19	234A Leg, semi-bnls	8.28	$1.84	$ 15.24
							234B Leg, shank-off, bnls	7.50	$2.42	$ 18.15
232 Loin	9.38	$3.30	$ 30.95	7.96	$3.60	$ 28.66	232 Loin	7.96	$3.60	$ 28.66
204 Rack	9.68	$2.95	$ 28.56	8.58	$3.15	$ 27.03	204 Rack	8.58	$3.15	$ 27.03
207 Shoulders, square-cut	16.96	$0.95	$ 16.11	16.12	$0.99	$ 15.96				
							208 Shoulder, boneless	5.04	$1.46	$ 7.36
							Saratoga roll	1.04	$2.35	$ 2.44
							Outside shoulder	3.24	$1.35	$ 4.37
MINOR CUTS										
210 Foreshank	2.42	$1.20	$ 2.90	2.42	$1.20	$ 2.90	Fore and Hindshank	3.22	$1.20	$ 3.86
Neck	3.58	$0.25	$ 0.90	3.58	$0.25	$ 0.90	Neck	3.58	$0.25	$ 0.90
Breast	9.10	$0.35	$ 3.19	9.10	$0.35	$ 3.19	Breast	9.10	$0.35	$ 3.19
Flank	4.74	$0.35	$ 1.66	4.74	$0.35	$ 1.66	Flank	4.74	$0.35	$ 1.66
							Dinner ribs	0.60	$1.25	$ 0.75
Lean trim	0.02	$0.79	$ 0.02	0.02	$0.79	$ 0.02	Lean trim	1.44	$0.79	$ 1.14
Fat trim	0.40	$0.08	$ 0.03	5.30	$0.08	$ 0.42	Fat trim	10.40	$0.08	$ 0.83
Bone	1.88	$0.08	$ 0.15	1.88	$0.08	$ 0.15	Bone	7.04	$0.08	$ 0.56
Total value			$116.70			$113.07				$116.13
Carcass value/cwt			$142.25			$137.82				$141.55

Table 8. Cut-Out Information and Pricing for Lamb 537.

Commodity				*Closely trimmed (1/4")*			*Innovative*			
	Yield	*Price*	*Extension*	*Yield*	*Price*	*Extension*		*Yield*	*Price*	*Extension*
MAJOR CUTS										
233A Leg, single (2)	24.60	$1.35	$ 33.21	21.94	$1.45	$ 31.81	234A Leg, semi-bnls	9.52	$1.84	$ 17.52
							234B Leg, shank-off, bnls	7.36	$2.42	$ 17.81
232 Loin	9.42	$3.30	$ 31.09	8.26	$3.60	$ 29.74	232 Loin	8.26	$3.60	$ 29.74
204 Rack	8.62	$2.95	$ 25.43	7.76	$3.15	$ 24.44	204 Rack	7.76	$3.15	$ 24.44
207 Shoulders, square-cut	15.36	$0.95	$ 14.59	14.70	$0.99	$ 14.55				
							208 Shoulder, boneless	4.74	$1.46	$ 6.92
							Saratoga roll	0.92	$2.35	$ 2.16
							Outside shoulder	2.90	$1.35	$ 3.92
MINOR CUTS										
210 Foreshank	2.36	$1.20	$ 2.83	2.36	$1.20	$ 2.83	Fore and Hindshank	3.24	$1.20	$ 3.89
Neck	2.42	$0.25	$ 0.61	2.42	$0.25	$ 0.61	Neck	2.42	$0.25	$ 0.61
Breast	10.48	$0.35	$ 3.67	10.48	$0.35	$ 3.67	Breast	10.48	$0.35	$ 3.67
Flank	5.10	$0.35	$ 1.79	5.10	$0.35	$ 1.79	Flank	5.10	$0.35	$ 1.79
							Dinner ribs	0.62	$1.25	$ 0.78
Lean trim	0.12	$0.79	$ 0.09	0.12	$0.79	$ 0.09	Lean trim	1.86	$0.79	$ 1.47
Fat trim	0.10	$0.08	$ 0.01	5.40	$0.08	$ 0.43	Fat trim	8.22	$0.08	$ 0.66
Bone	1.98	$0.08	$ 0.16	1.98	$0.08	$ 0.16	Bone	6.98	$0.08	$ 0.56
Total value			$113.47			$110.12				$115.91
Carcass value/cwt			$140.85			$136.69				$143.88

various combinations of these endpoints can have a marked effect on value. These decisions can greatly influence the value that lambs can be worth in a value-based marketing system.

