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ASSESSING ALABAMA CONSUMER ATTITUDES AND BELIEFS ABOUT LOCALLY OR REGIONALLY PRODUCED LIVESTOCK AND PRODUCTS

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Abstract

Local and regional food production has gained increased interest of consumers in recent years. The study, therefore, focused on assessing consumer attitudes and beliefs on local or regional livestock products. Data were obtained from a convenience sample of 432 participants from South Central Alabama, and were analyzed using descriptive statistics, including chi-square tests. A majority of respondents thought using chemicals and additives in locally or regionally produced beef or goat meat was a serious hazard. Therefore, many were willing to pay more for meat certified as locally or regionally produced. Also, most agreed or strongly agreed with statements on meat attributes. Chi-square tests showed that gender, education, and household income had significant relationships with willingness to pay more for meat certified as locally or regionally produced. Furthermore, safety, no difference, affordability, desirability, and hygiene had significant relationships with willingness to pay more for meat certified as locally or regionally produced.

Keywords: Consumers, Attitudes and Beliefs, Local and Regional, Willingness to Pay, Livestock Products

Introduction

Food safety concerns by consumers and others have had dramatic impacts on the meat industry in recent years. Events that have been perceived to adversely affect food safety have resulted in complete loss of access to key markets by meat producers such as those in the beef industry. The discovery of cattle infected with bovine spongiform encephalopathy (BSE) in North America in 2003, for instance, resulted in immediate and long-lasting bans on animals and beef trade causing substantial economic loss to the meat industry (Schroeder et al., 2007). In addition to BSE, other food safety concerns are also of considerable importance to the food industry. For example, periodic detection of *Escherichia coli* (E. coli) 0157:H7, *Salmonella*, *Campylobacter*, *Listeria*, and similar foodborne pathogens have been particularly noteworthy food safety concerns. The U.S Centers for Disease Control and Prevention estimates that approximately 37% of food borne illness which occurs annually comes from E. coli, *Salmonella*, and *Listeria* (Meade et al., 1999).

Amid high profile food scares and recalls, health concerns, and competition from other protein sources, the U.S. meat industry faces increasing demands from consumers for assurances regarding sources and production methods both in domestic and international markets (Abidoye et al., 2011). According to Miles et al. (2004), consumers are concerned with the extensive use of artificial chemicals in food manufacturing and food contaminants, such as antibiotics, hormones, and pesticides in production agriculture. Menkhaus et al. (1993) also emphasized that consumers have become concerned about specific attributes of meat products, such as tenderness, juiciness, cholesterol, calorie contents, and artificial ingredients. Taylor (2008) further argued that the

substantial changes in the meat market and evolution of consumer preferences have slowly created a market environment favorable for local and organic meat consumption in the U.S. Taylor contended that much of the popularity of local farm products lies in their perceived benefits to the consumer and environmental health.

Guptill and Wilkins (2002) stressed that the growing interest in local foods in the U.S. is largely attributed to the rise of several movements, such as the environmental movement, the community food security movement, the slow food movement, and the local food movement. Gaytan (2003) explained that the environmental movement encourages people to consider geographic dimensions in their food choices. The community food security movement focuses on enhancing access to safe, healthy, and culturally appropriate food for all consumers. The slow food movement promotes traditional methods of growing, producing, and preparing food. Also, Ilbery and Maye (2006) and Pirog (2009) explained that the local food movement reflects an increasing interest by consumers in supporting local farmers, and in better understanding the origins of their food.

Martinez et al. (2010) indicated that the term “local food” has no legal or universally accepted definition. In part, it is a geographical concept related to the distance between food producers and consumers. Thompson et al. (2008) maintained that some may associate production methods as part of what defines local food; however, other studies (e.g., Bean and Sharp, 2011; Onozaka et al., 2011) have suggested that local food is often associated with attributes such as health, convenience, environmental, and social concerns.

