A SURVEY OF DAIRY PRODUCER PRACTICES AND ATTITUDES PERTAINING TO DAIRY MARKET BEEF FOOD SAFETY[1]

Veterinary Certified Hazard Analysis and Critical Control Points

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ABSTRACT

A national survey of dairy producers assessed their willingness to improve safety of food products from their farms (response rate 9%). The majority considered a veterinarian as their first choice for information concerning dairy market food safety, with more than 33% reporting that they would pay for veterinarians to perform food safety assessments. Nearly half reported that they had been well informed by their veterinarian concerning food safety issues. Income from market beef was important to 75%, but few had toured a slaughter facility and less than 35% were aware that HACCP was required in U.S. slaughter facilities. Most believed consumer food safety concerns affected their profits, but less than half reported that on-farm HACCP would reduce the risk of foodborne disease. Several reported that they would change practices if so doing would increase profits and most preferred that profits come from incentives paid by slaughter establishments. Few preferred government subsidies and most opposed on-farm government regulatory programs. Ultimately, respondents expected consumers to pay for on-farm food safety practices and expected little of the corresponding increase in price to trickle to them. Overall, results indicate that producers might benefit from better knowledge of HACCP. Further research is needed to help producers determine if implementing on-farm HACCP improves profits as well as public health.

Keywords: HACCP, Questionnaire, Dairy, Food safety

Meat from dairy market cows (cull cows) comprises 15% (1 out of 7 meals) of the beef consumed in the United States (8). Dairy market beef (DMB) is cut into steaks such as rib, loin, and sirloin, which are served in family steak houses, casino buffets, and airline meals. Muscles from the round and other cuts that produce 100% visual lean beef are manufactured into roast beef used for sandwiches typically served at fast food restaurants. Trimmings from the de-boning process and the cutting of other cuts of meat are used to produce ground beef, which is used in many school lunch programs and fast food restaurants. Thus, people of all ages and social status consume dairy market beef, and as a result, dairy market cow management affects nearly everyone eating meat.

Dairy market cows have reached the end of their milk production profitability and may be ill, non-ambulatory, or weak. Animals in these conditions may harbor greater amounts of pathogens, and their slaughter may increase spread of pathogens at the slaughter establishment. The USDA requires beef slaughter establishments to have hazard analysis and critical control point (HACCP) plans designed to identify and reduce any physical, chemical, or biological hazards that are reasonably likely to cause injury or illness to consumers, and these pathogen reduction performance standards must be met (9). Such regulations portend regulation at dairy farms, but government currently has no jurisdiction there, so dairy farm HACCP implementation must be voluntary.

Some have proposed that veterinarians could help dairy farms adhere to production practices that minimize food safety hazards (1, 2, 3). Previous studies investigated production management practices using questionnaires (4, 5), and recently a survey

targeting slaughter establishments and veterinarians was used to identify the perceived market or client demand for dairy on-farm food safety services (6). However, to the authors' knowledge, no one has surveyed dairy producers about their management practices and attitudes about food safety. The objective of our questionnaire was to assess attitudes of dairy producers about practices that might affect the safety of food and food products derived from market dairy beef.

To assess the feasibility of "veterinary certified (VC) HACCP" at dairy farms, a questionnaire was constructed to determine dairy producers' attitudes about management practices of market dairy cows and understanding of HACCP and food safety practices. We assessed their knowledge of what happens to market cows— what products they become, how much waste is associated with those products, and who are the consumers of DMB— and their knowledge of how foodborne diseases impact DMB and associated profit. The survey also assessed producers' willingness to adopt food safety practices, their opinion about "certified/labeled production practices", incentives for changing their practices, and handling and disposal practices of non-ambulatory (downer) and dead cows. This information should provide knowledge that may be used to encourage producers to adopt practices that result in the production of safer food.

MATERIALS AND METHODS

A questionnaire was developed with 59 questions, which required ordinal, binomial, and ranking responses. The questionnaire was pre-tested at 7 dairy farms in four U. S. geographical regions— Southeast (FL), Midwest (OK, KS), Northwest (CO, ID), and

Southwest (CA, TX). Feedback from dairy managers and owners was used to revise the questionnaire. The questionnaire was printed, labeled, and mailed from the Kansas State University Agricultural Experiment Station and Cooperative Extension Service, Umberger Hall, Manhattan, KS. The mailing list was provided by a major pharmaceutical company; however addresses from the list had not been restricted to those who purchased products from the company.

