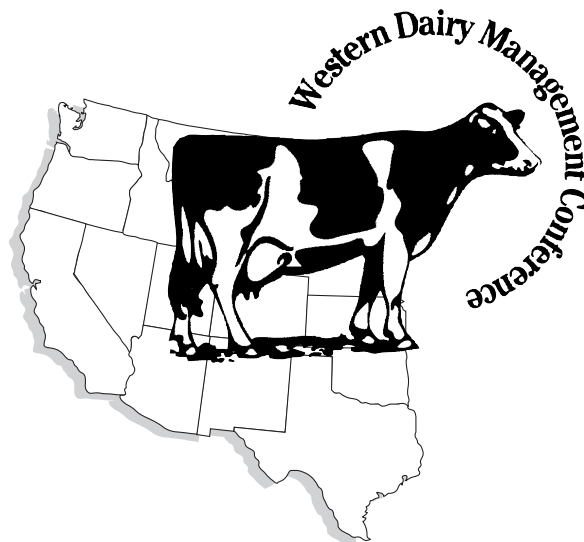


Marketing Beef From Dairy Cattle – Now And In The Future

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According to Galton and Knoblauch (1996), "For dairy farm sustainability... producers will continue to manage their dairies as businesses and continuously analyze their businesses to increase competitiveness and profitability. Producers will place greater emphasis on producing competitively priced milk for a more market-oriented industry. Producers must remember that their businesses are a part of the total U.S. economy and of the global economy as well. Producers need to position their businesses to achieve the desired standard of living. They should strive for farm profitability increases of at least 10% per year to maintain a standard of living, and farm and off-farm investments. Family income may come from dairy farm income only (milk, cull cows, bull calves, sale of breeding stock) or a combination of dairy farm income, non-dairy farm income and/or non-farm income. As a farm family relies more on dairy farm income, they are subject more to the economic forces of the dairy industry" (Galton and Knoblauch, 1996).

Paraphrased, and in the context of the narrower focus of the present topic... For dairy farm producers to increase competitiveness and profitability they must optimize marketability of cull cattle (surplus cows/bulls) and bull calves, so long as such optimization does not negatively impact on income received from sale of fluid milk and/or breeding stock. Be assured that the caveat, in the latter half of the previous sentence, must not be trivialized. Because the relative proportion of dairy farm income that comes from the sale of cull cows/bulls and bull calves is small, essentially no selection pressure and no change in husbandry or management would be warranted if there was concurrent or concomitant lessening of capacity to produce milk or to produce valuable stock for herd replacement or sale.

Gardner et al. (1994) cites a personal communication with Dr. Dennis R. Buege of University of Wisconsin-Madison in saying that "Holstein meats comprise approximately 15% of total beef consumption in the U.S." A

large part of that 15% would undoubtedly be lean beef from cull dairy cows/bulls that is used to manufacture ground beef and processed beef (like roasts for Arby's restaurants) but Smith et al. (1995) said that 4.8% of 1995 fed-beef supply was from dairy cattle (largely Holstein steers).

Optimizing The Value Of Surplus Cows/Bulls

Neither beef cattle producers nor dairy cattle producers spend lots of time thinking of ways to improve the merit of one of their most valuable byproducts-surplus cows and bulls-but they should. According to Cattle(Fax (1995), sale of cull cows and bulls for slaughter, depending upon the operation, represents 15 to 20% of farm/ranch revenues. And, with no need to spend money to do it, the value of surplus cows and bulls can be enhanced-marginally to markedly-just by paying attention...just by appropriately managing, monitoring and marketing surplus cattle.

Professors and graduate students at Colorado State University, in 1994, conducted a study-The National Non-Fed Beef Quality Audit-using dairy cattle and beef cattle checkoff funds that was designed to identify ways of enhancing value of surplus cows and bulls (Smith et al., 1994). The CSU scientists: (a) conducted Face-To-Face Interviews with industry leaders to identify and quantify "quality defects," (b) completed a National Audit At Packing Plants to quantify "quality defects" in the holding pens, on the slaughter floor and in the coolers, and (c) held a Strategy Workshop to identify strategies and tactics for improving quality, consistency and competitiveness of U.S. non-fed beef.