Taylor (2008) stated that for local meat products, reduced transport time between farm and slaughterhouse, and slaughterhouse and market means less opportunity for spoilage, and hence, less need for use of preservatives. Taylor also added that, generally, small producers use fewer agricultural chemicals and antibiotics in local meat production. This is possible because lower housing densities for pastured animals (compared with confined livestock) and a mixed-grass diet (compared with a high-grain diet) tend to reduce animal diseases.

Further, Marenick et al. (2010) made the case that other attributes such as taste, quality, price, and convenience are considered to be more important in consumer purchasing decisions. According to Lerman et al. (2010), people purchase local products only when some added benefit is present. Onozaka et al. (2011) stated that such benefits include better appearance; fresher, tastier, healthier, and safer products; supporting the local economy and farmers; preserving farmland; food security; fewer pesticides applied; less distance traveled; more authentic product; less energy used; better treatment of workers and animals; and sometimes price. In addition, Pearson et al. (2011) stressed that some consumers also attach social benefits to local foods. Social benefits include trust and connectedness between the consumer and the producer. Feagan and Morris (2009) argued that these interactions are more likely to occur in environments where consumers are able to purchase directly from producers.

It is critical to assess attitudes and beliefs about foods, especially livestock products. Indeed, there has been limited research on consumers’ perceptions about safety of livestock products in rural areas, such as the South Central Alabama area. Therefore, there is a need to conduct a study

such as the current study is attempting to pursue to add to the existing literature, and also, provide insights on views of locally or regionally produced livestock. The purpose of the study, therefore, was to assess Alabama consumer attitudes and beliefs about locally or regionally produced livestock and products. Specific objectives were to (1) identify and describe socioeconomic characteristics, (2) describe and assess attitudes and beliefs about chemicals in beef or goat meat, (3) describe and assess attitudes and beliefs about selected attributes of beef or goat meat, and (4) assess relationships between socioeconomic variables as well as meat attributes or variables and willingness to pay more for beef or goat meat certified as locally or regionally produced.

Literature Review

Perceptions about Production Methods

The use of hormones and other additives in livestock production have heightened consumer reluctance to knowingly purchase hormone or other chemically-treated livestock products. For example, Halbrendt et al. (1991) analyzed the public's perception of food safety in animal food products, including use of vitamin supplements, feed additives, growth promotants, and antibiotics in livestock production. Fifty percent of the respondents indicated they were very concerned about the use of feed additives, growth promotants, and antibiotics. When the authors probed the degree of concern further as to the extent to which respondents agreed with chemicals' relatedness to health risk, 50% strongly agreed that chemicals increase the risk of illness.

Also, Van Ravenswaay (1991) examined consumer perceptions about health risks in food. The author reported that respondents identified pesticide residues in food, insecticides, herbicides, and other chemical use as the greatest threat to food safety in open-ended questions. In close-ended questions, respondents listed antibiotics, hormones, additives, and preservatives as serious health hazards.

In addition, the Food Marketing Institute (1996) assessed consumer concerns and attitudes regarding chemicals in meat. It reported that 66% of the respondents considered pesticide residues/insecticides/herbicides in meat as a serious hazard; whereas, 42% considered antibiotics and hormones in meat as a serious hazard to health.

Lusk et al. (2001[b]) examined the demand for beef cattle administered growth hormones or fed genetically modified corn. The authors found that consumers were concerned about the use of growth hormones or genetically modified corn in beef cattle production, rating the concern 4.1 and 3.9, respectively, [with 5 being the highest] for growth hormones and genetically modified corn.

Moreover, Grannis and Thilmany (2001) assessed regional demand for natural beef products. Consumers were asked to rank the importance of production practices such as use of antibiotics, growth hormones, and small or crowded pens. Consumers were highly sensitive to the use of chemical additives in the production of meat; the practices most important to consumers were "no use of antibiotics" and "hormone free."