Lamb 537. This lamb weighed 83 pounds, dressed 59.3%, and had slightly less fat than Lamb 995. The fat thickness for this carcass was .40 inch, and the body wall thickness was 1.30 inches (Figure 15). The USDA yield grade was 4.4.

Fabricated yields from this carcass were very similar to the other fat lamb (Lamb 995). Going from the untrimmed primal to the 1/4-inch style resulted in approximately six and one-half percentage points less primal yield and approximately that much more yield of fat. The major difference between this lamb and Lamb 995 in yield of innovative-style cuts was that less fat was present (10.23% versus 12.72%), which resulted in a slightly higher yield of major and minor cuts.

The same scenario existed for the cut-out values as was found for Lamb 995 (Table 5). The intact carcass was heavily discounted to $100/cwt, and the cut-out values were some $40/cwt higher than the carcass value. It should be noted that this severe discount does not have to be explained fully by the loss in cut-out value; some of this discount is that there are simply too many lambs in this weight range for what the market will have the flexibility to absorb.

Pork

Each hog was slaughtered at the Loeffel Meat Laboratory at the University of Nebraska-Lincoln, and carcass data (USDA, 1985) were collected after 24 hours of chilling (reported in Table 9). Two styles of fabrication were used for the pork carcasses: a traditional bone-in four lean cuts version — ham, loin, picnic shoulder and Boston butt along with minor cuts—with products trimmed to have no more than 1/4 inch fat, and a boneless version — boneless ham, boneless loin, tenderloin, boneless picnic shoulder and boneless Boston butt along with minor cuts, lean trim and bone and fat generated from this style of fabrication.

As with the other species, one side of each carcass was scanned through a TOBEC machine. Pounds of lean from the four lean cuts were predicted based on a University of Nebraska-Lincoln equation and were compared to actual pounds of lean from these cuts. For pork, the relationship between these two numbers for each carcass was not as clear as we found for the other species used in this demonstration. The problem here was that the TOBEC appeared to grossly underestimate the amount of lean from the four lean cuts in the leaner hog (Hog 10).

Ultrasound and an optical probe were available to use on the live hogs and/or their carcasses. Both A-mode and real-time ultrasound were used to measure fat thicknesses of the live hogs and carcasses, and these numbers (reported in Table 9) were generally well correlated with the actual carcass measures. Carcass ultrasound was used to measure fat thickness at the 10th rib and the loin eye area with both ultrasound measures being fairly close to the actual carcass measures. An optical probe was used to estimate the percent lean from the four lean cuts of the carcass. Although these numbers did not match up directly with those actually obtained from the cutting tests, the trend is there for the probe to rank the carcasses from the leanest to the fattest.

Weights from the various carcass components already mentioned were entered into computer spread sheets (Tables 10 through 12) with current market prices for each cut multiplied to give a total value per carcass and a carcass value per hundredweight. (For some of the boneless endpoints, USDA market news sources had no reported prices. For these cuts, we used our best estimate of what the price should be.) A discussion of each hog's carcass and cut-out follows.

Hog 10. The carcass from this hog weighed 168 pounds and dressed 74.7%. The fat thicknesses over the last rib and last lumbar vertebra were between .60 and .80 inches. As estimated live, this was the leanest and most muscular hog, with a 5.6 square inch loin eye and a 2+ USDA muscling score (Figure 16).

When fabricated following the bone-in style, major cut yields were 66.37%, minor cut yields were 25.60% and fat and skin yields were 8.03%. Reducing these cuts further by removing the bone and additional fat caused the yields of major cuts to go to 52.88%, the minor cuts to increase slightly (up to 27.75%) and the bone and fat/skin to be increased (7.70% and 11.67%, respectively).

The carcass price (Table 9) was $70/cwt based on the market value of a U.S. #1 pork carcass. The cut-out value for the bone-in fabrication style was $73.46/cwt and for the boneless style of fabrication was $85.16/cwt. This price differential reflects a substantial increase in value for products prepared boneless rather than bone-in.

