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Attitudes: Survey Summary**

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Staff Paper 2015-03

June 2015

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U.S. Public Dairy Cattle Welfare Perceptions and Attitudes: Survey Summary

The U.S. dairy industry is facing pressure to assure and verify dairy cattle welfare related practices in response to societal concerns. Periodically under-cover videos are released of abuse—whether real or perceived—on dairy farms which focuses public attention on these issues. Residents in multiple states have determined, through ballot initiatives or legislation, that particular livestock agriculture production practices will be phased out or banned due to associated undesirable animal welfare impacts. For example, tail docking of dairy cows was banned in California—the largest milk producing state—as of January 1, 2010. However, it does not take formal policies to change agricultural production practices. Many food service establishments—from grocers to restaurants—are increasingly purchasing their food from “humanely raised” sources. While most of the attention and legal changes to date have focused on other livestock sectors, the dairy industry is aware that these pressures affect them as well.

Recognizing the broader discussions and interest in animal welfare on U.S. dairy farms, this research aims to determine U.S. public’s attitudes and perceptions about dairy cattle welfare. This research was funded by a U.S. Department of Agriculture grant.¹ This report summarizes the responses to survey questions assessing public perceptions of dairy cattle welfare. Separate reports summarize responses to parallel surveys examining views of dairy producers as well as public and producer perceptions of the beef cow-calf industry.

Survey and Summary Statistics

A national online survey was administered in April 2014 to collect information about U.S. consumer milk purchasing habits, perceptions of dairy cow welfare, and demographic characteristics. The survey was written by a team of Michigan State University and Kansas State University researchers and was administered by Decipher, Inc. A total of 2,001 respondents completed the survey. Summary statistics of respondent demographics are provided in Table 1.

¹ National Institute of Food and Agriculture Grant No. 2012-68006-30178. All views expressed here are those of the authors and should not be attributed to the U.S. Department of Agriculture.

As the survey was aimed at the primary shopper, respondents were 70 percent female (compared to the actual 51 percent of Americans that are female (U.S. Census Bureau (2015))). Average respondent household size was about 2.4 persons which was smaller than the Census reports for the general population of 2.7 people. The average age of respondents was 51.3 years with more than half of respondents being 55 years or older. Respondent's education level were higher than the U.S. Average with more than 97 percent having graduated high school and about 34 percent holding a Bachelor's or higher college degree.

Over 80 percent of respondent households had annual incomes less than \$75,000 with almost one-third coming from households with annual incomes between \$25,000 and \$50,000. The median U.S. household income was \$53,046 (U.S. Census Bureau, 2015). Average weekly food expenditure was approximately \$115/week. The geographic dispersion of respondents was quite similar to that reported by the U.S. Census Bureau which was 37 percent in the South region, 24 percent in the West, 21 percent in the Midwest, and 18 percent in the Northeast.

Eighty-six respondents (4.3 percent) self-reported that they were either vegetarian or vegan. Of those 61 identified as vegetarian, 12 as vegan and 13 as both.

Table 1. Summary Statistics

Gender (percent)	
Male	30
Female	70
Household Size	
Average Household Size	2.38
Average Number of Adults	1.90
Average Number of Children	0.48
Age (percent)	
18-24	2.99
25-34	14.79
35-44	15.44
45-54	20.63
55 and over	51.77
Average Age (years)	51.34
Education Level (percent)	
Did not graduate from high school	2.39
Graduated from high school	37.63
Associate's or Trade Degree	26.34
Bachelor's (B.S. of B.A.) Degree	23.79
Graduate or Advanced Degree	9.85
Annual Household Income (percent)	
Less than \$25,000	28.69
\$25,000-\$49,999	32.08
\$50,000-\$74,999	20.09
\$75,000-\$99,999	9.95
\$100,000-\$124,999	4.30
\$125,000-\$149,999	2.75
\$150,000-\$174,999	0.85
\$175,000 or more	1.29
Race (percent)	
White or Caucasian	65.52
Black or African American	19.09
Asian or Pacific Islander	6.89
Mexican or Latino	5.65
American Indian	0.95
Other (please describe):	1.90
Geographic Region (percent)	
South	33.68
West	23.94
Midwest	23.69
Northeast	18.69
Average Weekly Food Expenditure	\$114.83

As most Americans do not have experience with production agriculture, the primary interaction they have with animals is with their pets. The context provided by pets as the primary animal interaction has been hypothesized to influence people’s perceptions regarding practices utilized in commercial agriculture. Table 2 reveals that about 40 percent of respondents had at least one dog and about 35 percent had at least one cat.

Table 2. Pet Ownership

	Number of household pets				
	0	1	2	3	4 +
	% respondents				
Dog	61	26	8	3	3
Cat	65	18	10	4	4
Other	91	4	2	1	2

Milk Purchasing Patterns and Preferences

Survey respondent frequency of milk consumption is summarized in Figure 1. Overall about two-thirds of respondents reported consuming milk four or more times per week. About 14 percent reported consuming milk less than once per week.