A total of 6,736 questionnaires were sent by U.S. postal mail during the first week of June 2001. Fifty-seven surveys were unable to reach their destination because of address problems. Questionnaires were 8 pages, saddle stitched. The title page included with the questionnaire asked for a response by July 1. Some of our questionnaires did not reach their destination before this return date (because they were mailed fifth class) which may have contributed to a lower than expected response rate (about 10%). A total of 607 questionnaires were returned and used for analysis.

For ease of data entry, the responses were entered into a computer spreadsheet (Excel) and then imported into Statistical Analysis System (SAS) (7) files. The Chi-squared test (General association Cochran Mantel Hansen) was used to detect pair wise differences in response frequency to questions requiring multinomial or binomial responses. For ranking questions, each rank was treated as a repeated measure and averaged using Least Squared mean procedure in SAS. Responses were categorized by the 5 geographical regions defined by NAHMS (1996) and the responses among regions were compared statistically. Farm sizes vary between regions, and responses between regions may reflect differences in farm sizes.

RESULTS

Sample information

The dairy farms surveyed were representative of farms nationally. The dairy farms surveyed varied in herd size: less than 250 (26.3%), 251 to 500 (38.4%), 501 to 1000 (21.8%), and 13.5% of farms had more than 1000 milking cows. Producers milked their cows twice (56.2%) or three times (43.6%) daily. Eighty-three percent of the dairy farms were within 50 miles of the nearest auction market, 13.1% were 201 to 500 miles and 2.3% were between 501 and 1000 miles. Approximately 85% were within two hundred miles of a slaughter establishment (37.2% within 50 miles). Mean rolling herd average and calving interval of the dairy farms were 9,937 kg and 13.6 months, respectively. Forty-three percent of producers surveyed had culling rates of 21 to 30% and 37.7% had a slightly higher rate of 31 to 40%.

Producer perceptions about the role of veterinarians

More than a third of the respondents would pay a veterinarian to certify that their production practices protect the safety of meat, locate hot spots of bacteria on the farm, and train their personnel about HACCP (Table 1). However, the respondents were less willing to pay a veterinarian to test cows in an effort to monitor meat safety. More than

45% of the producers believed that they had been well-informed about issues of food safety by their veterinarian (Table 1).

Producers were more willing to get information about dairy market beef safety from a veterinarian than from product sales representatives, non-veterinary consultants, university extension specialists, government agencies, or slaughter establishments (Table 2). To prevent diseases from entering the herd, respondents were equally likely to implement bio-security programs and test cows for disease before purchasing them as they were to contact a veterinarian for assistance. Purchasing animals from a trusted supplier and testing cows at freshening were other preventive measures selected by the respondents. Producers were more likely to contact a veterinarian for assistance if a disease was already in the herd and they needed assistance in preventing its spread (Table 3).

Producer perceptions about the processing and distribution of dairy market beef.

Fewer than 15% of the respondents had toured a slaughter establishment where their market cows were sold. More than 65% of the respondents were unaware that HACCP plans are required for slaughter establishments, and more than 10% of the respondents thought, incorrectly, that HACCP was a government program or agency. Most producers underestimated or did not know the amount of meat derived from dairy market cows, and more than 38% of the producers did not know that, in addition to ground meat, steaks and roasts are derived from dairy market beef (Table 4). More than 50% of the producers

overestimated or were unsure of the amount of dairy market meat that is condemned because of the condition of dairy market cows at slaughter.

Producers perceptions about consumers of Dairy Market Beef

Respondents report that what consumers value most about dairy market beef is that it is safe to eat. Following that, producers perceive that consumers value taste and tenderness, ease of preparation, and leanness. They believe consumers are least concerned about production practices that are protective of the environment or that maximize animal well-being and welfare.