Hog 20. This carcass weighed 179 pounds and dressed 73.4%. The fat thicknesses were 1.40 inches over the first rib, 1.00 inch over the last rib and 1.00 inch over the last lumbar vertebra. The fat depth at the 10th rib was 1.15 inches. This carcass had average muscling based on a mid-point 2 USDA muscling score and a 4.6 square inch loin eye area (Figure 17). The USDA grade was a 2.0.

The carcass cut-out for this hog was intermediate to that of the other two hogs. When compared to Hog 10, the minor cuts yield was similar for the two carcasses, but the major cuts yield was lower by about three percentage points, most of which is accounted for by increased fat trim percentage. These relationships follow through to the boneless style of fabrication where, compared to Hog 10, decreased percentage major cuts and increased percentage fat were found.

The carcass price was $67/cwt, reflecting a somewhat reduced price compared to the leaner Hog 10 because it was a U.S. #2 pork carcass. The cut-out values, especially the boneless style, differed more than the difference found between Hog 10 and this hog on a carcass basis. This shows that as further fabrication occurs, more differential in value may be found as differences in muscle-to-fat and muscle-to-bone ratios become more evident.

Hog 30. The carcass weighed 168 pounds and it dressed 72.1%. As discussed in the live evaluation portion of this paper, this hog was the fattest of the three used in this demonstration. The fat thicknesses over the back were 1.50 inches at the first rib, 1.30 inches at the last rib, and 1.25 inches over the last lumbar vertebra. The fat depth at the 10th rib was 1.50 inches. In addition to being the fattest carcass, muscling also was less evident with a 3.7 square inch loin eye area and a 2– on USDA muscling score (Figure 18). This carcass graded U.S. #3.2.

Figure 16

View of loin eye of carcass from Hog 10.

Figure 17

View of loin eye of carcass from Hog 20.

Figure 18

View of loin eye of carcass from Hog 30.

Table 9. Pork Carcass Traits, Composition and Value.

	Animal tattoo number		
	10	*20*	*30*
Carcass traits			
Live weight, lbs.	225	244	233
Hot carcass weight, lbs.	168	179	168
Dressing percent	74.7	73.4	72.1
Fat thickness, first rib, in.	1.50	1.40	1.50
Fat thickness, last rib, in.	.80	1.00	1.30
Fat thickness, last lumbar, in.	.60	1.00	1.25
Fat depth, 10th rib, in.	.75	1.15	1.50
Muscling score	2+	2°	2–
Loin eye area, sq. in.	5.6	4.6	3.7
USDA grade	U.S. #1.2	U.S. #2.0	U.S. #3.2
TOBEC			
Predicted lean, 4 lean cuts, lbs.	31.43	35.93	27.72
Boneless lean, 4 lean cuts, lbs.	41.88	40.52	34.16
Probes			
Live ultrasound, A-mode, in.	.60	.68	1.08
Live ultrasound, real-time, in.	.56	.80	1.24
Carcass ultrasound, 10th rib, in.	.80	1.16	1.40
Carcass ultrasound, LEA, sq. in.	5.3	5.4	4.1
Optical probe, percent lean	49.4	45.1	40.2
Bone-in, %			
Major cuts	66.37	62.59	57.22
Minor cuts	25.60	26.81	28.01
Fat/skin	8.03	10.61	14.77
Bone	.00	.00	.00
Boneless, %			
Major cuts	52.88	49.63	43.00
Minor cuts	27.75	28.96	29.71
Fat/skin	11.67	13.77	19.76
Bone	7.70	7.64	7.53
Values			
Live price/cwt	$49	$49	$49
Carcass price/cwt	$70	$67	$65
Carcass cut-out value/cwt			
Bone-in	$73.46	$68.58	$66.24
Boneless	$85.16	$78.98	$73.44

This carcass being the fattest, least muscular of the three by traditional carcass measures is further verified by the low yields of major cuts, either bone-in or boneless, and by the highest percentage of fat generated in the fabrication process. Major cuts yields are nearly ten percentage points lower than those of the leaner carcass from Hog 10.

The price for this carcass was $65/cwt based on the current market value of U.S. carcasses. This is $5/cwt lower than the carcass price for the U.S. #1 carcass, Hog 10. When cut-out values were calculated for this carcass, they were substantially lower than the comparable endpoints of the other two carcasses. For example, the value of the bone-in endpoint was about $7/cwt lower and the boneless endpoint about $12/cwt lower than the cut-out values in Hog 10.

Table 10. Cut-Out Information and Pricing for Hog 10.