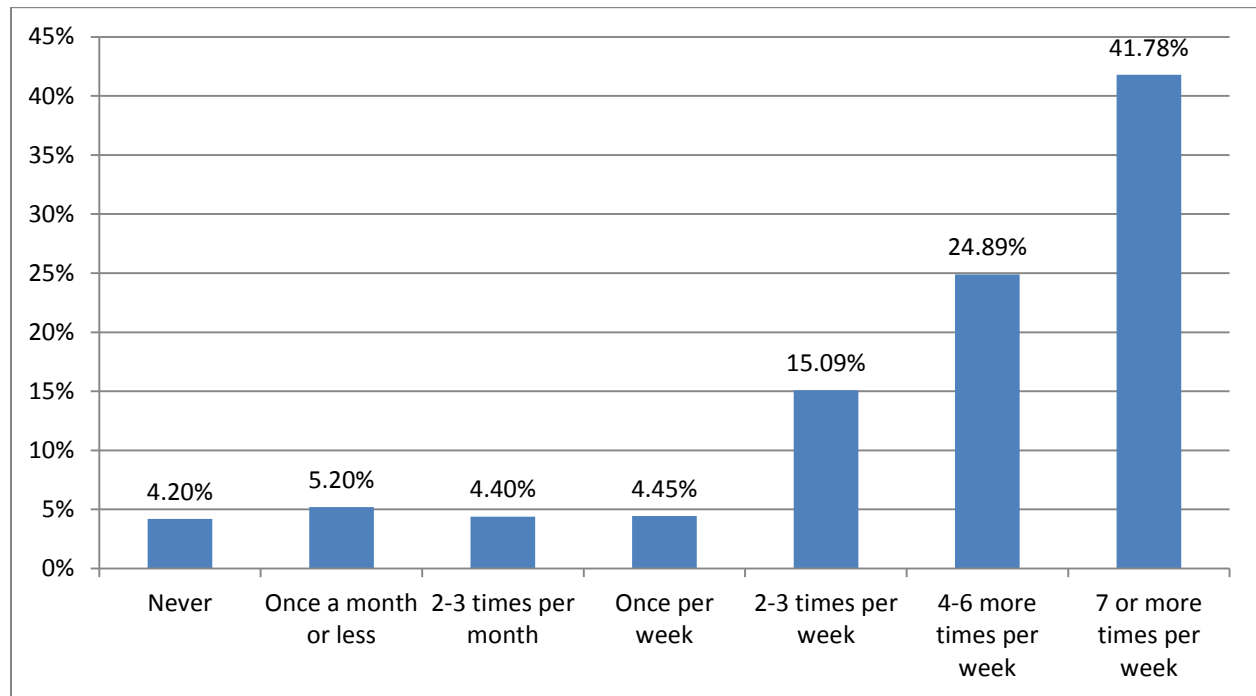


Figure 1. Frequency of milk consumption

The overwhelming majority of milk was purchased at a supermarket (Table 3). Targeted retailers and convenience stores together made up about five percent of milk purchases. The “other” category included those that did not purchase milk and some that purchased at discount clubs (i.e., Costco and Sam’s club).

Table 3. Source of Typical Milk Purchase

Source	% respondents
Supermarket Retailer (e.g., Wal-Mart, Kroger, Safeway)	90.55
Targeted Retailer (e.g., Whole Foods, Foods for Living)	2.85
Convenience Store (e.g., 7-Eleven)	2.20
Farmers Market	0.55
Direct from Farmer	0.45
Other	3.35

Respondents were also asked whether they had purchased milk with selected production processes or attributes. Among these were organic, natural, grass-fed, hormone-free, and animal welfare assured among others (Table 4). The most common attribute respondents had purchased was locally produced milk. More than one-third of respondents had purchased organic milk while 55 percent had not. Animal welfare assured milk, which is quite uncommon, was said to have been purchased by about 8 percent of respondents. Twenty-five percent or more of respondents did not know whether they had purchased sustainably produced, grass-fed or animal welfare assured milk. Later we consider the premiums that respondents stated they would pay for these production attributes.

Table 4. Purchase of milk with product attributes

	Yes	No	Don't Know
	% respondents		
Organic milk	34.6	54.9	10.5
Natural milk	31.6	46.4	22.0
Animal welfare assured milk	7.8	62.1	30.1
Locally produced milk	41.2	39.2	19.6
Sustainably produced milk	11.4	55.8	32.7
Grass-fed milk	16.9	53.5	29.6
Antibiotic-free milk	20.2	56.8	23.0
Hormone-free milk	25.4	52.1	22.5

Dairy Cattle Welfare and Industry Perceptions

In order to understand how important dairy cattle welfare was to the U.S. public, respondents were asked to rate their level of agreement with which principles should underpin the dairy industry (Table 5). The strongest agreement was with respect to generating a safe food supply (61.6 percent strongly agreed). While the least amount of strong agreement was with respect to being competitive in the global dairy market. Generating an affordable supply of dairy products was strongly agreed upon by 51 percent of respondents. Conserving and protecting the welfare of dairy cattle was one of the principles of medium importance relative to the other principles. Note that there were no trade-offs in these choices. That is, respondents could choose strongly agree with all of the principles whereas some of them—such as generating innovation and affordable supply might be at odds at some level.

Table 5. U.S. public agreement with potential U.S. dairy industry supporting principles

	Strongly Agree				Strongly Disagree	Don't Know	Average*
	1	2	3	4	5		
	% respondents						Score
Being competitive in the global dairy marketplace	32.6	21.2	21.6	7.0	5.3	12.4	1.94
Conserve and protect the welfare of dairy cattle	49.9	21.2	12.1	4.7	4.6	7.5	1.70
Generating a reliable supply of dairy products	50.8	22.3	10.0	5.2	4.0	7.6	1.66
Generating research and innovation for dairy production	38.3	24.5	17.3	6.2	3.8	10.0	1.83
Generating an affordable supply of dairy products	51.3	22.3	9.6	5.0	4.3	7.6	1.66
Economically efficient dairy production	44.8	24.0	13.5	5.0	4.1	8.7	1.74
Assuring sufficient farm income for dairy farms	41.6	24.9	14.7	6.3	4.0	8.6	1.81
Generating a safe supply of dairy products	61.6	15.3	7.4	3.9	4.9	7.0	1.54
Conserve and protect land and water resources	52.3	19.2	12.2	4.5	4.4	7.4	1.67

* "Average" is across respondents that did not answer "don't know."

Past research has shown that respondents often view the perceived responses of typical or average citizens as differing from their own (Olynk, Tonsor and Wolf, 2010). Inquiring about what the average American thinks has been shown to be a way to deal with social desirability bias (which is answering in a way which you think puts you in a better light rather than being honest). With this in mind, it is informative to consider the responses to the statements in Table 6. While 57 percent of respondents disagreed or strongly disagreed with the statement low milk prices are more important than the well-being of cattle, they thought that the average American would disagree or strongly disagree only 23 percent of the time. In contrast, respondents thought that they and the average American had about the same level of agreement with the statement that dairy farmers face a trade-off between profitability and animal welfare. In the case of the latter statement, the opinion was fairly neutral but leaned towards agreement that dairy farmers faced a trade-off between profitability and animal welfare.

Table 6. U.S. public agreement with statements regarding dairy cattle well-being

	Strongly Agree				Strongly Disagree	Don't Know	Average*
	1	2	3	4	5		
	% respondents						Score
"Low milk prices are more important than the well-being of cattle."	7.6	8.4	19.7	21.2	36.0	7.2	3.48
"The average American thinks low milk prices are more important than the well-being of cattle."	20.9	25.2	19.5	12.6	10.6	11.0	2.34
"I believe that dairy farmers face a trade-off between profitability and animal welfare."	16.9	24.4	24.8	12.7	8.2	12.9	2.32
"The average American believes that dairy farmers face a trade-off between profitability and animal welfare."	15.2	24.0	26.3	11.8	6.4	16.3	2.21

* "Average" is across respondents that did not answer "don't know."