Producers' perception of threats and/or risks to dairy market beef

Producers report that Foot and Mouth disease poses the greatest threat to dairy market beef safety in the U. S., followed by *Salmonella*, Bovine Spongiform Encephalopathy (Mad cow disease), *E. coli* 0157:H7, Brucellosis (*Brucella abortus*), and Johne's disease (*Mycobacterium paratuberculosis*). Producers ranked antibiotics as the greatest risk to dairy beef food safety, followed by injection site abscesses, vaccines and other disease prevention products, recombinant Bovine Somatotropin (rBSt), and prostaglandin injections for enhancing reproductive performance (Table 5).

Producers ranked cattle bedding and housing areas as the most likely source for dairy cows to acquire bacteria followed by water troughs and feed bunks, other animals (wild, domestic, rodents, and birds), recycled flush water, and ranked employees as least likely.

When asked to rank from least to most the challenges facing their dairy farm, reproduction ranked first followed by production management (low milk yield), herd health, manure management, animal welfare/well-being, and finally dead animal disposal. When asked to rank the challenges facing the dairy industry as a whole, environmental issues ranked as the most challenging with an average ranking of 1.6, followed by milk safety (2.5), meat safety animal and welfare (tied at 3.4). Producers perceived bio-terrorism as the least challenging, with an overall ranking of 4.2 (Table 6).

Producer perceptions about the profitability of HACCP

More than 57% of the producers depend on profits from the sale of dairy market cows and not solely on profits from the sale of milk; but more than 45% of the producers were unsure if implementing HACCP would increase profits. Forty percent of the respondents would be willing to change practices related to meat safety if doing so would increase profits. However, there is no pricing system or regulation that currently encourages producers to alter their practices. For producers to change their behavior, 65% would prefer incentives (premiums vs. dockage) from slaughter establishments. Only 29.6%

indicated that slaughter establishments should demand on-farm HACCP. Few respondents preferred government subsidies as an incentive to alter production practices. Respondents generally opposed on-farm government regulatory programs. Ultimately, the respondents expected the consumer to pay for on-farm food safety programs such as HACCP because they believe the consumer would benefit most from certified beef safety production practices. However, respondents expected that little of the resulting increase in beef prices would "trickle down" to the dairy farmer for implementing food safety programs. They believed that slaughter establishments, retailers, certifiers (e.g., veterinarians) would realize profits before the dairy farmer.

Producers were asked to rank the most likely to least likely forces that would cause producers to change practices that might impact dairy market beef safety. Respondents ranked premiums or dockage from slaughter establishments as the most likely, followed by government subsidies for destroying downers or sick animals, government regulations, consumer demand, and the least likely force was recommendations from dairy and beef associations (NMPF, DHIA, NCBA).

More than 60% of the respondents would implement a 30-day pre-market feeding program to create added value. Half the respondents would clean their trailers before marketing cows if they would receive a premium of US$0.01 per pound of hot carcass weight, and 15.4% of the respondents would guarantee a minimum body condition score of 2.5 on a 1 (low) to 5 (high) scale for an additional US$0.01 per pound of hot carcass weight.

About 40.3% of the respondents believed that on-farm HACCP would reduce the risk of disease to people. For those willing to implement on-farm HACCP, the majority did not know how to begin, but considered the veterinarian to be their first choice for acquiring information about dairy market food safety. Before implementing a HACCP program themselves, producers believed that they would first need to know the cost of implementation, followed by what tools are available for implementation, government regulation for slaughter establishments, the effects of antibiotic residues and bacteria on public health, and slaughter establishment practices. Knowledge of who eats dairy market beef was least important to producers contemplating implementing a market cow food safety program.

Producer perceptions about practices that may affect food safety

Over 54% of the producers surveyed indicated that healthy animals on a dairy farm should not share the same pen, eat from the same feed bunk, or drink from the same water trough as sick animals. Over 55% of producers surveyed would consider giving intramuscular injections in the neck to reduce damage to valuable cuts of meat, compared to 28.6% who would not.

According to the producers surveyed, the most humane way to load downer cows into trucks is to use a sled. Less humane ways are by a loader bucket or hip lift. The least humane way is to pull them by a chain with a loader. Producers were asked to rank the

most to the least safe way to dispose of dead cows. A dead pile above ground was ranked safest followed by a renderer, carcass composting, dead pile in an uncovered hole, burying, and the least safe way was to burn.