Furthermore, Lusk and Fox (2002) evaluated the impact of mandatory labeling of beef from cattle administered growth hormones or fed genetically modified corn. They found that consumers were concerned about production practices such as use of hormones and genetically modified corn in beef. They also found that concern for the use of growth hormones and genetically modified corn by some consumers was a more significant factor in determining willingness to pay for a mandatorily labeled product compared to consumers who had less concern for the use of growth hormones and genetically modified corn.

Hwang et al. (2005) assessed consumers' concerns about food production and processing technologies. Out of eight technologies assessed, use of pesticides, growth hormones, and antibiotics rated first, second, and third, respectively, as the technologies with the most concern for consumers. Consumers were also concerned about how domestic produce is grown and handled.

Perceptions on Product Attributes

Caswell (1998) argued that consumers will choose the bundle of food products that provides them with the largest utility if they can accurately determine the quality attributes of those food products. In addition, Caswell emphasized that labeling with certification is appropriate for the attributes that consumers care about.

Degner and Lin (1993), for example, analyzed the willingness to consume goat meat at a restaurant and at home. They found that if respondents possessed a positive attitude toward goat meat in terms of nutrition and health benefits, they were more likely to order goat meat at a restaurant or purchase it for home consumption. Similarly, Knight et al. (2006) evaluated consumer preferences for goat meat. They found that factors, such as the frequency at which meats are consumed, individual perception of the product, and various nutritional, safety, and product attributes, had significant effects on the willingness to consume goat meat.

Also, Hui et al. (1995) analyzed ratings of meat attributes by consumers. They reported freshness as the first and most important attribute influencing meat purchase decisions, followed by taste; appearance of meat stands; U.S. Department of Agriculture label; tenderness; no chemical additives; low in sodium; low in cholesterol; price; white meat; and red meat. Relatedly, Hui et al. (1997) investigated consumer concerns about nutrition, taste, price, and chemical additives during meat shopping. They reported that consumers rated their meat being free from chemical additives as the first and most important attribute when shopping for meat; followed by taste, nutritional value, and price.

Moreover, Givry (1998) assessed consumer preferences for natural beef products. Consumers were asked to rate attributes such as color, presence of marbling, minimum external fat, tenderness, packaging, brand, leanness, sodium content, and artificial ingredient content. They rated color as the most important attribute; followed by tenderness, minimal external fat, leanness, presence of marbling, artificial ingredient, packaging, sodium content, and brand.

McGarry-Wolf and Thulin (2000) also assessed consumer profile and positioning of a newly locally branded beef product. They found that the characteristics that are extremely important to the consumers when purchasing beef were price, quality and appearance, value, leanness, color,

and healthiness of the beef. The “somewhat” desirable characteristics of beef to consumers were juiciness, premium brand, quick preparation time, boneless, natural, and easy to-clean. In addition, the respondents rated grass-fed and organically certified as the least attribute they will consider when purchasing meat.

However, Gwin and Hardesty (2008) evaluated attributes of the niche meat market. They found that respondents rated taste as the most important attribute, followed by “no hormones/antibiotics”, “consistent cut size/shape”, “health benefits”, and “humanely raised.”

Willingness to Pay More for Product Attributes

Willingness to pay more has been used as a criterion in the literature to ascertain consumers’ propensity toward a particular product. For instance, Lusk et al. (2001[a]) assessed consumer response to steak tenderness taste test. They found that a majority of consumers were willing to pay an average of \$1.84/lb more when they had completed the taste test and were also provided with information on beef steak tenderness.