There are many parties that might supply information regarding cattle welfare from producers to processors to grocers and restaurants. Table 7 summarizes respondent views about the accuracy of information produced by the many parties involved with the U.S. dairy industry.

Respondents gave the U.S. Department of Agriculture the highest score. The Humane Society of the United States was the second most accurate essentially tied with the American Veterinary Medical Association. The third tier of accuracy included American Farm Bureau, National Milk Producers Federation, International Dairy Foods Association, local veterinarians, and People for the Ethical Treatment of Animals. Dairy cattle welfare information from grocers and restaurants was viewed as relatively inaccurate.

Table 7. U.S. public views of accuracy of dairy cattle welfare information from select parties

	Very Inaccurate				Very Accurate	Don't Know	Average*
	1	2	3	4	5		
	% respondents						Score
Retail Grocer	7.8	13.0	22.2	14.0	7.9	35.2	1.96
Food Service Restaurant	10.8	13.6	20.7	11.1	7.3	36.3	1.81
Consumer - Beef Purchaser	8.4	11.3	20.8	14.6	9.4	35.5	1.99
Resident - Likely Voter	8.7	12.7	20.1	13.0	9.2	36.3	1.92
People for the Ethical Treatment of Animals (PETA)	8.1	8.0	17.6	18.5	15.7	32.1	2.29
Local Veterinarian	3.2	5.8	19.6	21.8	14.2	35.3	2.32
University Scientists/Researchers	3.4	4.8	19.0	22.5	15.9	34.4	2.39
National Milk Producer's Federation (NMPF)	3.2	5.0	18.3	22.9	14.6	36.0	2.33
The Humane Society of the United States (HSUS)	3.6	5.6	19.5	21.6	17.1	32.6	2.45
United States Department of Agriculture (USDA)	3.5	4.9	17.8	25.0	19.5	29.3	2.64
American Farm Bureau (AFB)	2.8	5.4	20.6	21.9	14.4	35.0	2.35
International Dairy Foods Association (IDFA)	3.6	5.3	19.7	21.3	14.0	36.1	2.29
American Veterinary Medical Association (AVMA)	3.0	4.3	18.3	24.0	16.0	34.4	2.43

* "Average" is across respondents that did not answer "don't know."

Respondents to the public survey believed that the U.S. Department of Agriculture and dairy farmers had the most influence over the welfare of dairy cattle (Table 8). National Milk Producers Federation—the national organization of dairy farmer cooperatives which created the Farmers Assuring Responsible Management program to address dairy cattle welfare—was viewed as the next most influential in assuring dairy cattle welfare. The next tier of influence was believed to be HSUS and IDFA followed by consumers and veterinarians. Respondents seemed to recognize that consumers and consumer related groups have a role to play in assuring dairy cattle welfare but farmers—with direct daily access to cattle—have the most influence.

Table 8. U.S. public belief in the ability of the following parties to influence and assure dairy cattle welfare

	Very Low Ability				Very High Ability	Don't Know	Average*
	1	2	3	4	5		
	% respondents						Score
Dairy farmer	2.4	3.6	13.5	21.3	44.6	14.6	3.58
Processor/Cooperative	4.0	6.1	21.9	23.2	17.0	27.8	2.60
Retail Grocer	12.3	14.2	21.7	18.0	14.9	18.7	2.53
Food Service Restaurant	16.3	14.2	20.8	14.7	13.3	20.7	2.33
Consumer - Dairy Purchaser	9.3	10.4	20.5	21.2	21.5	17.0	2.84
Resident - Likely Voter	9.2	11.8	23.5	18.4	17.3	19.7	2.64
People for the Ethical Treatment of Animals (PETA)	7.9	9.7	21.2	20.7	20.7	19.8	2.77
Local Veterinarian	8.7	12.2	22.3	20.8	15.3	20.6	2.60
University Scientists/Researchers	6.3	11.0	25.7	19.5	14.7	22.8	2.57
National Milk Producer's Federation (NMPF)	2.1	3.7	16.4	25.9	29.2	22.7	3.08
The Humane Society of the United States (HSUS)	4.9	7.8	21.1	22.8	23.3	20.1	2.92
United States Department of Agriculture (USDA)	2.0	2.5	12.0	24.6	43.7	15.2	3.60
American Farm Bureau (AFB)	2.7	4.0	18.8	25.5	26.5	22.5	3.02
International Dairy Foods Association (IDFA)	3.0	4.5	19.0	23.8	25.5	24.2	2.92
American Veterinary Medical Association (AVMA)	4.2	6.4	22.0	23.7	20.9	22.8	2.82

There have been several instances of undercover videos and related print, internet and television reports related to abuse of dairy cattle in recent years. Respondents were asked whether they had noticed any of these reports and, if so, on which medium. Seventy percent reported that they had not seen any media stories regarding dairy cattle welfare (Table 9). Those respondents that had noticed media stories on dairy cattle welfare could have done so on multiple media types. The most common was television followed by internet. Less common were printed newspapers and magazines.

Table 9. U.S. public recollection of media stories regarding dairy cattle welfare

	% Yes	% No
I have not seen any media stories regarding dairy cattle welfare	70.3	29.7
I have seen stories regarding dairy cattle welfare on:		
Television	18.0	82.0
Internet	12.9	87.1
Printed Newspaper	5.3	94.7
Magazines	5.6	94.4
Books	2.7	97.3
Other media	1.4	98.6

Respondents were asked about the percent chance that the typical gallon of milk was produced on farms with a set of welfare related practices. About one quarter of respondents felt that 76-100 percent of milk was produced on farms where cattle had access to fresh feed and water (Table 10). As many respondents were unfamiliar with the production methods on dairy farms we expected that there would be a significant percentage that would answer “I don’t know.” This proved to be correct as almost half of respondents had no belief about the percent of cattle that were dehorned or castrated with pain control. In most cases about one third of respondents answered that they did not know how much of typical U.S. milk came from farms with the practice mentioned. This highlights the opportunity for education and awareness of the U.S. public with respect to the welfare related practices on U.S. dairy farms.