Bone-in carcass	*Yield (lbs.)*	*Price*	*Extension*	*Boneless carcass*	*Yield (lbs.)*	*Price*	*Extension*
MAJOR CUTS							
401 Fresh ham	20.06	$0.65	$13.04	402B Fresh ham, boneless	16.16	$0.90	$14.54
410 Loin	15.68	$1.49	$23.36	413 Loin, boneless	10.98	$2.29	$25.14
				415 Tenderloin	0.76	$3.00	$ 2.28
406 Shoulder, Boston butt	6.44	$1.11	$ 7.15	406A Shoulder, Boston butt, boneless	6.00	$1.17	$ 7.02
405 Shoulder, picnic	10.56	$0.55	$ 5.81	405A Shoulder, picnic, boneless	7.98	$0.78	$ 6.22
MINOR CUTS							
408 Belly	11.40	$0.31	$ 3.53	408 Belly	11.40	$0.31	$ 3.53
416 Spareribs	3.12	$1.25	$ 3.90	416 Spareribs	3.12	$1.25	$ 3.90
				Back ribs	1.28	$1.97	$ 2.52
Feet, tail and neckbones	4.50	$0.15	$ 0.68	Feet, tail and neckbones	4.50	$0.15	$ 0.68
Fat and skin	6.38	$0.08	$ 0.51	Fat and skin	9.24	$0.08	$ 0.74
Jowl	1.32	$0.30	$ 0.40	Jowl	1.32	$0.30	$ 0.40
				Lean trim	0.36	$0.55	$ 0.20
				Bone	6.10	$0.08	$ 0.49
Total value (side)			$58.37				$67.66
Carcass value/cwt			$73.46				$85.16

Table 11. Cut-Out Information and Pricing for Hog 20.

Bone-in carcass	*Yield (lbs.)*	*Price*	*Extension*	*Boneless carcass*	*Yield (lbs.)*	*Price*	*Extension*
MAJOR CUTS							
401 Fresh ham	19.36	$0.65	$12.58	402B Fresh ham, boneless	15.50	$0.90	$13.95
410 Loin	14.66	$1.49	$21.84	413 Loin, boneless	10.08	$2.29	$23.08
				415 Tenderloin	0.78	$3.00	$ 2.34
406 Shoulder, Boston butt	6.44	$1.11	$ 7.15	406A Shoulder, Boston butt, boneless	5.96	$1.17	$ 6.97
405 Shoulder, picnic	10.76	$0.55	$ 5.92	405A Shoulder, picnic, boneless	8.20	$0.78	$ 6.40
MINOR CUTS							
408 Belly	12.62	$0.31	$ 3.91	408 Belly	12.62	$0.31	$ 3.91
416 Spareribs	2.04	$1.25	$ 2.55	416 Spareribs	2.04	$1.25	$ 2.55
				Back ribs	1.14	$1.97	$ 2.25
Feet, tail and neckbones	4.70	$0.15	$ 0.71	Feet, tail and neckbones	4.70	$0.15	$ 0.71
Fat and skin	8.68	$0.08	$ 0.69	Fat and skin	11.24	$0.08	$ 0.90
Jowl	2.58	$0.30	$ 0.77	Jowl	2.58	$0.30	$ 0.77
				Lean trim	0.56	$0.55	$ 0.31
				Bone	6.24	$0.08	$ 0.50
Total value (side)			$56.13				$64.64
Carcass value/cwt			$68.58				$78.98

Table 12. Cut-Out Information and Pricing for Hog 30.