From the Face-To-Face Interviews it was determined that the Top Ten Defects Of Cull Cows And Bulls were: (1) Excessive Bruises, (2) Excessive Condemnation Rates, (3) Excessive Hot-Iron Brands, (4) Too Small Ribeyes In Cow Carcasses, (5) Inadequate Muscling In Cows, (6) Excessive External Fat, (7) Excessively Heavy Live Weights In Bulls, (8) Low Dressing Percentages, (9) Advanced Lameness, and (10) Too Frequent Disease.



Presented in Table 1 is the frequency of defects in live cattle at packing plants. The breakdown into categories of beef cattle vs. dairy cattle was for informative, not comparative, purposes.

Areas in which dairy cattle producers can make immediate progress to reduce quality defects include: dehorning; moving as many as possible of side and shoulder brands to the upper hip region; lessening scratches and cuts on the hide; and, getting cull cattle to market (auction or packing plant) before they become too skinny, emaciated or too lame.

Presented in Table 2 are economic costs for quality losses in non-fed cattle. The \$69.90, average loss due to quality defects for every cull cow/bull sent to harvest in 1994, represents a huge loss to the industry, as a whole, and to the production sector, specifically.

During the Strategy Workshop, ten strategies were identified as means for improving the quality, competitiveness and value of cull cows and bulls and the products they produce. Those strategies are: (1) Minimize Condemnations By Timely Marketing, (2) Accomplish End-Product Improvements, (3) Decrease Hide Damage, (4) Reduce Bruises, (5) Encourage Competitiveness And Accountability, (6) Assure Equity In Salvage Value By Equalizing Plant-To-Plant FSIS Inspection, (7) Ensure Beef Safety (especially its microbiological safety), (8) Prevent Chemical Residues And Injection-Site Lesions, (9) Enhance Price Discovery and (10) Encourage On-Farm Euthanasia Of Downer Animals And Animals With Advanced Cases Of Cancer Eye.

In summary, of the \$69.90 for every cull cow/bull harvested... cattlepersons could recover:

Table 1: Frequency Of Defects In Live Cattle In Holding Pens At Packing Plants.

condition	incidence in:	
	beef	dairy
low muscling	37.4%	57.5%
low body condition	3.5%	4.6%
high body condition	8.6%	3.0%
severe cancer eye	1.6%	0.3%
moderate cancer eye	2.0%	0.0%
prolapse	1.2%	0.2%
udder/teat problems	5.0%	14.5%
sheath damage	10.2%	5.3%
knots/abscesses	5.8%	13.4%
horns	24.2%	11.9%
scratches/cuts on hides	26.3%	34.1%
insect damage on hides	7.8%	11.5%
side brands on hides	30.1%	4.8%
shldr/hip brands on hides	24.9%	13.6%
multiple brands on hides	27.9%	3.0%
downer cattle	0.9%	1.3%
stifled cattle	3.4%	5.8%
lumpy jaw	1.9%	0.6%

Table 2: Economic Costs For Quality Losses For Non-Fed Cattle.

Whole Cattle/Carcass Condemnation	\$11.99
Carcass Cooking & Parts Removed	2.16
Carcass Loss-"Zero Tolerance (FSIS)"	1.87
Condemnations of Edible Offal	3.99
Hide Loss; Brands/Scratches/Insects/Disease	6.92
Injection-Site Lesions	.66
Bruise Trim (Includes Primal Devaluation)	3.91
Disabled Cattle & Dark Cutters	.84
Yellow External Fat	2.27
Inadequate Muscling	14.43
Excess External Fat	17.74
Light Carcasses (Includes Primal Devaluation)	3.12
Total loss	\$69.90

\$14.60 by managing cattle, to minimize defects and quality deficiencies, \$27.65 by monitoring cattle, to ascertain their health and condition, and \$27.65 by marketing cull and surplus cattle in a timely manner. Additional information and a bulletin entitled "The National Non-Fed Beef Quality Audit; Special Section:Dairy Cattle" can be obtained by writing Dr. Gary L. Cowman or Michael T. Smith at National Cattlemen's Beef Association, P.O. Box 3316, Englewood, CO 80155).