More than 56.6% of producers strongly or mildly disagreed with a statement suggesting that only market cows able to walk onto a trailer should be sold for beef, compared to 35.6% that mildly or strongly agreed. Interestingly, 57.9% agreed that slaughter establishments should refuse non-ambulatory (downers) or sick cows with high amounts of "harmful bacteria." When suggested to producers that slaughter establishments were not concerned about the quality of market cows, 63.9% of producers disagreed; however, they did not want slaughter establishments to dictate production practices to them.

Regional effects

Significant differences were found in the responses to some questions among the five geographical regions surveyed. More producers (55%) in the NW would implement HACCP only if it would provide them with additional profits than producers in the SE (43%), MW (40%), SW (34%) and NE (33%). More producers in the NW (42%), MW (40%), NE (38%), and SE (34%) believed that non-ambulatory cows should be sold for beef than in the SW (24%). More dairy producers in the NE (45%) and MW (42%) believed that on-farm HACCP would reduce risk of disease in people than in the SW (39%), NW (31%) and SE (28%). More producers in the NE (63%) believed that healthy animals should not share the same pen, eat from the same feed bunk, or drink

from the same water trough as unhealthy animals than producers in the MW (54%), SW, (51%) NW (18%), and SE (14%). More producers from the MW (61%) and the SW (59%) agreed that intramuscular injections should be given in the neck to reduce damage to valuable cuts of meat than producers in the NE (52%), NW (24%) and the SE (14%).

Culling rates reported also varied by geographical region. The majority of producers in the NW (53%),, MW (45%), and SE (44%) reported 21 to 30% culling rates and those responding from the SW and NE had the majority of their culling rates between 31 and 40%, and no more than 5% in any region reported culling rates of more than 40%.

The average price per pound of market cow beef sold in 2001 varied with region of the country. The majority of producers in the MW (50%) and the NE (49%) received between 36 and 45 cents per pound of market beef and the majority (MW (62%) NE (73%)) had average herd sizes of less than 500 milking cows. The majority of producers in the NW (63%), SW (55%), and SE (52%) received 26 to 35 cents per pound of market cow beef and the majority of herds surveyed in the NW (69%), SW (67%), SE (65%) averaged between 250 and 1000 milking cows. Only 13.5% of those surveyed were milking more than 1000 cows, and of those about 50% were in the SW, 19% were in the NW, 18% were in the MW, 9% were in the NE, and 4% were in the SE.

The majority of producers who milked cows 3 times were from the MW (55%), and the NW (54%). The majority of producers from the SW (74%), SE (74%), and NE (55%) milked cows twice daily.

DISCUSSION

Producers are ill informed about what happens to their animals after they leave the farm and therefore are not as likely to be concerned with their market cows once they are unloaded at the packing plant. More information must become available and presented in a clear and practical manner to encourage dairy producers to implement programs (VC-HACCP) that may reduce foodborne disease. One problem is that the majority (64.3%) of dairy producers do not know how to begin to implement HACCP. This presents an opportunity for veterinarians to provide such a service, as producers indicated that they would first consult with a veterinarian for food safety information. Research is needed to determine if veterinarians know how to develop a HACCP plan and understand the pre-requisites associated with a HACCP plan. In addition, veterinarians must be compensated for helping producers monitor progress and for following up with suggestions addressing food safety problems. Some dairy producers responded that HACCP is a government regulation or agency. These producers do not realize that it is a program of their own design, and that the proof of success is measured at the packing plant. Dairy producers could increase profits by implementing such a program, which produces high quality and safe meat, if the packers were willing to pay premiums.

Profits from selling market beef are important to producers, and producers are willing to change practices related to meat safety if doing so will increase profits. The majority of respondents indicated that they would inject animals in the recommended locations to minimize damage to meat and allow veterinarians to certify their market cow practices. However, with the current pricing system and regulations, producers do not have a mechanism that enables them to increase profits by changing their behavior. For producers to change their behavior they would prefer incentives (premiums vs. dockage) from the slaughter establishments over government subsidies.

