

Factors Influencing Consumer Decisions Related to “Natural” Beef In The Southern Plains

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The beef industry has experienced major changes during the past 25 years, highlighted by steadily decreasing per-capita beef consumption. Changing consumer tastes and preferences have spurred the need for product differentiation in the beef industry, pressing producers to utilize alternative marketing methods for their beef products (Purcell; Givry). One alternative for beef producers is the natural (no hormones or antibiotics) beef market. The natural beef market is growing, with the greatest growth occurring on the coasts, and more producers of natural beef are emerging. Recent work by Lusk and Fox indicates that consumers are willing to pay a higher price for quality-differentiated beef products to offset the increased production costs for natural beef producers. However, in the Southern Plains states of Kansas, Oklahoma, and Texas—where considerable beef production occurs—natural beef marketing efforts have been relatively limited.

Little information exists related to consumer tastes and preferences for natural beef in the Southern Plains. However, as the cultural and economic landscape of the metropolitan centers of the Southern Plains experience change and as more beef producers entertain the notion of small-scale natural beef marketing, such information is essential for successful venture development. This paper provides some of the results from a study undertaken to determine the demographic and socioeconomic factors affecting consumer tastes, preferences, and perceptions of natural beef in Oklahoma, Kansas, and Texas.

Reasons for the Growing Natural Beef Market

Consumers' Food Safety Concerns

Food safety is an important issue for most consumers. However, concern for pesticide, hormone, and

antibiotic use in food products has recently become a more important factor affecting consumer purchases (Nayga). Consumers are demanding food products that are safer for their families. Numerous studies have shown that certain consumer segments are willing to pay more for food safety attributes (Baker; Hayes et al.; Malone; Flake and Patterson). Consumer concern for food safety is often influenced by various demographic and socioeconomic factors (Lin). In order to effectively position and market their products, producers need to know which consumers are more concerned about food safety (Givry).

Changing Consumer Demand

Schroeder, Marsh, and Mintert have attributed the declining beef demand to several factors including increased health information, food safety concerns, and changing consumer demographics. In addition to these factors, changes in relative prices, product convenience and offering, product quality and consistency, and the concerns related to the ability to trace meat products to their origins may also have contributed to the decline (Boland and Schroeder, 2000).

From 1982 to 1998 beef demand declined as a result of health information linking cholesterol and heart disease to red meat consumption. Moon and Ward found that health concerns positively affected poultry demand during this period, while both beef and pork were negatively impacted. Kinnucan et al. note that small percentage changes in the amount of health information available have larger impacts on meat consumption than the same small percentage change in relative prices.

Changing consumer demographics have also caused beef demand to decrease. From 1982 to 1998 the percentage of women in the labor force increased from 52 to 60 percent. As more women enter the labor force, the time available for food preparation declines, and beef demand has been negatively affected because of a lack of convenient and “quick” beef products (Schroeder, Marsh, and

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Mintert). As a result, some producers are looking for alternative markets for convenience beef products.

Beef Marketing Efforts

Beef Product Attributes

Consumers make purchasing decisions based on product attributes they consider to be important. According to Wesember, consumer perception of beef quality is influenced by four main categories of attributes: health, convenience, appeal, and merchandising. Menkhaus (1993) found that consumers determine beef quality based on characteristics such as cholesterol, calories, sodium, artificial ingredients, microwaveability, packaging, display, and price. Schmitz and Nayga note that the expansion of beef sales may be limited because some consumers have a poor image of beef healthiness and price. Beef is now being promoted as a more healthy and nutritional product (Skaggs et al.), but appropriate labeling is necessary for consumers to identify the nutritional and healthy qualities of beef products (Givry).

Consumers consider tenderness to be the most important palatability attribute of beef (Huffman et al.; Miller et al.). However, consumers are unsure if the beef they purchase will be tender since USDA quality-grading standards do not give consumers a direct tenderness measurement. In fact, Lusk suggests that some degree of beef's declining consumption may be due to consumers' inability to differentiate between the quality of beef cuts available for purchase.

Value-Added Beef Products

Barkema, Drabenstott, and Welch say that the food industry is beginning to target smaller niche markets since consumers are demanding more convenient and healthy foods. Boland, Boyle, and Lusk say that product differentiation will allow producers to produce customized or niche products for various market segments. Streeter, Sonka, and Hudson note that many of the product characteristics of particular importance to consumers cannot be created during the marketing process but must be created at the farm level. Producers and processors are finding more opportunities to add value by

creating products with the specific attributes desired by consumers. However, producers and processors must recognize where the opportunities exist to add value.

Marketing of Natural Beef

In recent years the use of artificial growth stimulants in livestock production has received considerable attention. Although the USDA has stated that residues from hormones administered in proper doses pose no threat to human health, some consumers are still not convinced (Kenney and Fallert). The recent success of niche markets for "natural" or "hormone-free" beef provides evidence that consumers are concerned about hormone use (Lusk and Fox).