Bone-in carcass	*Yield (lbs.)*	*Price*	*Extension*	*Boneless carcass*	*Yield (lbs.)*	*Price*	*Extension*
MAJOR CUTS							
401 Fresh ham	17.82	$0.65	$11.58	402B Fresh ham, boneless	12.88	$0.90	$11.59
410 Loin	14.02	$1.49	$20.89	413 Loin, boneless	9.62	$2.29	$22.03
				415 Tenderloin	0.64	$3.00	$ 1.92
406 Shoulder, Boston butt	5.80	$1.11	$ 6.44	406A Shoulder, Boston butt, boneless	5.54	$1.17	$ 6.48
405 Shoulder, picnic	7.92	$0.55	$ 4.36	405A Shoulder, picnic, boneless	5.48	$0.78	$ 4.27
MINOR CUTS							
408 Belly	14.32	$0.31	$ 4.44	408 Belly	14.32	$0.31	$ 4.44
416 Spareribs	2.42	$1.25	$ 3.03	416 Spareribs	2.42	$1.25	$ 3.03
				Back ribs	0.84	$1.97	$ 1.65
Feet, tail and neckbones	4.00	$0.15	$ 0.60	Feet, tail and neckbones	4.00	$0.15	$ 0.60
Fat and skin	11.76	$0.08	$ 0.94	Fat and skin	15.70	$0.08	$ 1.26
Jowl	1.56	$0.30	$ 0.47	Jowl	1.56	$0.30	$ 0.47
				Lean trim	0.46	$0.55	$ 0.25
				Bone	5.98	$0.08	$ 0.48
Total value (side)			$52.74				$58.47
Carcass value/cwt			$66.24				$73.44

Overall Carcass and Cut-Out Summary

Several points can be made regarding the findings of the carcass evaluation and cutability tests performed:

(1) Specific endpoints for measuring carcass composition—boneless versus bone-in, commodity versus trimmed, etc.—can and will make substantial differences in the value of carcasses in a value-based marketing system.

(2) Accurate measuring capabilities of equipment or devices to evaluate live animals or carcasses are needed so that the most precise information can be obtained about the relative amounts of salable yield versus bone and fat without having to follow carcasses through fabrication.

(3) Carcass yields are not the only issue in determining value in a value-based marketing system. Carcass quality, especially in beef, can result in different prices for primals or subprimals. Carcasses with similar yields, but different qualities, can range in value by 10% to 15%.

(4) Obtaining current and complete market information is a must when using a carcass cut-out value determination scheme to price carcasses or live animals. No market price information was available for several of the less traditional cuts used in this exercise.

Packer Response

It is clear that the information presented in this demonstration is an academic exercise, but a very necessary one to better prepare this industry for the future. Our company (Excel Corporation) views value-based marketing not as something that would be nice to have but a necessity that will enable us to have the supply of the types of livestock needed for the marketplace to be competitive for the future.

As a packer, we are constantly in the crossfire of this industry and are oftentimes held responsible by entities of the marketing chain either before or after us for a lack of forward progress in achieving value-based marketing. The real issue we see in value-based marketing is that people, as sellers, want to be paid for the true value of the product and nothing less; as buyers, they want to pay for the true value of the product and nothing more. The key factor that we must realize is that the true value of the product is not determined by academicians, it is not determined by the packer, it is determined by marketplace which is, at best, quite volatile, very illogical and mostly nonscientific. Thus, it is difficult to bring science and science logic to bear on a very dynamic market that is influenced daily and even hourly by factors that are oftentimes hard to assess. Many times the marketplace is impacted by perception rather than reality; getting a handle on this is a most difficult process.

For packers to make value-based marketing work as identified in the previous sections, live animal selling, as we know it, would have to disappear. Eliminating live selling of cattle, especially in the High Plains area, will be most difficult because of the lack of confidence by the seller in knowing how the cattle will perform when hanging on the rail. Cattle fed in this region come from a variety of sources around the country with little or no information regarding their genetic background. Predicting the way the cattle will grade, both quality and yield, when slaughtered is, at best, a guess. Even with better information available for the feeder to predict carcass performance, no real mandate is coming from that marketing sector to demand on-the-rail selling of cattle.

One of the primary tasks that must be accomplished in the packing plant for value-based marketing to succeed is for a rapid way (no more than several seconds per head) to objec-

tively evaluate the value-determining traits. This calls for the development of some on-line system to measure these traits in a system where both buyer and seller have trust. Currently, neither buyer nor seller have enough trust in each other to allow subjective human assessment of value. USDA graders do provide for some degree of trust here, not because they are infallible, but because they are an impartial third party in the marketing chain.

Another impediment for accomplishing value-based marketing is creating a system for tracking carcasses through the modern, high-speed packing plants of today. Identity must be preserved at least through the grading stand and preferably through fabrication. This also will give the packer information on how well the automated grading/evaluation system is working on estimating such parameters as carcass cutability. Maintaining identity through the plant will be a major accomplishment. Developing a system to do this from the live animal to carcass is probably rather easy to accomplish if the incentive is there; however, providing individual identification for the parts of the carcass once fabrication has begun is mind-boggling because of the speed and number of pieces generated in the large fabrication facilities.