The cost of disposal of animals that die on the farm has increased as environmental regulations have become stronger. Therefore, there is an incentive for dairy farmers to transport for slaughter animals that are near death, non-ambulatory, terminally ill, or poorly conditioned. Even if these animals fail ante-mortem inspection, the dairy producers may profit from the sale of the hide, and certainly may break even if the cost of disposal is factored in. Although unclear from the literature, these animals may harbor greater amounts of pathogens and their transport to slaughter may prove hazardous to public health. In addition, should these animals pass ante-mortem and subsequent inspections during the slaughter process, the quality and quantity of products may be undesirable.

Market cow processing plants (packers) are dwindling, thereby increasing the distance that cows are transported and the volume of cows processed in those plants receiving market animals. Eventually dairy market beef may have to adhere to higher standards,

and the financial impact on the dairy industry as a whole could be devastating. The destiny of cows that would have normally been marketed for beef but are no longer eligible under stricter inspection requirements is unclear. Such changes could impact the consumer meat market. Dairy producers may have to "fatten" cows before slaughter to reach a minimum BCS acceptable for meat being used for human consumption. Eighty-five percent suggested that it would take more than a penny a pound to guarantee a BCS of 2.5 or greater. Such practices may not be profitable, or able to meet consumer quality standards. Currently, market dairy cows represent a small proportion of the dairy producer's profit, and there are no financial incentives for producers to change their behavior.

CONCLUSION

Producers are not consumer or customer (slaughter establishments) driven because slaughter establishments are a means of disposing of animals that have concluded their milk production profitability. Meat producers in other agriculture sectors have become more customer driven and have modified production because of greater food safety accountability. Dairy producers oppose government regulatory programs, however some are willing to voluntarily implement their own programs if they can make additional profits. The majority, though, do not know how. If producers are willing to implement voluntary programs, they prefer that a veterinarian help them. Dairy producers prefer subsidies and premiums over government regulation or dockage. The biggest challenges facing dairy producers in today's industry, according to our survey,

were reproduction/production, herd health, and manure management. Producers feel that the slaughter establishment should absorb their costs for improved dairy market beef practices, but agree that consumers will benefit the most. How much impact will food safety have at the farm level and how soon will its impact be felt? Will changing our current practices at the farm assure consumers the best quality and safest dairy market beef possible, and if so, who is going to pay for it? Further research is needed to answer these questions and to help producers determine if implementing on-farm HACCP will improve profits and the public health.

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REFERENCES

1. Cullor, J. S. 1997. HACCP (hazard analysis critical control points): Is it coming to the dairy? J. Dairy Sci. 80:3449-3452.

2. Cullor, J. S. 1995. Implementing the HACCP program on your clients dairies. Veterinary Medicine/March pgs. 290-295.

3. Gardner, I. A. 1997. Testing to fulfill HACCP (hazard analysis critical control points) requirements: principles and examples. J. Dairy Sci. 80:3453-3457.

4. Goodger, W. J., J. C. Galland, and V. E. Christiansen. 1988. Survey of milking management practices on large dairies and their relationship to udder health and production variables. J. Dairy Sci. 71:2535-2542.

5. Jordan, E. R. and R. H. Fourdraine. 1993. Characterization of the management practices of the top milk producing herds in the country. J. Dairy Sci. 76:3247-3256.

6. Moore, D. A., W. W. Sischo, and D. J. Wilson. 2000. Continuing education needs assessment for on-farm food safety services. JAVMA 217(4) 479-484.

7. SAS User's Guide: Statistics, Version 6 Third edition. 1990. SAS Inst., Cary NC.

8. Trout, H. F. and B. I. Osburn. 1997. Meat from dairy cows: Possible microbiological hazards and risks. Rev. Sci. Off. Int. Epiz, 16(2) 405-414.

9. USDA:Food Safety and Inspection Service. Pathogen reduction; hazard analysis and critical control point (HACCP) systems. Federal Register 1996;61:38806-38989.

TABLE 1. Producers' perception of a veterinarian's role on dairy farms.