Currently, about 95 percent of all cattle in the U.S. are implanted with growth hormones to increase production efficiency (Kuchler et al.; Lusk and Fox). The USDA reports that the use of anabolic agents can significantly improve weight gain, feed efficiency, and lean-meat growth (Kenny and Fallert). Beef operations that produce "hormone-free" or "antibiotic-free" beef will incur much higher production costs due to reduced production efficiency (Lusk and Fox).

Even with expected higher costs, however, producers are entering the organic/natural farming business as a method of capturing high premium prices and increasing farm income (Govindasamy and Italia). The U.S. Department of Agriculture defines *natural* as "a product containing no artificial ingredient or added color and is only minimally processed". Thus, natural beef contains no hormones or antibiotics and the label must explain the use of the term "natural" (Boland, Lyle, and Lusk). Recent work by Skaggs et al. and Lusk and Fox reports that there is a consumer segment interested in a branded, low-fat natural product. Yet the production of natural beef results in increased production costs due to feed, marketing costs, time investment, and possibly lower carcass yield, thus necessitating a price premium to ensure natural beef supplies (Boland, Lyle, and Lusk). According to Mayer, producing natural beef costs 25-percent more than regular beef.

Menkhaus et al. (1988) conducted a study to determine how a price premium on branded, low-fat fresh beef impacted sales. The study shows that

a consumer segment will pay a higher price for a low-fat natural product. However, information is needed regarding consumer segments in Oklahoma, Kansas, and Texas that are willing to purchase natural beef products. Producers need to know how to effectively position their product to consumers. Grannis and Thilmany say target consumers must be able to recognize products that are hormone- and antibiotic-free or environmentally friendly. Therefore producers must use marketing and packaging methods that will make their products stand out to consumers.

Producer Alliances

Boland, Loyle, and Lusk say that natural beef producers need access to markets that will enable them to obtain a price premium for their products. To gain market access producers must supply enough beef to meet the market demand at all times and establish a differentiated product for consumers through marketing services. Producers can add value by providing marketing services such as processing, labeling, and packaging. However, individual producers may be unable to provide large quantities of uniform product, much less carry out all the functions associated with these marketing services. These individuals may therefore consider contracting with retailers to lock in supply/marketing arrangements or forming or joining an alliance of producers to collectively market their beef (Boland, Loyle, and Lusk; Richmond; Hennessy; Schrader; Lawrence et al.).

Survey Procedures

Consumer purchasing behavior is assumed to be a function of several demographic and socio-economic factors, including age, gender, education, income, and number of children present in the household. Consumers' demographic and socio-economic characteristics may influence their attitudes toward natural beef and decisions to purchase natural beef. The specific objective of this study is to determine factors impacting consumer purchase decisions related to natural beef.

To examine the impacts of consumer characteristics on natural beef perceptions in the Southern Plains, the Dichotomous Choice Contingent Valuation Method (DC-CVM) was used in a sur-

vey of supermarket customers. The dichotomous-choice method seems to better approximate markets that consumers are familiar with since the prices appear to be set by the seller and are not usually negotiable (Calia and Strazzer). It also lowers the possibility of respondents exaggerating their expressed willingness to pay amounts.

Consumers are faced with a hypothetical market situation, with a given price for each good, and asked to choose which good to accept (Yoo). The researcher must assure that the willingness-to-pay responses under these hypothetical situations accurately simulate behavior under real world conditions. If the situation appears to be hypothetical, consumers may be more inclined to give hypothetical responses. Since the actual market or data do not usually exist, there is no way to ensure that respondents' give "real" answers.

One of the more common problems with contingent-valuation studies is the lack of effective budget constraints for consumers. Jamieson and Bass note that marketing researchers frequently observe actual purchase data far below the quantities consumers say they intend to purchase. As a result of this discrepancy, hypothetical willingness to pay usually exceeds actual willingness to pay and cannot be assumed to represent actual willingness to pay (Blumenschein et al.; Mitchell and Carson).

For this study, researchers surveyed consumers in supermarkets catering to consumers of natural foods as part of an effort funded by USDA's Sustainable Agriculture Research and Education (SARE) program. The consultants began the surveys in November 2000 and finished in March 2001. The supermarkets chosen for this study were ones that maintain a section of their stores for "natural foods". Stores from three geographic locations were chosen—two stores in the Oklahoma City region, three stores in the Dallas/Ft. Worth metroplex, and three stores in the Kansas City metroplex (two in Kansas, one in Missouri). The surveys took place in stores that agreed to allow consumer sampling at their meat counters. One hundred responses were received from each store, although some of these were incomplete and thus not useable in statistical evaluations.

Survey administrators asked store customers—specifically, those customers who were the primary shoppers for their households—to voluntarily participate in the survey, which on average took less

than three minutes to complete. The questions addressed consumer meat-purchasing behaviors, perceptions, and preferences for natural beef; indicators of willingness-to-pay for natural beef cuts; and demographic characteristics of the household.