Table 10. U.S. public belief that a typical U.S. gallon of milk is produced with given production practices

	0% -25%	26% -50%	51% -75%	76% -100%	Don't Know
	% respondents				
Cattle provided access to fresh, clean feed and water.	10.7	14.6	21.0	25.6	28.1
Cattle provided antibiotics to prevent illness and disease.	9.3	13.3	20.4	23.3	33.8
Cattle provided shade, windbreaks, and ventilation.	16.2	17.3	18.4	13.6	34.4
Cattle dehorned/disbudded with pain control.	19.0	14.4	11.8	6.8	47.9
Cattle older than three months of age castrated with pain control	20.0	13.3	11.4	7.1	48.2
Farm/ranches with consistent training program for employees focusing on principles of animal care and handling	17.0	17.6	17.7	11.7	35.9
Farms/ranches with third party verification that appropriate animal care and facilities are provided	15.8	16.3	18.4	13.6	35.8
Farms/ranches where injured or sick animals are treated or euthanized promptly	16.9	15.0	15.2	14.1	38.7
Farms/ranches with a herd health plan, developed with the help of a veterinarian	15.3	16.9	18.2	14.3	35.3
Farms/ranches with less than 100 dairy cows	27.7	17.5	12.0	7.3	35.5
Farms/ranches providing appropriate overall care for the well-being of their cattle	11.6	16.2	21.4	20.5	30.2

Potential Dairy Cattle Welfare Related Voting and Purchasing Behavior

Many of the animal welfare related actions in recent years have been driven by legislation or voter approved ballot initiatives. As both consumers and non-consumers of milk can vote on these issues, it is important to consider the voting behavior and consumption consequences. Past research suggests that voters do not consider the market implications—i.e., the higher prices from production changes—from the animal welfare related ballot initiatives on which they might vote (Tonsor and Wolf, 2010). Two-thirds of respondents stated that they would be willing to vote for limiting antibiotic use in cattle only for disease treatment but only 41 percent would pay a premium for this practice (Table 11). Similarly, about two-thirds of respondents would vote to ban cattle castration without pain control but only about 30 percent would pay a premium for this practice. The only practice where the voting behavior and premium payment agreed was in the use of organic feed on which about 45 percent of respondents agreed.

Table 11. U.S. public willingness to vote or pay for production practices

	Yes	No	Don't Know
	% respondents		
Vote to limit antibiotic use for cattle to only disease treatment	65.7	12.4	21.9
Pay a premium for beef from cattle provided antibiotics only for disease treatment	40.9	35.0	24.0
Vote to ban cattle castration without use of pain control	65.0	14.0	21.0
Pay a premium for beef from cattle castrated with pain control	29.7	40.7	29.5
Vote to ban use of sow gestation stalls in the swine industry	45.7	15.4	38.9
Pay a premium for pork not produced using sow gestation stalls	29.9	37.1	32.9
Vote to ban use of laying hen cages in the egg industry	47.7	22.4	29.8
Pay a premium for eggs not produced using laying hen cages	37.6	37.5	24.8
Vote to ban use of rbST/rbGH in the dairy industry	49.0	10.4	40.6
Pay a premium for milk from cows not treated with rbST/rbGH	34.8	31.3	33.9
Vote to ban use of non-organic feed in the dairy industry	43.5	26.6	29.9
Pay a premium for milk from cows fed only organic feed	44.7	33.9	21.3

Respondents were asked about the largest premium they would pay for a gallon of milk with a set of production related practices as compared to a conventionally produced gallon of milk. One-quarter to one third of respondents stated that they would not pay any premium for these production-process related attribute sets (Table 12). At the other end of the spectrum there were consistently 15 to 20 percent of respondents that stated they would pay more than \$3.00/gallon which essentially means double the price of conventionally produced milk. Combined with those that would pay \$2.51/gallon or more, there are at least one-third of respondents that would pay a large premium for these production processes. The unconditional mean is the average premium that would be paid per gallon including those that would not pay a premium while the conditional mean includes only those respondents who would pay a premium. Respondents would pay the highest premium for locally produced milk followed closely for “natural” milk. All of the average unconditional premiums were in the range of \$1.40-\$1.60/gallon but note that about a third of respondents would pay no premium. This is consistent with past research findings on production attribute premiums (Wolf, Tonsor, and Olynk, 2011).

Table 12. Largest stated premium would pay for production labels vs conventional milk

	Organic	Natural	Animal welfare assured	Locally produced	Sustainably produced	Grass fed	Antibiotic free	Hormone-free
\$/gallon	% respondents							
\$0	29.1	25.8	30.7	22.2	30.0	28.7	27.9	27.3
\$0.01-\$0.50	9.0	10.2	10.9	11.3	11.4	11.1	11.4	11.6
\$0.51-\$1.00	6.7	5.9	6.4	6.6	5.6	6.2	6.7	6.6
\$1.01-\$1.50	5.0	4.9	4.8	5.0	5.0	4.6	5.0	4.5
\$1.51-\$2.00	5.5	6.0	6.1	6.7	5.8	5.5	5.5	5.9
\$2.01-\$2.50	8.1	9.1	8.8	10.7	9.1	8.7	9.1	8.7
\$2.51-\$3.00	16.6	19.6	17.4	20.8	18.9	19.1	17.6	18.1
Over \$3.00	19.9	18.3	14.9	16.6	14.0	16.0	16.6	17.1
	\$/gallon							
Unconditional Mean	1.52	1.58	1.40	1.61	1.42	1.47	1.47	1.49
Conditional Mean	2.14	2.13	2.03	2.07	2.03	2.06	2.04	2.05

Ultimately, this research was concerned with the premium that the public would be willing to pay for milk production attributes. Respondents were shown a random premium from \$0.25 to \$3.00/gallon and asked whether they would pay that amount for the attribute in milk production. Table 13 shows the percent of participants at each random price that would pay that premium.