Optimizing The Value Of Dairy Bull Calves

Dairy producers seldom feed, or retain ownership during the finishing of, the steers derived from their surplus bull calves but it should be of interest for them to know as much as is possible about the U.S. fed-beef supply. Professors and graduate students of Colorado State University, Texas A&M University and Okla-

homa State University, in 1995, conducted a study-The National Beef Quality Audit-using dairy cattle and beef cattle checkoff funds that was designed to identify ways of enhancing value of slaughter steers/heifers (Smith et al., 1995). The CSU/TAMU/OSU scientists (A) conducted Face-To-Face Interviews with industry leaders to identify and quantify "quality defects"; (b) completed a National Audit At Packing Plants to quantify "quality defects" on the slaughter floor and in the coolers; and (c) held a Strategy Workshop to identify strategies and tactics for improving the quality, consistency, competitiveness and market-share of U.S. fed beef.

From the Face-To-Face Interviews it was determined that the Top Ten Quality Concerns based upon the aggregated responses of purveyors, retailers and restaurateurs were:

- (1) Low Overall Uniformity and Consistency
- (2) Inadequate Tenderness
- (3) Low Overall Palatability
- (4) Excessive External Fat
- (5) Beef's Price Is Too High For The

Value Received

- (6) Insufficient Flavor
- (7) Excessive Weights Of Cuts And Boxes Of Cuts
- (8) Inappropriate USDA Quality Grade Mix
- (9) Incidence Of Injection-Site Lesions Is Too High
- (10) Low Overall Cutability.

The Top Ten Quality Concerns of packers were:

- (1) Lack Of Uniformity And Predictability Of Live Cattle
- (2) Liver Condemnation Rate Is Too High
- (3) Too Frequent Hide Damage Due To Mud/Manure
- (4 tie) Too Frequent Bruise Damage
- (4 tie) Too Many Dark Cutters
- (4 tie) Excessive External Fat
- (7) Cattle Of Too Heavy Weight
- (8) Inadequate Marbling
- (9 tie) Too Frequent Hide Damage Due To Hot-Iron Brands
- (9 tie) Beef's Price Is Too High For Value Received.

Table 3: Frequency Of Defects On The Slaughter Floor And In The Cooler.

<u>defect</u>	<u>incidence</u>
Butt Brands	38.7%
Side/Shldr Brands	19.8%
Multiple Brands	6.2%
Excessive Mud	5.1%
Horns	32.2%
Bruises	48.4%
Liver Condemnations	22.2%
Tongue Condemnations	3.8%
B Maturity	4.3%
C/D/E Maturity	.6%
Traces Marbling	3.7%
Practically Devoid Marbling	.1%
U.S. Standard	4.6%
Dark Cutter (1/3, 2/3 disc)	2.4%
Dark Cutter (full disc)	.4%
Blood Splash	1.0%

tionally high propensity to deposit marbling. So to the extent possible, steers of the dairy breeds should be finished for slaughter at liveweights of 900 to 1,400 lb in order to provide beef of Prime and Upper 2/3 Choice.

Presented in Table 5 are economic costs for quality losses in fed cattle.