Consumers were asked the following questions (questions 23, 24, and 25 in the survey) in an effort to determine their willingness to purchase natural beef at varying price levels:

23. If Regular Beef Sirloin Steak costs \$4.00 per pound and All Natural Beef Sirloin Steak cost \$5.60 per pound, I would buy (Check only one)
 Regular Beef Sirloin Steak at \$4.00/pound
 All Natural Beef Sirloin Steak at \$5.60/pound

If the consumer chose Regular beef, then he or she was asked to go to question 24 and not to answer question 25. If the consumer chose All Natural Beef, he or she was asked to go to question 25 and not to answer question 24.

24. If Regular Beef Sirloin Steak costs \$4.00 per pound and All Natural Beef Sirloin Steak cost \$5.00 per pound, I would buy (Check only one)
 Regular Beef Sirloin Steak at \$4.00/pound
 All Natural Beef Sirloin Steak at \$5.00/pound

25. If Regular Beef Sirloin Steak costs \$4.00 per pound and All Natural Beef Sirloin Steak cost \$6.50 per pound, I would buy (Check only one)
 Regular Beef Sirloin Steak at \$4.00/pound
 All Natural Beef Sirloin Steak at \$6.50/pound

The responses were coded 1 for All Natural Beef and 0 otherwise for all three of these questions. Responses were then grouped into three categories:

- 1) NN – Respondents chose natural beef in both questions 23 and 25.
- 2) NR – This category was actually composed of two groups of people who will only purchase natural beef if the price is low enough. Group 1 included respondents who chose natural beef in question 23 and regular beef in question 25. Group 2 included respondents who chose regular beef in question 23 and natural beef in question 24. Respondents in both groups would only purchase natural beef at the lower price. Group 1 consumers first chose natural beef, but then chose regular beef when the price of natural beef increased. Group 2 consumers first chose

regular beef, but then chose natural beef when the price of natural beef decreased.

- 3) RR – Respondents chose regular beef in both questions 23 and 24.

Once the respondents were grouped into categories, frequency tables were computed to determine how each group answered questions concerning their meat-purchasing and consumption behavior. Chi-squared statistics were used to test whether or not the responses of the three groups were significantly different.

The majority of respondents—about 50 percent—was in the NN group. The NR groups made up about 30 percent of the respondents. The remaining 20 percent of respondents were in the RR group.

Question 1: Informed about Meat Processing

The majority of consumers in each group said that they were somewhat informed about how meat is raised and processed (Table 1). Obviously, these responses represent perceptions that may or may not be accurate.

Question 2: Traceability of Meat

In Table 2, the percentage of responses to the traceability question from each group is shown. The

Table 1. How Informed Are Respondents of Meat Processing (%) (Chi-Square^a = 19.88)

	Not Informed	Somewhat Informed	Very Important
NN ^b (n=221)	8.14	65.35	28.51
NR ^c (n=130)	16.92	70.77	12.31
RR ^d (n=93)	17.20	67.74	15.05

^a The chi-square value indicates that the groups (NN, NR, RR) did respond differently to the question.

^b The NN group always prefers natural beef to regular beef regardless of the price.

^c The NR group will only purchase natural beef if the price is low enough. If the price of natural beef is too high, they will purchase regular beef.

^d The RR group always prefers regular beef to natural beef.

majority of respondents in the NN group said that it was either very important or extremely important to trace meat back to the farm and animal of origin (Figure 1). In the NR group about half of the respondents said it was very important or extremely important to trace meat back to the origin. However, in the RR group, fewer respondents said that tracing meat to the origin was either very important or extremely important. Consumers who said that it was important to trace meat to the origin probably have greater health and safety concerns. Therefore, it was expected that a larger percentage of consumers in the NN group said that it was important to trace meat to the origin. Most of these consumers would probably not actually trace their meat to the origin, but they feel better about purchasing meat when they know that they have this option.

Question 3: Check Labels

In question 3, consumers were asked how often they check labels. In the NN group 87 percent of the consumers frequently or always check labels (Figure 2). About 63 percent of the NR group and 57 percent of the RR group frequently or always check labels. Table 3 shows all of the responses for each group. Consumers who are more concerned about health and safety issues will also be more likely to frequently or always check labels. Therefore it is not surprising that 52.3 percent of consumers in the NN group always check labels. However, a large percentage of the NR and RR groups frequently check labels. This means that consumers in the NN group were not the only group concerned about health and safety issues; consumers in the NN group