Portions of value-based marketing exist today. When packers purchase cattle, for instance, the buyer takes into account in making the bid the number that meet the basis (e.g., Choice YG 3) and figures discounts or premiums off of this basis. The criticism of this system is that one price is paid for all in the lot rather than pricing each cattle individually and summing the total value. In addition, some criticize the system where the ranges in values among individuals or among lots are small. One problem that we have in this industry is that the price paid for livestock is quickly communicated among producers. If one lot of cattle in western Kansas brings $78/cwt, and that is a market high for the day or week, producers tend to believe that their cattle are worth the same price, even if the quality and consistency of their cattle is less than those that have topped the market.

Producers must take the initiative to begin to improve their livestock regardless of the economic signals in the marketplace. In this presentation, some of the best carcasses shown or that have the best cut-out values would have come from animals that were more efficient to produce in the first place. Producers must remember that they are in a complex industry that has many competitors. If the livestock industry does not begin producing the kinds of animals that have the efficiency in the costs of production to compete with other sources of proteins in the diet, no value-based marketing system created will save it.

Conclusions

This exercise provided a tremendous amount of information for a limited investment of product to use in a demonstration. As the title of the presentation states, "demonstrating problems and potential" is what this session accomplished. Everywhere the potential is shown for value-based marketing to work, a corresponding problem is identified that keeps the various segments of the industry from adopting such a system.

One thing is certain about value-based marketing: no real system will be used by the livestock and meat industry without automation or instrumentation. Value determination is something that will have to be done in a matter of seconds rather than the lengthy process such as the one we used to calculate values for this session. Instrumentation also will provide the confidence necessary for all parties in a value-based marketing system to buy and sell livestock and meat products on merit and trust.

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Discussion

D. Meeker: I don't really have a question but I have a comment. I have a complaint other than the one Dell described. And I have heard packer economics many times so I don't want to discuss that either. Dr. Forrest's point about this academic exercise was a good one and that's one issue getting the eight hours down to three seconds. But there is another important issue that has not been part of this program this afternoon that was brought up by Mr. Lochmann, and Dell Allen brought it up briefly just now. That is the issue of value and value to whom is the question.

This exercise compared different animals as to their conformance to an esoteric industry assumption of what value is. We must put dollars and cents on the values of animals according to their ability to satisfy customers. Today's systems have many problems, at least three problems beyond the predictive ability. One is that there is still obviously too much tolerance for fat. Secondly, there is too much ignorance of muscle quality; and by muscle quality, I don't mean Select or Choice, I mean texture, moisture, flavor, etc. And thirdly, indifference to packaging and presentation, etc. So getting better at predicting how animals conform to our own ideas is only part of it.

We have got to get systems to tap in to consumers, as Dell said. I think that everyone here probably has shopped at Wal-Mart. When you take your basket of goods out of Wal-Mart and they scan it with a scanner, your purchases are grouped with everybody else who bought at that store that day, grouped with all the stores in the country in Arkansas, and they know exactly what's hot and what's not. And most of the time, that information goes that night to the supplier and those shelves are restocked according to what consumers bought without all of the gut-wrenching exercises we go through trying to figure out what consumers want.

J. Forrest: I think you make an excellent point and we probably didn't bring that out very well because that is exactly what our goal needs to be after we measure it. We tried to put values on here that reflect consumer values, but perhaps an important aspect of that comment is that is the reason we need to send an economic signal back to the producer that in order to have the same kind of information that a Wal-Mart has, the producer needs that type of information as well, and we can only have that if we send that signal back. Yes, discounts and premiums, I think, Dell, are important but that's not the whole point. If the producer got a premium because he was more efficient in producing, that's great, but we also need to make it so that he is not sending the wrong product through that line and that's affecting consumption. So we need to continue to work to send that economic signal back and find good ways to do that. That has to be a part of this whole thing.

D. Allen: There is one way to do that and that's to mandate it, by law. I hope we in this country are not to the point where we are ready to do that. In other words, what we are talking about is that there is a competitive free-enterprise system out there; that if this is really and truly the way that it's going to be the most profitable for people to do, we are going to go about it in that manner. I think that Dave makes a good point. The industry has not to this point in time had the information systems to be able to handle all of this together. One final point that I will try to make: Do we want a Wal-Mart of the meat industry?