Table13. Respondents who would pay premium for milk production attributes

Production attribute	Premium (\$/gallon)							
	\$0.25	\$0.50	\$0.75	\$1.00	\$1.50	\$2.00	\$2.50	\$3.00
	% respondents							
Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).	50.0	51.6	47.2	42.4	45.6	40.4	44.4	44.0
Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.	46.4	47.6	42.0	34.4	35.2	34.8	36.8	41.2
Owner/operator assessment that appropriate animal care and facilities are provided on farm with animals monitored daily for illness and injury.	32.0	30.8	32.4	26.0	31.2	26.4	28.4	31.2
Consistent training program for owner and employees focusing on principles of animal care and handling.	29.2	36.8	33.2	28.4	30.0	28.4	37.2	29.2
Develop a herd health plan with the help of a veterinarian.	31.6	28.0	27.6	24.4	28.0	24.4	29.2	30.8
Third party verification that appropriate animal care and facilities are provided on farm.	32.8	34.0	31.6	30.0	35.2	26.8	28.4	29.6
Restrict use of antibiotics to only disease treatment	46.8	34.0	40.4	34.0	43.6	38.4	41.2	40.0
Promptly treat or euthanize all injured or sick animals	43.2	35.2	38.0	34.4	37.2	33.6	33.2	40.4
Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.	18.4	17.6	16.0	14.0	16.8	16.4	18.8	20.0
Castrate male calves either within the first three months of age or with pain control.	20.8	21.2	20.0	17.2	18.4	18.8	20.0	20.4
Properly move cattle that are unable to walk on their own, do not try to market cattle if there is a reasonable chance they will not be able to walk on their own, and never drag cattle.	37.2	36.0	37.2	26.0	31.2	34.8	34.0	33.6
Plan the timing of transport to minimize traveling and waiting time for the cattle.	19.6	16.0	18.4	13.2	19.6	15.6	20.0	20.4
Handlers strive to move cattle at a comfortable pace, refrain from using loud noises, and use an electric prod on less than 10% of cattle. Sticks and flags can be used as extensions of the handler's arm but must not be used to hit cattle.	25.2	28.4	26.0	23.2	23.6	27.6	26.0	26.8
None--I would not pay a premium.	22.8	26.4	28.4	34.0	33.6	36.4	30.8	39.2

The patterns from Table 13 are somewhat complicated. There are clearly some practices that respondents were quite willing to pay an amount up to double the current price of a gallon of milk. Providing access to clean feed and water, providing facilities with adequate comfort, restricting antibiotic use to only disease treatment, and promptly treating or euthanizing injured or sick animals had 40 percent or more support across all potential premium levels. One should note that the handling of injured or “downer” animals has been depicted unfavorably in many of the undercover videos from dairy farms.

Figure 2 displays the information from Table 13 in graphical form. The trends across the premium level are either downward sloping or flat. It would appear that there is a baseline, consistent level of support which begins at about 15 percent and increases to 50 percent at low premium levels. Respondents were most willing-to-pay for what might be termed “basic” requirements (i.e., food, water, shelter) and practices related to food safety (i.e., antibiotic use and treatment of downer cattle). Note that we have not controlled for income or other variables that might account for the lack of downward trend in the willingness-to-pay a premium for these practices.

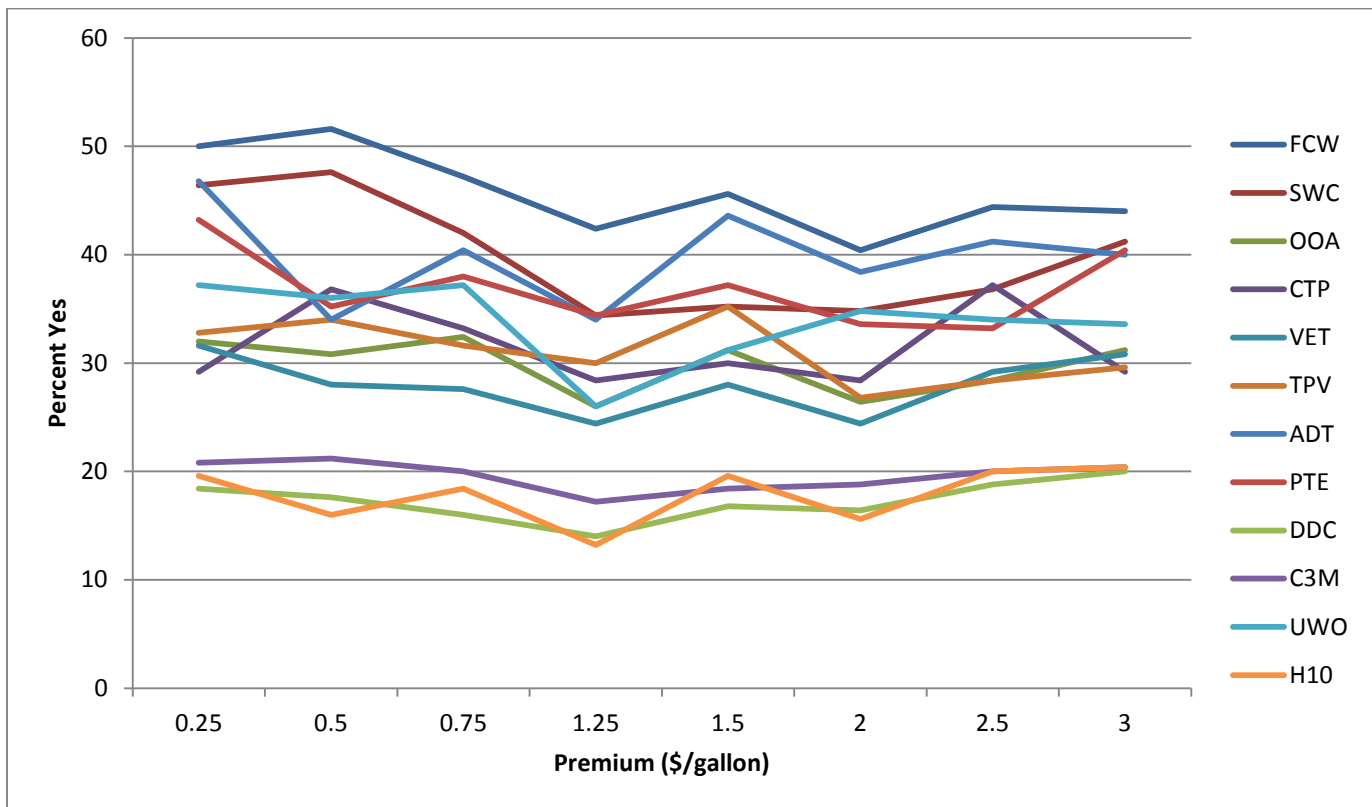


Figure 2. Stated willingness-to-pay for milk production attributes

Conclusions

This research summarized the results of a 2014 survey of U.S. public opinions and attitudes about dairy cattle welfare. Most respondents consumed milk several times a week and most of this milk was purchased at a supermarket. Generating a safe supply of dairy products was the most important principle for the U.S. dairy industry according to respondents although conserving dairy cattle welfare also enjoyed support. Respondents generally disagreed that low milk prices were more important than dairy cattle welfare. The most reliable source of animal welfare information was thought to be the U.S. Department of Agriculture. The USDA and farmers were viewed as the most influential parties affecting dairy cattle welfare. More respondents were willing to vote to ban practices related to cattle welfare than were willing to pay a premium to eliminate those practices. One-quarter to one-third of respondents were not willing to pay for organic, natural, local, animal welfare assured or other production practices. However, each of these set of production attributes also enjoyed a substantial portion of respondents that would pay quite large premiums. With respect to specific production practices, the most important were providing basic needs and a safe food supply.