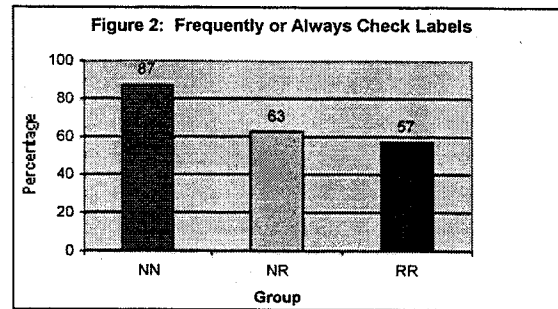
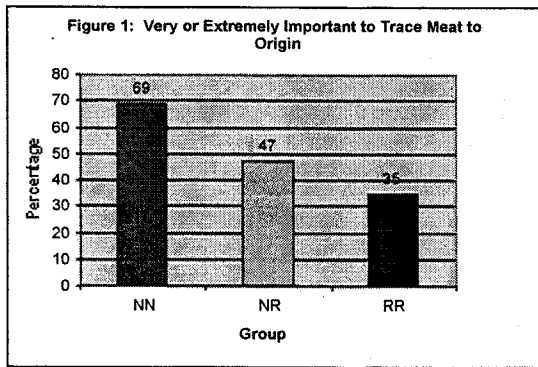


Table 2. The Importance of Ability to Trace Meat to Origin (%) (Chi-Square^a = 49.80)

	Not Important	Somewhat Important	Important	Very Important	Extremely Important
NN ^b (n=219)	1.37	8.68	20.55	32.42	36.99
NR ^c (n=130)	3.08	26.15	22.31	28.46	20.00
RR ^d (n=93)	4.30	35.48	24.73	20.43	15.05

^a The chi-square value indicates that the groups (NN, NR, RR) did respond differently to the question.

^b The NN group always prefers natural beef to regular beef regardless of the price.

^c The NR group will only purchase natural beef if the price is low enough. If the price of natural beef is too high, they will purchase regular beef.

^d The RR group always prefers regular beef to natural beef.

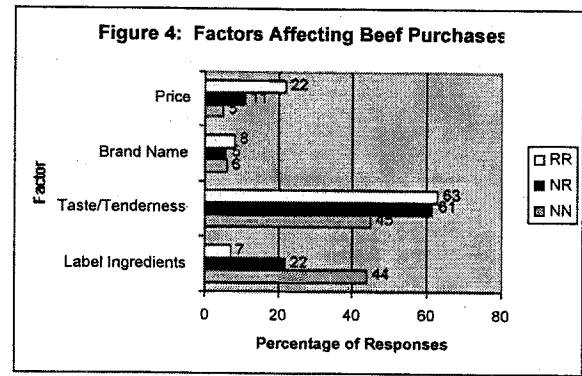
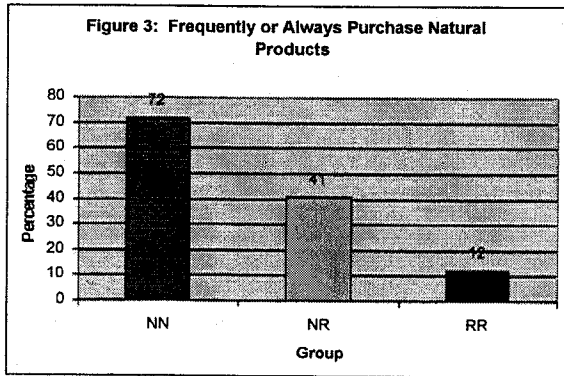


Table 3. Frequency that Consumers Check Labels (%) (Chi-Square^a = 77.42)

	Never	Rarely	Occasionally	Frequently	Always
NN^b (n=221)	0.45	2.71	9.95	33.94	52.94
NR^c (n=130)	0.77	9.23	26.92	46.15	16.92
RR^d (n=93)	3.23	13.98	25.81	38.71	18.28

^a The chi-square value indicates that the groups (NN, NR, RR) did respond differently to the question.

^b The NN group always prefers natural beef to regular beef regardless of the price.

^c The NR group will only purchase natural beef if the price is low enough. If the price of natural beef is too high, they will purchase regular beef.

^d The RR group always prefers regular beef to natural beef.

Table 4. Frequency of Natural Product Purchases (%) (Chi-Square^a = 127.43)

	Never	Rarely	Occasionally	Frequently	Always
NN^b (n=221)	2.26	3.62	21.72	57.01	15.38
NR^c (n=130)	3.85	16.92	38.46	39.23	1.54
RR^d (n=93)	10.75	33.33	44.09	10.75	1.08

^a The chi-square value indicates that the groups (NN, NR, RR) did respond differently to the question.

^b The NN group always prefers natural beef to regular beef regardless of the price.

^c The NR group will only purchase natural beef if the price is low enough. If the price of natural beef is too high, they will purchase regular beef.

^d The RR group always prefers regular beef to natural beef.

were just more willing to pay a higher price to ensure that their food products were healthy and safe.

Question 4: Purchase Natural Products

Table 4 shows the frequency that consumers purchase natural products. Seventy-two percent of the consumers in the NN group frequently or always purchased natural products, while only 12 percent of the RR group frequently purchased natural products (Figure 3). This 12 percent of the RR group may actually be willing to purchase natural beef when faced with an actual market situation where price differentials are not as extreme as those used for questions 23-25. However, they may only be interested in purchasing natural products other than beef. About 41 percent of consumers in the NR group frequently or always purchased natural products.

