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Comparison of the beef empire days index with carcass pricing for ranking beef carcasses (2002)

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**COMPARISON OF THE BEEF EMPIRE DAYS INDEX
WITH CARCASS PRICING FOR RANKING
BEEF CARCASSES**

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Summary

Our study evaluated the effectiveness of the Beef Empire Days carcass index in ranking beef carcasses compared to rankings based on carcass prices. Two price sets were used: the average prices between January 1998 and June 2001, and a short-range price determined from the average prices between April and September of 2001. Additionally, carcass data from the top live-placing cattle were compared to the data of the highest indexing carcasses. The live show judges were very accurate in selecting for ribeye size. However, they selected cattle that were fatter, but did not marble as well as the high indexing carcasses. Changes that might improve the index are identified. However, the Beef Empire Days index ranked carcasses moderately well compared to the pricing system.

(Key Words: Beef Carcass Ranking, Prices.)

Introduction

In 1992, the Beef Empire Days Committee and Kansas State University developed an index system to rank beef carcasses based on how well they fit a specific industry target. The target, and point deductions for missing the target, were based on industry priorities at that time. Since 1992, slight modifications have been made to the index as needed. However, no comparison has been made

between the index rankings and price rankings of carcasses.

Value-based marketing of cattle has become much more common since 1992. Today, a large proportion of slaughter cattle are sold on a carcass value basis. Prices are negotiated between the producer and processor and usually have premiums and discounts based on carcass weights, quality and yield grades, and factors that reduce carcass value. This study evaluated the ability of the live show judges to select cattle that scored well in the index. Additionally, we wanted to see how well the Beef Empire Days Index reflects beef carcass prices in industry trade.

Experimental Procedures

USDA yield and quality factors and Beef Empire Days index values were obtained for the 641 steers and 494 heifers entered in the 1998, 1999, 2000, and 2001 Beef Empire Days contests. We compared the carcass data from the 25 steers and 15 heifers that placed high in the live show each year to the data of the 25 steer and 15 heifer carcasses that had the highest indexes in that same year. Analysis of variance was used to determine if differences existed in the characteristics between the top live placings and the top carcass placings.

Prices were calculated for each carcass based on the base prices \pm premiums and discounts reported by USDA. A long-

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range price structure was determined from the average prices reported during the time period from January 1998 through June of 2001 (Table 1). A short-range price was determined using the average prices from April to September of 2001 (Table 2). The price for low Choice, yield grade 3 carcasses was used as the base. That value and the Choice-Select spread were obtained one day each week from the USDA Beef Carcass Price Equivalent Index Value report. The premiums and discounts for carcasses deviating from the base were determined one day each week from the USDA National Weekly Direct Slaughter Cattle-Premiums and Discounts report. The Spearman correlation between the Beef Empire Days index values and carcass prices was calculated. Additionally, correlations between rankings produced by these two systems were evaluated.

The Beef Empire Days index starts with 100 points and is based on an optimum range of hot carcass weight, fat thickness, ribeye area, kidney, pelvic and heart fat, and quality grade. Cattle with values for a trait outside the optimum range have points deducted based on how far outside the optimum range they are. A relatively large deduction is made for Select versus the low Choice grade, but higher quality grades are rewarded minimally.

Results and Discussion

The average carcass data of the highest placing individuals from the live and carcass shows are presented in Table 3. The live judges attempt to select cattle that produce “ideal” carcasses and are useful to all segments of the beef cattle industry. No difference was found in the live weights of the cattle selected live compared to the highest indexing animals. However, the live judges selected animals that dressed higher than those that yielded the top ranking carcasses.

Highest placing live cattle had more fat cover, higher yield grades and less marbling than the highest indexing carcasses. Remarkably, the ribeye areas were almost identical between the individuals selected in the live and carcass shows.

Spearman correlation coefficients measure the relationship between rankings based on Beef Empire Days index and rankings based on prices. Spearman correlations of 0.69 and 0.71 indicate that rankings from the different methods agree moderately well. Additionally, of the 100 highest indexing carcasses, 33 were among the 100 with the highest long-range prices, and 70 were among the 100 carcasses with the highest short-range prices.

An examination of the Beef Empire Days index would not be complete without examining the current industry situation and determining if the targets set by the index in 1992 need to be changed. In the early 1990’s, reducing fat and improving quality were top priorities. A comparison of the 1991 and 2000 National Beef Quality Audits (NBQA) show that the 2000 audit had a slightly higher proportion of Select carcasses and of yield grade 1 and 2 carcasses. Additionally, the average fat thickness had decreased slightly, but other carcass traits had not really changed.