During the Strategy Workshop, eight strategies were identified as means for improving the quality, consistency, competitiveness and market-share of fed beef. Those strategies are:

- (1) Assist Producers With Use Of Selection And Management Techniques To Produce Cattle That Fit Customer Expectations For Marbling, Red Meat Yield And Weight.
- (2) Establish Close-Trimmed Beef (1/4-inch or less) As The Industry Standard.
- (3) Develop A Cattle Identification System That Facilitates Data Collection And Information Feedback, And Reduces Reliance On Hot-Iron Branding.
- (4) Encourage Development Of Cattle-Pricing Systems That Accurately Identify And Reward Production Of Cattle With Zero Defects.
- (5) Encourage Development Of Cattle-Pricing Systems That Identify, Categorize And Price Product Attributes That Affect Consumer Satisfaction.
- (6) Continue To Discover, Develop And Apply Technology To Enhance The Quality Of Beef.
- (7) Identify Breeding Systems That Optimize Production, Palatability And Profitability.
- (8) Identify Procedures To Facilitate Improved Customer Satisfaction And Loyalty To The Beef Eating Experience.

Presented in Table 3 is the frequency of defects in live cattle on the slaughter floor and in the cooler.

Areas in which dairy cattle producers could have impact on reducing quality defects in fed-beef would include: if they brand bull calves, moving as many as possible of side and shoulder brands to the upper hip region; dehorning; and selecting against wildness in cattle (cattle with poor dispositions are much more likely to be "dark cutters" and to have "blood splash" in muscle than are docile cattle).

Presented in Table 4 is the ideal consist of fed-beef carcasses, by USDA Quality Grades, in order to meet present and future demands for domestic/export trades.

Steers of all of the dairy cattle breeds have excep-

In summary, the quality losses per steer and heifer from the 1995 NBQA totaled \$137.82. Of this total, it was determined that 34.7% could be recovered by increasing Red Meat Yield (\$47.76), 27.8% could be recaptured by Enhancing

Table 4. Ideal Consist Of USDA Quality Grades.

	<u>actual</u> <u>1995</u> <u>NBQA</u> <u>consist</u>	<u>retailers</u>	<u>food</u> <u>service</u> <u>purveyors</u>	<u>exporters</u>	<u>packers</u>	<u>aggregate</u> <u>ideal</u> <u>consist</u>
Prime	1%	3%	6%	30%	6%	7%
Upper 2/3 Choice	11%	18%	19%	42%	25%	21%
Low Choice	36%	27%	43%	28%	38%	34%
Select	47%	52%	32%	0%	31%	38%
Standard (and lower)	5%	0%	0%	0%	0%	0%



Taste And Tenderness (\$38.30), 34.1% was recoverable by Improving Management (\$47.76), and 3.4% was recapturable by Controlling Weight \$4.66). Additional information and a bulletin entitled "The National Beef Quality Audit-1995" can be obtained by writing Dr. Jim Gibb at National Cattlemen's Beef Association, P.O. Box 3469, Englewood, CO 80155).

Improving Muscling And/Or Quality In Dairy Bull Calves

Gardner et al. (1994) reported that the majority of Holstein steers are sired by a limited number of genetic-related bulls; accordingly, meat from Holstein steers is highly consistent and acceptable in sensory attributes. It is presumed that the sires of steers of other dairy cattle breeds in the U.S. (Jersey, Guernsey, Ayrshire, Brown Swiss, Milking Shorthorn) are also closely genetically related. Finished steers of all of the dairy cattle breeds have high propensities to deposit marbling and all produce carcasses with high USDA Quality Grades. Likewise though, finished steers of all of the dairy cattle breeds have thin and flat muscles, high percentages of bone in the carcass and/or low muscle-to-bone ratios.