Question 5: Factors Affecting Beef Purchases

About 44 percent of consumers in the NN group said that label ingredients were an important factor affecting beef purchases (Figure 4). In this same group, 45 percent said that taste and tenderness was the most important factor. The high concern over ingredients was expected, as consumers in this group consider themselves to be more concerned about the health and safety of beef products and less concerned about the taste.

Taste and tenderness was the most important factor for the majority of consumers in both the

NR and RR groups (61 and 63 percent, respectively). For all groups, the importance of taste and tenderness was expected to have the most impact on purchase decisions, as shown in previous studies (e.g., Huffman et al. and Miller et. al).

Respondents' ratings of the importance of price mirrored their responses to questions 23-25. More consumers in the RR group said that price was an important factor affecting beef purchases. Respondents in the NR group said that price was a somewhat important factor affecting their beef purchases. The percentage indicating price as the most important factor was between that of the RR and NN groups. In the NN group few respondents said that price was an important factor concerning beef purchases. These respondents in the NR group did, after all, have a limit to the amount they would pay for natural beef.

None of the groups was very interested in brand name, which is important information for beef alliances that want to market their own beef brands. Producers may not be able to profit from marketing their own beef brands to consumers in these locations.

Question 6: Image of Natural Beef

The majority of respondents in all three groups associate natural beef with no use of antibiotics or hormones in production (Table 5). Few consumers associated natural beef with the image of environment. This could be due to the fact that many con-

Table 5. Consumers' Image of Natural Beef (%)
(Chi-Square^a = 23.62)

	Environment	No Antibiotics/ Hormones	Taste & Tenderness	Local Family Farms
NN ^b (n=203)	8.87	74.88	10.34	5.91
NR ^c (n=128)	4.69	63.28	21.09	10.94
RR ^d (n=92)	6.52	56.52	30.43	6.52

^a The chi-square value indicates that the groups (NN, NR, RR) did respond differently to the question.

^b The NN group always prefers natural beef to regular beef regardless of the price.

^c The NR group will only purchase natural beef if the price is low enough. If the price of natural beef is too high, they will purchase regular beef.

^d The RR group always prefers regular beef to natural beef.

sumers purchase all types of beef products even though the packaging is not environmentally friendly.

Question 7: Interest in More Ingredient Information on Processed Beef

Figure 5 shows the percentage of respondents in each group who are very or extremely interested in more ingredient information on processed beef. Consumers in the NN group were the most interested, followed by the NR and the RR group. The various levels of interest by respondents in each group are shown in Table 6.

This will probably be a bigger issue for further-processed meat products. For natural beef the ingredients are limited so more ingredient information probably won't be available.

Question 19: Purchase Natural Beef

Table 7 indicates the frequency that each group purchased natural beef. Sixty-two percent of the NN group frequently or always purchased natural beef. In the RR group, 35 percent never purchased natural beef and 20 percent frequently or always purchased natural beef. It is interesting to note that even though a large majority of the RR group said they wouldn't purchase natural beef under the price scenarios in the survey, 20 percent said that they frequently purchase natural beef. Therefore, consumers in the RR group may be willing to purchase natural beef even more frequently at certain prices.

Table 8. Attitude to a Natural Beef Label before Description (%) (Chi-Square^a = 67.70)

	Positive	Negative	Indifferent
NN ^b (n=218)	85.78	1.83	12.39
NR ^c (n=129)	75.19	0.78	24.03
RR ^d (n=92)	41.30	3.26	55.43

^a The chi-square value indicates that the groups (NN, NR, RR) did respond differently to the question.

^b The NN group always prefers natural beef to regular beef regardless of the price.

^c The NR group will only purchase natural beef if the price is

Thirty-one percent of consumers in the NR group frequently or always purchased natural beef. Figure 6 illustrates the percentage of respondents in each group who frequently or always purchased natural beef.

Questions 21 and 22: Attitude to a Natural Beef Label

Consumers were asked to read the following description of natural beef: "Natural beef is a high quality beef product raised without any hormones or antibiotics. Family farmers and ranchers who produce natural beef are committed to agricultural production methods that ensure the protection and enhancement of natural resources and believe in humane treatment of animals."

Table 8 shows consumer attitudes toward an All Natural Beef Label before reading the description. The majority of respondents in the NN and NR groups had a positive attitude toward natural beef before reading the description (Figure 7). However, in the RR group, 41 percent had a positive attitude but 55 percent were indifferent about natural beef before reading the description.