References

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Appendix A – Survey Instrument

This is a short survey designed to obtain important information from U.S. milk consumers. This project is being conducted by Michigan State University and Kansas State University faculty and graduate students.

This survey begins by assessing the importance of various issues in your milk buying and consuming decisions. Please answer these questions with the specific type of dairy product you typically purchase and consume in mind.

1. Indicate how frequently your household consumes milk:
 - a. Never
 - b. Once a month or less
 - c. 2-3 times per month
 - d. Once per week
 - e. 2-3 times per week
 - f. 4-6 more times per week
 - g. 7 or more times per week

2. Consumers purchase food from many sources. What best describes where you typically purchase milk for at home consumption?
 - a. Supermarket Retailer (e.g., Wal-Mart, Kroger, Safeway)
 - b. Targeted Retailer (e.g., Whole Foods, Foods for Living)
 - c. Convenience Store (e.g., 7-Eleven)
 - d. Farmers Market
 - e. Direct from Farmer
 - f. Other (please describe): ____

3. Have you ever purchased the following products?
 - a. Organic milk
 - b. Natural milk
 - c. Animal welfare assured milk
 - d. Locally produced milk
 - e. Sustainably produced milk
 - f. Grass-fed milk
 - g. Antibiotic-free milk
 - h. Hormone-free milk

4. What is the largest premium you would pay for one gallon of milk produced by the following methods compared to conventional means assuming both products were the same brand name.
 - a. Organic
 - b. Natural
 - c. Animal welfare assured
 - d. Locally produced
 - e. Sustainably produced
 - f. Grass fed
 - g. Antibiotic free
 - h. Hormone-free

5. What percentage chance do you believe the typical U.S. gallon of milk comes from:

	0%- 25%	26%- 50%	51%- 75%	76%- 100%	Don't know
Cattle provided access to fresh, clean feed and water	*	*	*	*	*
Cattle provided antibiotics to prevent illness and disease	*	*	*	*	*
Cattle provided shade, windbreaks, and ventilation	*	*	*	*	*
Cattle dehorned/disbudded with pain control	*	*	*	*	*
Cattle older than three months of age castrated with pain control	*	*	*	*	*
Farm/ranches with consistent training program for employees focusing on principles of animal care and handling.	*	*	*	*	*
Farms/ranches with third party verification that appropriate animal care and facilities are provided.	*	*	*	*	*
Farms/ranches where injured or sick animals are treated or euthanized promptly.	*	*	*	*	*
Farms/ranches with a herd health plan, developed with the help of a veterinarian.	*	*	*	*	*
Farms/ranches with less than 100 dairy cows	*	*	*	*	*
Farms/ranches providing appropriate overall care for the well-being of their cattle.	*	*	*	*	*

6. Are you concerned about the welfare of dairy cattle in the United States?

- a. Yes
- b. No
- c. I don't know

7. Would you vote to support the following restrictions on food production practices?

Vote to limit antibiotic use for cattle to only disease treatment	Yes	No	I don't know
Vote to ban cattle castration without use of pain control	Yes	No	I don't know
Vote to ban use of sow gestation stalls in the swine industry	Yes	No	I don't know
Vote to ban use of laying hen cages in the egg industry	Yes	No	I don't know
Vote to ban use of rbST/rbGH in the dairy industry	Yes	No	I don't know
Vote to ban use of non-organic feed in the dairy industry	Yes	No	I don't know

8. Would you pay a price premium for the following food products?

Pork not produced using sow gestation stalls	Yes	No	I don't know
Beef from cattle castrated with pain control	Yes	No	I don't know
Milk from cows not treated with rbST/rbGH	Yes	No	I don't know
Eggs not produced using laying hen cages	Yes	No	I don't know
Beef from cattle provided antibiotics only for disease treatment	Yes	No	I don't know
Milk from cows fed only organic feed	Yes	No	I don't know

9. In your opinion, should the following be *supporting principles* of the U.S. dairy industry?

	Strongly Agree				Strongly Disagree	Don't Know
Being competitive in the global dairy marketplace.	1	2	3	4	5	*
Conserve and protect the welfare of dairy cattle.	1	2	3	4	5	*
Generating a reliable supply of dairy products.	1	2	3	4	5	*
Generating new research and innovation for dairy production	1	2	3	4	5	*
Generating an affordable supply of dairy products.	1	2	3	4	5	*
Economically efficient dairy production.	1	2	3	4	5	*
Assuring sufficient farm income for dairy farms.	1	2	3	4	5	*
Generating a safe supply of dairy products.	1	2	3	4	5	*
Conserve and protect land and water resources.	1	2	3	4	5	*

10. How much ability do the following parties have to influence and assure dairy cattle welfare?

	Very Low Ability				Very High Ability	Don't Know
Dairy farmer	1	2	3	4	5	*
Processor/Cooperative	1	2	3	4	5	*
Retail Grocer	1	2	3	4	5	*
Food Service Restaurant	1	2	3	4	5	*
Consumer - Dairy Purchaser	1	2	3	4	5	*
Resident - Likely Voter	1	2	3	4	5	*
People for the Ethical Treatment of Animals (PETA)	1	2	3	4	5	*
Local Veterinarian	1	2	3	4	5	*
University Scientists/Researchers	1	2	3	4	5	*
National Milk Producer's Federation (NMPF)	1	2	3	4	5	*
The Humane Society of the United States (HSUS)	1	2	3	4	5	*
United States Department of Agriculture (USDA)	1	2	3	4	5	*
American Farm Bureau (AFB)	1	2	3	4	5	*
International Dairy Foods Association (IDFA)	1	2	3	4	5	*
American Veterinary Medical Association (AVMA)	1	2	3	4	5	*