Item	SD[1]	D[2]	N A nor D[3]	A[4]	SA[5]
	% [6]				
Testing cows	32.6[a]	29.1[ac]	24.4[bc]	11.9[d]	2.0[e]
Locate harmful bacteria	18.2[a]	22.0[a]	21.5[a]	29.9 [b]	8.4[c]
Train personnel	20.6[a]	20.4[a]	26.0[b]	27.0[b]	6.0[c]
Certify practices	19.0[a]	22.0[a]	20.3[a]	28.0[b]	10.7[c]
Well-informed about food safety	9.2[a]	21.2[b]	24.5b[c]	30.0[c]	15.1[d]

[1]Strongly disagree, [2]disagree, [3]neither agree nor disagree, [4]agree, [5]strongly agree, [6]Percent of respondents (n=607) that share the same superscript do not differ ($P > 0.05$).

TABLE 2. Average mean rank of producer's preference relative to where to seek information about dairy market beef safety as reported by dairy producers.

Item	Rank[1]
Veterinarian	2.2[a]
Sales person	4.2[b]
Government	4.8[c]
Non-Veterinarian consultant	4.1[b]
Other dairy producers or dairy associations	4.4[b]
University extension agents	3.1[d]
Slaughter establishments	5.2[e]

[1]Mean rank of all responses, the lower the rank value the more likely the person or place was preferred for seeking information, (1 = most likely, 5 = least likely). Ranks that share the same superscript do not differ ($P > 0.05$).

TABLE 3. Average mean rank of producer's most likely practice to employ in an attempt to prevent disease from entering or spreading throughout their dairy herd as reported by dairy producers.

Entering	Rank[1]
Veterinarian assistance	2.7[a]
Trusted supplier	3.0[b]
Test at freshening	4.0[c]
Test prior to purchase	2.9[ab]
Implement Biosecurity	2.5[a]
Spreading	**Rank[1]**
Veterinarian assistance	2.1[a]
Market before clinically ill	3.9[b]
Market clinically ill animals	3.5[c]
Test clinically ill animals	2.9[d]
Implement Biosecurity	2.6[e]

[1]Mean rank of all responses, the lower the rank value the more often the item was selected. Ranks that share the same superscript do not differ ($P > 0.05$).

TABLE 4. Producer's perception of dairy beef processing.

Item	%[1]
Have toured slaughter establishment	15.0
Unaware HACCP was mandated for slaughter establishments	65.0
Believed HACCP was Government agency	10.0
Unaware of the amount of beef derived from dairy animals	42.0
Unaware of the amount of dairy beef products that become roast beef and/or steaks	94.0

[1] Percent of total number of respondents (n = 607).

TABLE 5. Average mean rank of the greatest threats/risks to dairy beef food safety as reported by dairy producers.

Threats	Rank[1]
Foot and mouth disease	2.4[a]
Salmonella	2.5[a]
Mad cow disease (BSE)	3.5[b]
E. coli O157:H7	3.5[b]
Bangs disease (*Brucellosis abortus*)	4.0[c]
Johne's disease (Mycobacterium paratuberculosis)	5.0[d]
Risks	**Rank[1]**
Antibiotics	1.6[a]
Injection site abscesses	2.0[b]
Vaccines	3.4[c]
BSt and other growth hormones	4.0[d]
Prostaglandins and other injections for reproductive performance	4.0[d]

[1]Mean rank of all responses, the lower the rank value the more often the item was selected. Ranks that share the same superscript do not differ ($P > 0.05$).

TABLE 6. Average mean rank of the greatest challenges facing their own farms, and the entire dairy industry as reported by dairy producers.

Their farm	Rank[1]
Reproduction problems (open, infertile)	1.9[a]
Health problems (lame, injury, ketosis, DA)	2.3[b]
Production problems (low yield)	2.9[c]
Milk quality problems (high SCC/CMT, residues)	3.1[c]
Need cash	4.9[d]
The dairy industry as a whole	**Rank[1]**
Environmental issues	1.6[a]
Milk safety	2.5[b]
Meat safety	3.4[c]
Animal welfare	3.4[c]
Bioterrorism	4.2[d]

[1]Mean rank of all responses, the lower the rank value the more often the item was selected. Ranks that share the same superscript do not differ ($P > 0.05$).