After reading the description, the percentage of positive attitudes about natural beef increased for all groups. The change mainly occurred because consumers changed indifferent attitudes to positive attitudes after reading the description. Figure 8 illustrates of this change. Positive attitudes increased by 6 percent for the NN group, 18 percent for the NR group, and 20 percent for the RR group (Table

Table 9. Attitude to a Natural Beef Label after Description (%) (Chi-Square^a = 63.20)

	Positive	Negative	Indifferent
NN ^b (n=219)	91.78	1.37	6.85
NR ^c (n=129)	93.02	0.78	6.20
RR ^d (n=92)	60.87	1.09	38.04

^a The chi-square value indicates that the groups (NN, NR, RR) did respond differently to the question.

^b The NN group always prefers natural beef to regular beef regardless of the price.

Table 6. Interest in More Ingredient Information in Beef (%) (Chi-Square^a = 66.97)

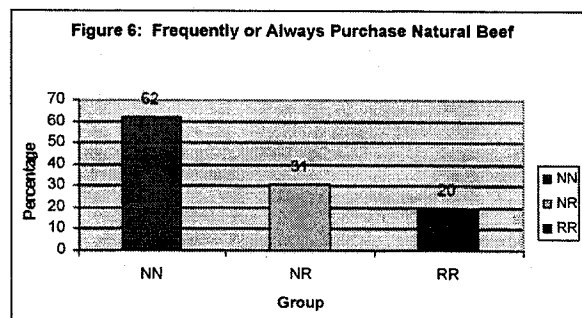
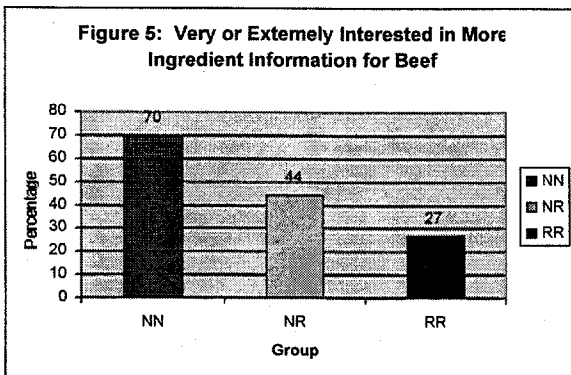
	Not Interested	Somewhat Interested	Interested	Very Interested	Extremely Interested
NN ^b (n=220)	3.18	8.18	19.09	35.91	33.64
NR ^c (n=128)	3.13	15.63	37.50	30.47	13.28
RR ^d (n=93)	7.53	25.81	39.78	21.51	5.38

- ^a The chi-square value indicates that the groups (NN, NR, RR) did respond differently to the question.
- ^b The NN group always prefers natural beef to regular beef regardless of the price.
- ^c The NR group will only purchase natural beef if the price is low enough. If the price of natural beef is too high, they will purchase regular beef.
- ^d The RR group always prefers regular beef to natural beef.

Table 7. Frequency of Natural Beef Purchases (%) (Chi-Square^a = 78.22)

	Never	Occasionally	Frequently	Always
NN ^b (n=215)	10.23	28.37	42.79	18.60
NR ^c (n=128)	18.75	50.00	29.69	1.56
RR ^d (n=93)	35.48	44.09	19.35	1.08

- ^a The chi-square value indicates that the groups (NN, NR, RR) did respond differently to the question.
- ^b The NN group always prefers natural beef to regular beef regardless of the price.
- ^c The NR group will only purchase natural beef if the price is low enough. If the price of natural beef is too high, they will purchase regular beef.
- ^d The RR group always prefers regular beef to natural beef.



9). The respondents in the NR and RR groups had a more positive attitude once they read the description of natural beef. Natural beef producers and marketers may be able to influence consumer attitudes toward natural beef by adding more promotional and advertising activities. However, a fairly large percentage of the RR group was still indifferent about natural beef after reading the description. Therefore, it will probably be much more difficult to influence consumer attitudes in the RR group through promotional activities.

Conclusions and Implications

The findings from these assessments of survey responses indicate the ability of beef marketers to categorize beef consumers into three distinctive groups: those who will always choose natural beef over “regular” beef even with a high price differential, those who would buy natural beef but have reservation prices beyond which they will purchase regular beef instead of natural beef, and those who will purchase regular beef instead of natural beef if any price differential exists. Each group maintains a core set of tastes and preferences that differs significantly from the other two groups, as shown by the chi-square analyses of responses to survey questions.

Survey responses indicate that consumers’ perceptions of natural beef are mostly related to the image of hormone- and antibiotic-free production conditions. Although many natural beef marketing efforts focus on the promotion of family farms and environmental awareness, very few consumers responding to this survey idealized natural beef in that manner. As is often the case with food items, consumers focused on the products’ aspects that directly affected their physical intake of food and

their eating experience (i.e. hormone/antibiotic free, taste and tenderness) rather than the product’s impact on the environment or agricultural producers.

Another interesting finding from this study was that brand names did not significantly affected respondents’ purchasing patterns for natural or regular beef. This is intriguing because many newer beef operations—whether natural beef or not—are trying to promote brand recognition and generate consumer loyalty. While brand recognition may play a larger role in processed meat products, the Southern Plains consumers who participated in this survey were generally not interested in the brand names on their beef cuts.