11. How accurate is the dairy cattle welfare information provided by the following parties:

	Very Inaccurate				Very Accurate	Don't Know
Cow-Calf Producer	1	2	3	4	5	*
Feedlot Producer	1	2	3	4	5	*
Processor/Packing Plant	1	2	3	4	5	*
Retail Grocer	1	2	3	4	5	*
Food Service Restaurant	1	2	3	4	5	*
Consumer - Beef Purchaser	1	2	3	4	5	*
Resident - Likely Voter	1	2	3	4	5	*
People for the Ethical Treatment of Animals (PETA)	1	2	3	4	5	*
Local Veterinarian	1	2	3	4	5	*
University Scientists/Researchers	1	2	3	4	5	*
National Milk Producer's Federation (NMPF)	1	2	3	4	5	*
The Humane Society of the United States (HSUS)	1	2	3	4	5	*
United States Department of Agriculture (USDA)	1	2	3	4	5	*
American Farm Bureau (AFB)	1	2	3	4	5	*
International Dairy Foods Association (IDFA)	1	2	3	4	5	*
American Veterinary Medical Association (AVMA)	1	2	3	4	5	*

12. Please rate your agreement with these statements (circle one number for each statement):

	Strongly Agree				Strongly Disagree	Don't Know
"Low milk prices are more important than the well-being of cattle."	1	2	3	4	5	*
"The average American thinks low milk prices are more important than the well-being of cattle."	1	2	3	4	5	*
"I believe that dairy farmers face a trade-off between profitability and animal welfare."	1	2	3	4	5	*
"The average American believes that dairy farmers face a trade-off between profitability and animal welfare."	1	2	3	4	5	*

13. How effective/practical would each of the dairy cattle management practices be in improving the welfare of dairy cattle, if implemented throughout the entire U.S. dairy industry? (NOTE: One-half were asked effective/ineffective and one-half were asked practical/impractical.)

	Very Ineffective/Unpractical		Neutral		Very Effective/Practical
Provide access to fresh, clean feed and water appropriate for the cow's physiological state.	1	2	3	4	5
Provide adequate comfort by assuring clean, dry, sanitary environmental conditions for cattle.	1	2	3	4	5
Consistent training program for owner and employees focusing on principles of cow care and handling.	1	2	3	4	5
All cattle must have access to outdoor exercise areas for at least 4 hours per day, weather permitting.	1	2	3	4	5
Third party verification that appropriate cow care and facilities are provided on farm.	1	2	3	4	5
Maintain foot health in order to reduce lameness.	1	2	3	4	5
Promptly treat or euthanize all injured or sick cows.	1	2	3	4	5
Sticks and flags may be used as benign handling aids but must not be used for hitting cattle.	1	2	3	4	5
Tail docking (removing bottom part of tail) is prohibited.	1	2	3	4	5

There are many different options being discussed for the U.S. dairy industry to adopt in response to growing animal welfare discussions. Please consider the following six sets of actions and your ranking of the action which would be most effective and least effective to improve welfare of dairy cattle in the U.S.

14. Which of the following actions, if implemented throughout the entire U.S. dairy industry, is the most effective and which is the least effective to improve the welfare of dairy cattle?

(Check only one issue as the most and only one as the least effective)

Most Effective	Action	Least Effective
	<i>Maintain foot health in order to reduce lameness.</i>	
	<i>Tail docking (removing bottom part of tail) is prohibited.</i>	
	<i>Sticks and flags may be used as benign handling aids but must not be used for hitting cattle.</i>	
	<i>All cattle must have access to outdoor exercise areas for at least 4 hours per day, weather permitting.</i>	
	<i>Provide adequate comfort by assuring clean, dry, sanitary environmental conditions for cattle.</i>	
	<i>Third party verification that appropriate cow care and facilities are provided on farm.</i>	

15. Which of the following actions, if implemented throughout the entire U.S. dairy industry, is the most effective and which is the least effective to improve the welfare of dairy cattle?

(Check only one issue as the most and only one as the least effective)

Most Effective	Action	Least Effective
	<i>Consistent training program for owner and employees focusing on principles of cow care and handling.</i>	
	<i>All cattle must have access to outdoor exercise areas for at least 4 hours per day, weather permitting.</i>	
	<i>Provide adequate comfort by assuring clean, dry, sanitary environmental conditions for cattle.</i>	
	<i>Sticks and flags may be used as benign handling aids but must not be used for hitting cattle.</i>	
	<i>Maintain foot health in order to reduce lameness.</i>	
	<i>Provide access to fresh, clean feed and water appropriate for the cow's physiological state.</i>	

16. Which of the following actions, if implemented throughout the entire U.S. dairy industry, is the most effective and which is the least effective to improve the welfare of dairy cattle?

(Check only one issue as the most and only one as the least effective)

Most Effective	Action	Least Effective
	<i>Tail docking (removing bottom part of tail) is prohibited.</i>	
	<i>Consistent training program for owner and employees focusing on principles of cow care and handling.</i>	
	<i>Provide access to fresh, clean feed and water appropriate for the cow's physiological state.</i>	
	<i>Maintain foot health in order to reduce lameness.</i>	
	<i>Third party verification that appropriate cow care and facilities are provided on farm.</i>	
	<i>Provide adequate comfort by assuring clean, dry, sanitary environmental conditions for cattle.</i>	

17. Which of the following actions, if implemented throughout the entire U.S. dairy industry, is the most effective and which is the least effective to improve the welfare of dairy cattle?

(Check only one issue as the most and only one as the least effective)

Most Effective	Action	Least Effective
	<i>All cattle must have access to outdoor exercise areas for at least 4 hours per day, weather permitting.</i>	
	<i>Maintain foot health in order to reduce lameness.</i>	
	<i>Third party verification that appropriate cow care and facilities are provided on farm.</i>	
	<i>Provide access to fresh, clean feed and water appropriate for the cow's physiological state.</i>	
	<i>Tail docking (removing bottom part of tail) is prohibited.</i>	
	<i>Promptly treat or euthanize all injured or sick cows.</i>	

18. Which of the following actions, if implemented throughout the entire U.S. dairy industry, is the most effective and which is the least effective to improve the welfare of dairy cattle?

(Check only one issue as the most and only one as the least effective)

Most Effective	Action	Least Effective
	<i>Tail docking (removing bottom part of tail) is prohibited.</i>	
	<i>Sticks and flags may be used as benign handling aids but must not be used for hitting cattle.</i>	
	<i>Consistent training program for owner and employees focusing on principles of cow care and handling.</i>	
	<i>Promptly treat or euthanize all injured or sick cows.</i>	
	<i>All cattle must have access to outdoor exercise areas for at least 4 hours per day, weather permitting.</i>	
	<i>Maintain foot health in order to reduce lameness.</i>	

19. Which of the following actions, if implemented throughout the entire U.S. dairy industry, is the most effective and which is the least effective to improve the welfare of dairy cattle?