Gardner et al. (1994; 1995) compared aggressively implanted and calf-fed Holstein steers, normally implanted and calf-fed Holstein steers and normal-implanted and yearling-fed Holstein steers to determine effects of age-class and implant protocol on carcass desirability. Results were as follows:

- (1) Carcasses from aggressively implanted calf-fed steers were more mature, had the least marbling and had the highest incidence of dark-cutters.
- (2) Carcasses from normally implanted, calf-fed steers had the most marbling, the smallest ribeyes, the least desirable Yield Grades and the most trimmable fat.
- (3) Yearling-fed, normally implanted steers produced carcasses that had the largest ribeyes, the most desirable Yield Grades, and the least trimmable fat.
- (4) No significant difference in boxed beef, lean trim or bone yields due to age or implant were detected.

(5) In comparison to hotel/restaurant/institution carcasses from traditional beef breeds, carcasses from Holstein steers had less trimmable fat and lower boxed beef yields as well as much higher percentages of bone.

(6) No significant differences were noted in tenderness of ribeye, top sirloin butt or top round steaks although variability in tenderness tended to be highest for top sirloin butt and top round steaks from aggressively implanted, calf-fed steers. Additional information on this study and a bulletin can be obtained by writing Brett Gardner or Dr. Glen Dolezal at Oklahoma State University, Department of Animal Science, 104 Animal Science Building, Stillwater, OK 74078-6051.

Finally, a colleague of mine at Colorado State University, Dr. George Seidel, is getting very, very close to being able to separate sperm into gender groups. When that is accomplished and becomes commercially feasible, the dairy farm producer will have the option of breeding cows that are not worthy of producing replacement females to male-gender semen of a breed other than that of the dairy cow.

It will be interesting to see when such semen selection is possible which crosses will occur in greatest frequency. My guess is that dairypersons with Holstein cows will favor crosses with Angus, Japanese Black Wagyu, Limousin and Charolais. Of the latter four crosses, Holstein X Wagyu steers would yield the highest quality carcasses but they would lack muscling. Holstein x

Angus steers would yield high quality carcasses with desirable muscling and cutability – the best combination of characteristics – while Holstein X Limousin and Holstein X Charolais would produce Select grade carcasses with much more muscling than purebred Holstein steers. Crosses of Brown Swiss, Ayrshire and Milking Shorthorn cows with beef breeds would probably follow logic similar to that described for those with Holstein cows.

My guess is that dairyper-

Table 5: Economic Costs For Quality Losses For Fed Cattle.

Excess external, seam and trim fat	\$27.42
Inferior muscling	20.34
Inadequate palatability	7.64
Insufficient marbling	28.41
Too many hardboned carcasses	1.35
Too many bullocks	.90
Hide defects	24.30
Carcass pathology	.46
Offal condemnations	3.44
Injection sites	7.05
Bruises	4.03
Dark cutters	6.08
Grubs, blood-splash, yellow fat, calluses	1.74
Carcass weights <550 lbs. or >949 lbs.	4.66
Total loss	\$137.82

sons with Jersey or Guernsey cows will favor crosses with Angus, Limousin or Charolais. The problem with Jersey X Angus and Guernsey X Angus steers is that their carcasses would still be relatively small and not well-muscled; steers of Jersey or Guernsey crossed with Limousin or Charolais would be of moderate size, Choice in Quality Grade and very acceptable in muscling and cutability.

In conclusion, Smith (1995) said that for the beef industry and its products to be sold in domestic or foreign markets, the results of the National Beef Quality Audit, the National Non-Fed Beef Quality Audit, and the International Beef Quality Audit and the findings of appropriate position-papers, treatises and reviews have identified, as the primary inconsistencies in the quality of beef, (a) Insufficient Palatability, (b) Inadequate Marbling, (c) Problems With Color, Water-Loss and Shelflife of Beef Muscle, and (d) Production/Management Errors

Causing Blemishes, Bruises, Defects, Diseases and Condemnations. Beef from steers of dairy cattle breeds and crosses of dairy cattle with cattle of the beef breeds have much to offer in reducing inconsistencies in palatability, marbling and muscle color of beef. And, hopefully, dairy farm producers will take seriously their role in reducing errors in production and management of cull cows/bulls and of bull calves.

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