It may be possible for natural beef marketing efforts in the Southern Plains to capture a share of the consumers who—under the conditions stated in the survey questions—indicated they would not buy natural beef. The before-and-after-description questions related to the perceived image of natural beef indicate that some of these consumers can be swayed to have a more favorable view of natural beef if given more product information. However, the perceived differences between natural beef and regular beef may not be enough to convince them to pay a large price premium for natural beef.

The results of this study indicate that distinctive differences in perceptions and purchasing patterns can be recognized among beef consumers. The next step for marketers is to determine which characteristics most directly distinguish consumers in each category. Further research focusing on the levels of price-premium thresholds and the impacts of socio-economic and demographic characteristics are needed to help the marketing campaigns of those enterprises promoting natural beef in the Southern Plains states.

Figure 7: Attitude Towards a Natural Beef Label Before Reading a Definition of Natural Beef

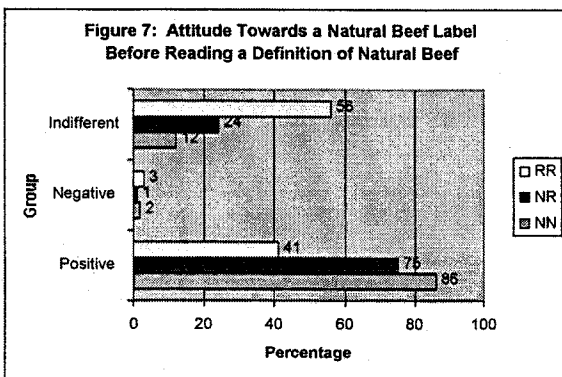
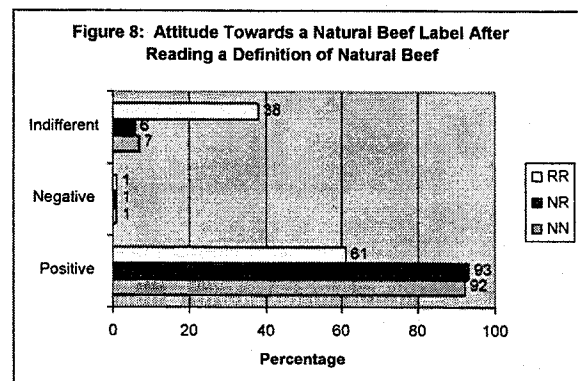


Figure 8: Attitude Towards a Natural Beef Label After Reading a Definition of Natural Beef



References

- Baker, G.A. 1999. "Consumer Preferences for Food Safety Attributes in Fresh Apples: Market Segments, Consumer Characteristics, and Marketing Opportunities." *Journal of Agricultural and Resource Economics* 24(July):80-97.
- Barkema, A., M. Drabenstott, and K. Welch. 1991. "The Quiet Revolution on the U.S. Food Market." *Economic Review* 81(May/June):25-41.
- Blumenschein, K., M. Johannesson, G. C. Blomquist, B. Liljas, and R. M. O Connor. 1998. "Experimental Results on Expressed Certainty and Hypothetical Bias in Contingent Valuation." *Southern Economic Journal* 65(July): 169-178
- Boland, M., E. Boyle, and C. Lusk. 1999. "Economic Issues with Natural and Organic Beef." Kansas State University Agricultural Experiment Station and Cooperative Extension Service, MF-2432. Kansas State University, December.
- Boland, M. and T. Schroder. 2000. "Marginal Value of Quality Attributes for Natural (Organic) Beef." Paper Presented at the Western Agricultural Economics Association Annual Meetings, Vancouver, British Columbia. June 29-July 1.
- Calia, P. and E. Strazzer. 2000. "Bias and Efficiency of Single Versus Double Bound Models for Contingent Valuation Studies: A Monte Carlo Analysis." *Applied Economics* 32(August): 1329
- Flake, O. L. and P. M. Patterson. 1999. "Health, Food Safety and Meat Demand." Paper Presented at American Agricultural Economics Association Annual Meetings, Nashville, TN. August.
- Givry, S. R. M. 1998. "Consumers Preferences for Natural Beef Products." Masters Thesis. Department of Agricultural Economics, Kansas State University, Manhattan, Kansas.
- Govindasamy, R. and J. Italia. 1999. "Predicting Willingness-to-Pay a Premium for Organically Grown Fresh Produce." *Journal of Food Distribution Research* 15(July): 44-53.
- Grannis, J. and D. Thilmany. 1999. "Targetable Market Segments for Natural Pork Products." Paper Presented at the American Agricultural Economics Association Annual Meeting, Nashville, Tennessee. August.
- Hayes, D. J., J. F. Shogren, S. Y. Shin, J. B. Kliebenstein. 1995. "Valuing Food Safety in Experimental Auction Markets." *American Journal of Agricultural Economics* 77(February):40-53.
- Hennessy, D.A. 1996. "Information Asymmetry as a Reason for Food Industry Vertical Integration." *American Journal of Agricultural Economics* 78(November):1034-1043.
- Huffman, K. L., M. F. Miller, L. C. Hoover, C. K. Wu, H. C. Brittin, and C. B. Ramsey. 1996. "Effect of Beef Tenderness on Consumer Satisfaction with Steaks Consumed in the Home and Restaurant." *Journal of Animal Science* 74(January):91-97.
- Jamieson, L. F. and F. M. Bass. 1989. "Adjusting Stated Intention Measures to Predict Trial Purchase of New Products: A Comparison of Models and Methods." *Journal of Marketing Research* 26():336-345.
- Kinnucan, H. W., H. Xiao, C.-J. Hsia, and J. D. Jackson. 1991. "Effects of Health Information and Generic Advertising on U.S. Meat Demand." *American Journal of Agricultural Economics* 79(February): 13-23.
- Lawrence, J. D., V. J. Rhodes, G. A. Grimes, M. L. Hayenga. 1997. "Vertical Coordination in the US Pork Industry: Status, Motivations, and Expectations." *Agribusiness: An International Journal* 13(January/February):21-31.
- Lin, K. C. 1995. "Demographic and Socioeconomic Influences on the Importance of Food Safety in Food Shopping." *Agricultural and Resource Economics Review* 24(October): 190-198.
- Lusk, J. L. 2000. "Consumer and Retailer Demand for Quality Differentiated Beef." Doctoral Dissertation. Department of Agricultural Economics, Kansas State University, Manhattan, Kansas.
- Lusk, J. L., and J. A. Fox. 2000. "Consumer Valuation of Beef Ribeye Steak Attributes." Paper presented at the American Agricultural Economics Association annual meeting, Tampa, Florida. August.
- Malone, J. W. Jr. 1990. "Consumer Willingness to Purchase and to Pay More for Potential Benefits of Irradiated Fresh Food Products." *Agribusiness* 6(March/April): 163-178.
- Menkhous, D. J., D. P. M. Colin, G. D. Whipple, and R. A. Field. 1993. "The Effects of Per-