(Check only one issue as the most and only one as the least effective)

Most Effective	Action	Least Effective
	<i>Provide adequate comfort by assuring clean, dry, sanitary environmental conditions for cattle.</i>	
	<i>All cattle must have access to outdoor exercise areas for at least 4 hours per day, weather permitting.</i>	
	<i>Promptly treat or euthanize all injured or sick cows.</i>	
	<i>Third party verification that appropriate cow care and facilities are provided on farm.</i>	
	<i>Provide access to fresh, clean feed and water appropriate for the cow's physiological state.</i>	
	<i>Sticks and flags may be used as benign handling aids but must not be used for hitting cattle.</i>	

20. Which of the following actions would you be willing to pay a \$X/gallon premium for on each gallon of milk purchased (check all that apply)?

- Provide access to fresh, clean feed and water appropriate for the animal's physiological state (appropriate energy for milk production, pregnancy, or weight gain).
- Provide adequate comfort through the use of shade, windbreaks, and ventilation assuring clean, dry, sanitary environmental conditions (housing, pasture, or dry lots) for cattle.
- Owner/operator assessment that appropriate animal care and facilities are provided on farm with animals monitored daily for illness and injury.
- Consistent training program for owner and employees focusing on principles of animal care and handling.
- Develop a herd health plan with the help of a veterinarian.
- Third party verification that appropriate animal care and facilities are provided on farm.
- Restrict use of antibiotics to only disease treatment
- Promptly treat or euthanize all injured or sick animals
- Dehorn (remove horns)/disbud calves either before horn tissue adheres to skull or with pain control.
- Castrate male calves either within the first three months of age or with pain control.
- Properly move cattle that are unable to walk on their own, do not try to market cattle if there is a reasonable chance they will not be able to walk on their own, and never drag cattle.
- Plan the timing of transport to minimize traveling and waiting time for the cattle.
- Handlers strive to move cattle at a comfortable pace, refrain from using loud noises, and use an electric prod on less than 10% of cattle. Sticks and flags can be used as extensions of the handler's arm but must not be used to hit cattle.
- None

21. Have you seen media stories regarding the welfare of dairy cattle on/in: (select all that apply):

- Television
- Internet
- Printed Newspaper
- Magazines
- Books
- Other
- I have not seen any media stories regarding dairy cattle welfare

The final portion of this survey presents you with multiple different sets of hypothetical pairs of gallons of milk available for purchase in a retail store where you typically shop. All products have been USDA inspected and are of the same size, weight, and quality grade. Prices vary for each product and are all in \$/gallon units. For each pair of gallons of milk, please select the one you would purchase or neither, if you would not purchase either product. For your information in interpreting alternative milk note:

...
Required means the product comes from an operation required to comply with the listed practice.

No Claim means that no claims on the listed practice are being made.

Please answer the following 7 questions. The experience from previous similar surveys is that people often state a higher willingness to pay than what one actually is willing to pay for the good. It is important that you make your selections like you would if you were actually facing these choices in your retail purchase decisions, noting that allocation of funds to purchase milk means you will have less money available for other purchases.

22. CE Scenario #1 (SEE APPENDIX B for example scenario)
23. CE Scenario #2
24. CE Scenario #3
25. CE Scenario #4
26. CE Scenario #5
27. CE Scenario #6
28. CE Scenario #7

29. How many adults (18 years old or older), including yourself, live in your household? _____
30. How many children under age 18 live in your household? _____
31. Your state of residence is: _____ (drop down menu of 50 states)
32. You are : Male Female
33. You are _____ years old (fill-in the blank or drop down).
34. Your annual pre-tax, household income is:
1) Less than \$25,000; 2) \$25,000 - \$49,999; 3) \$50,000-\$74,999; 4) \$75,000-\$99,999; 5) \$100,000-\$124,999; 6) \$125,000-\$149,999; 7) \$150,000-\$174,999; 8) \$175,000 or more
35. How much would you estimate your household spends each week for total food consumption including at home, in restaurants, take-out, etc.? \$ _____ week (please provide your best estimate).
36. The best description of the highest education you obtained is:
 - a. Did not graduate from high school
 - b. Graduated from high school
 - c. Associate's or Trade Degree earned
 - d. Bachelor's (B.S. or B.A.) College Degree earned
 - e. Graduate or Advanced College Degree (M.S., Ph.D., Law School) earned

37. Which best describes your race?

- a. White or Caucasian
- b. Black or African American
- c. Asian or Pacific Islander
- d. Mexican or Latino
- e. American Indian
- f. Other (please describe): _____

38. Please circle the number of each pet you currently have in your household:

- a. Dogs – 0 1 2 3 4 or more
- b. Cats - 0 1 2 3 4 or more
- c. Other pets (please describe) ____ 0 1 2 3 4 or more

39. What best describes your participation over the last 3 years in voting on public ballot/referendum issues and/or elections?

- a. I have not voted in the last 3 years
- b. I have voted on less than 50% of the issues/races in the last 3 years
- c. I have voted on at least 50% of the issues/races in the last 3 years
- d. I have voted on every ballot/referendum issue and election that I know of during the last 3 years

40. Do you consider yourself a vegetarian or vegan?

- a. Yes
- b. No
 - i. If yes is selected then:
 - 1. Do you most closely associate yourself with
 - a. Vegetarian
 - b. Vegan
 - c. Both

Thank you for your time in completing this survey. Your input will strengthen our research and help obtain more accurate conclusions. If you wish to add any comments, please feel free to do so here.

Appendix B. Choice Experiment (Example: Each Respondent Had a Set of 7 Scenarios)

Which option do you prefer?

<u>Attribute</u>	<u>Option A</u>	<u>Option B</u>	<u>Option C</u>
Price (\$/gal)	\$3.99	\$2.99	
Provide access to fresh, clean feed and water appropriate for the cow's physiological state.	Yes	No Claim	<i>I choose not to purchase either of these products.</i>
Provide adequate comfort by assuring clean, dry, sanitary environmental conditions for cattle.	No Claim	No Claim	
Consistent training program for owner and employees focusing on principles of animal care and handling.	Yes	No Claim	
<i>I choose:</i>	—	—	—