According to industry interviews in the NBQA—2000, excessive fat is still a primary concern. Therefore, the heavy emphasis on cutability should be maintained in the index. A significant increase in demand for “premium Choice” and Prime carcasses has occurred since 1992. The NBQA—2000 indicated that insufficient marbling is still among the top five industry concerns. Therefore, we suggest that the point bonuses for carcasses grading premium Choice or Prime should be increased.

The Beef Empire Days index is applied differently to steer and heifer carcasses, primarily because of the long-standing belief that heifers cannot compete with steer carcasses. However, previous data from the contests indicate that heifers are slightly fatter than their steer counterparts, but are also more muscular at the same carcass weight. Furthermore, steer and heifer carcasses are not priced differently in the industry. Therefore, we suggest that the same index be applied to both steer and heifer carcasses.

Finally, the range in carcass weights considered optimum in the Beef Empire Days index system is extremely narrow (50

pounds). In industry, the range of acceptable (no discounts) weights is about 350 to 400 pounds, which leads to too much variability for carcass ranking. However, the 50 pound optimum range in the Beef Empire Days index system penalizes a large number of carcasses that are desirable by industry standards. Initially, the narrow optimum weight range was established to decrease variability in subsequent retail cuts. This is partially corrected by the ribeye area adjustment for carcasses with especially large ribeyes. However, we suggest that the range of acceptable hot carcass weights be increased.

Table 1. Average Carcass Prices (\$/cwt) by USDA Quality and Yield Grades with Discounts for Outliers from January 1998 to June 2001

Yield Grade	Prime	Choice +/-0	Choice-	Select	Standard
1	119.09	114.92	113.45	105.54	95.61
2a	117.99	113.82	112.35	104.44	94.51
2b	117.95	113.78	112.31	104.40	94.47
3a	117.05	112.88	114.41	103.50	93.57
3b	116.75	112.58	111.11	103.20	93.27
4	101.12	96.95	95.48	87.57	77.64
5	95.94	91.77	90.30	82.39	72.46

Miscellaneous Discounts		Outweight Discounts	
Bullock/Stag	-25.90	400-500	-21.83
Hardbone	-22.88	400-550	-17.64
Dark Cutter	-28.90	950-1000	-16.14
		1000+	-22.20

^aTrimmer half of yield grades 2 & 3; ^bFatter half of yield grades 2 & 3.

Table 2. Average Carcass Prices (\$/cwt) by USDA Quality and Yield Grades with Discounts for Outliers from April to June 2001

Yield Grade	Prime	Choice +/0	Choice-	Select	Standard
1	127.19	122.54	121.08	110.97	103.88
2a ^a	125.73	121.08	119.62	109.51	102.42
2b ^b	125.21	120.56	119.10	108.99	101.90
3a	124.06	119.41	117.95	107.84	100.75
3b	123.96	119.31	117.85	107.74	100.65
4	110.98	106.33	104.87	94.76	87.67
5	104.41	99.76	98.30	88.19	81.10

	Miscellaneous Discounts	Outweight Discounts
Bullock/Stag	-22.33	400-500 -24.00
Hardbone	-24.57	400-550 -15.14
Dark Cutter	-27.50	950-1000 -9.23
		1000+ -18.26

^aTrimmer half of yield grades 2 & 3.

^bFatter half of yield grades 2 & 3.

Table 3. Least Squares Means for Carcass Traits of Highest Placing Steers and Heifers Selected by Live Evaluators or the Beef Empire Days Carcass Index from the 1998, 1999, 2000, and 2001 Beef Empire Days Contests

	Steers		Heifers	
	Live	Carcass	Live	Carcass
Live weight (lbs)	1212	1207	1102	1107
Hot carcass weight (lbs)	780 ^a	763 ^b	712	705
Fat thickness (in.)	0.50 ^a	0.37 ^b	0.50 ^a	0.37 ^b
Ribeye area (in ²)	14.5	14.3	14.6	14.5
KPH (%)	1.7	1.6	1.8 ^a	1.7 ^b
Yield grade	2.4 ^a	2.1 ^b	2.1 ^a	1.8 ^b
Marbling	Slight 80 ^a	Small 50 ^b	Small 00 ^a	Small 60 ^b
Beef Empire Days Index	68.16 ^b	102.23 ^a	69.71 ^b	99.11 ^a

^{a,b}LS means within a trait and sex class lacking common superscripts differ (P<0.05).