- ceived Product Attributes on the Perception of Beef." *Agribusiness* 9(January):57-63.
- Menkhaus, D. J, G. D. Whipple, R. A. Field, and S. W. Moore. 1988. "Impact of a Price Premium on Sales of Branded, Low Fat, Fresh Beef." *Agribusiness* 4(November/December):521-534.
- Miller, M. F., K. L. Huffman, S. Y. Gilbert, L. L. Hammon, and C. B. Ramsey. 1995. "Retail Consumer Acceptance of Beef Tenderized with Calcium Chloride." *Journal of Animal Science* 73(August):2308.
- Mitchell, R. C. and R. T. Carson. 1989. *Using Surveys to Value Public Goods: The Contingent Valuation Method*. Washington, D.C.: Resources for the Future.
- Moon W. and R. W. Ward. 1999. "Effects of Health Concerns and Consumer Characteristics on U.S. Meat Consumption." Paper Presented at the American Agricultural Economics Association Annual Meeting, Nashville, Tennessee.
- Nayga, R. M. Jr. 1996. "Sociodemographic Influences on Consumer Concern for Food Safety: The Case of Irradiation, Antibiotics, Hormones and Pesticides." *Review of Agricultural Economics* 18(September):467-475.
- Purcell, W. D. 2000. "Measures of Changes in Demand for Beef, Pork, and Chicken, 1975-2000." Research Bulletin 4-2000, Research Institute on Livestock Pricing, Department of Agricultural and Applied Economics, Virginia Tech. December.
- Schmitz, J. and R. M. Nayga, Jr. 1991. "Food Nutritional Quality: A Pilot Study on Consumer Awareness." *Journal of Food Distribution Research* 19(June):22.
- Schrader, L. F. 1986. "Responses to Forces Shaping Agricultural Marketing: Contracting." *American Journal of Agricultural Economics* 68(December):1161-66.
- Schroeder, T. C., T. L. Marsh, and J. Mintert. 2000. "Beef Demand Determinants: A Research Summary." Kansas State University. March.
- Skaggs, D. J. Menkhaus, S. J. Torok, and R. A. Field. 1987. "Test Marketing of Branded, Low Fat, Fresh Beef." *Agribusiness: An International Journal* 3:257-272.
- Streeter, D. H., S. T. Sonka, and M. A. Hudson. 1991. "Information Technology, Coordination, and Competitiveness in the Food and Agribusiness Sector." *American Journal of Agricultural Economics* 73(December):1466-1471.
- Yoo S.-H., S.-J Kwak, and T.-Y Kim. 2001. "Modelling Willingness to Pay Responses from Dichotomous Choice Contingent Valuation Surveys with Zero Observations." *Applied Economics* 33(March): 523.