Lusk et al. (2001[b]) analyzed the demand for beef cattle administered hormones or genetically modified corn. They evaluated two steaks, one from an animal administered growth hormones and the other from an animal not administered growth hormones. They noted that prices for “organic” or “hormone-free” beef ribeye steaks were \$24.95/lb, \$11.99/lb, and \$9.99/lb at three different retail grocery stores on a particular date. Prices for “typical” hormone-treated steaks were recorded on the same date and in the same study area. Prices ranged from \$6.88/lb for an ungraded ribeye steak to \$7.49/lb, and \$8.49/lb for a Select or Choice ribeye steak. The authors emphasized that “hormone-free” steaks often command large premiums over hormone-treated steaks in high-end retail grocery stores. In other words, consumers were willing to pay more for the hormone-free steaks compared to the hormone-treated steaks.

Grannis and Thilmany (2001) examined regional demand for natural beef products. When respondents were asked how much they were willing to pay for local, natural beef if it were available, with base retail price for ground beef as \$1.69 and steak as \$4.99, 67% said they were willing to pay \$1.89/lb (12% price premium) and 29% were willing to pay \$2.09 (23% price premium) for ground beef. Also, 38% said they were willing to pay \$5.49/lb (10% price premium) and 14% were willing to pay \$5.99/lb (20% price premium) for steak.

Further, Lusk and Fox (2002) investigated consumer demand for mandatory labeling of beef from cattle administered growth hormones or genetically modified corn. The results revealed that consumers that express a greater concern for the safety of hormone and genetically modified corn use in beef were willing to pay up to 17% more for beef that has been mandatorily labeled as hormone-free, and were willing to pay 10% more for beef that has been mandatorily labeled free from genetically modified corn.

Similarly, Thilmany et al. (2003) examined regional demand for natural beef products and consumers’ willingness to pay for the product. The findings showed that 20% of urban consumers purchased, at least, some of their meat from specialty shops or natural food stores, while 24% of rural consumers purchased, at least, some meat directly from producers. Also, the researchers reported that when the conventional price of natural ground beef was \$1.69/lb, there was still substantial demand by urban consumers when the price was increased to \$2.20/lb.

However, beyond \$2.20/lb, the demand dropped precipitously. The substantial demand and the drop in demand are a reflection of willingness to pay. Similarly, for natural steak with a conventional price of \$4.99/lb, there was substantial demand by urban consumers when the price was increased to \$6.00/lb. However, beyond \$6.00/lb, the demand dropped greatly. For rural consumers, the price tolerance points for the two products were \$2.29/lb and \$5.99/lb, respectively, for natural ground beef and natural steak. Furthermore, for natural freezer beef with a conventional price of \$2.89/lb, there was substantial demand by consumers in general when the price was increased to \$3.79/lb. Raising the price above \$3.79/lb resulted in a significant drop in the demand.

What's more, McCluskey et al. (2005) evaluated the marketing benefits of grass-fed beef. They found that respondents were willing to pay a premium for beef steaks with lower fat content and higher levels of omega 3 fatty acids. Their results revealed a willingness to pay of \$2.82 to move from high to low fat and calories, and a willingness to pay of \$1.71 to move from low to high omega-3 fatty acid content in beef steaks.

Loureiro and Umberger (2007) also analyzed consumer responses to food safety preferences related to beef. The authors reported that consumers were willing to pay a premium of \$2.57/lb for steaks labeled with country of origin, but were even willing to pay a higher premium of \$8.07/lb for the food safety inspection label.

Lusk and Parker (2009) examined consumer preferences for amount and type of fat in ground beef. The results indicated that consumers preferred grass-fed cattle as opposed to those raised on feed supplemented with fishmeal or flaxseed to improve the fatty acid content in beef. The results also showed that consumers were willing to pay \$0.21 and \$0.06 more, respectively, for each additional percentage reduction of fat in beef when label was provided. The results further revealed that consumers perceived food safety as the most important attribute, followed by fat content; hence, their willingness to pay more for these attributes.

Additionally, Daley et al. (2010) reviewed the fatty acid and antioxidant profiles of grass-fed and grain-fed beef. They found that increased consumer interest in grass-fed, naturally raised, locally produced meats is based on perceptions and evidence about "healthier" fats, reduced environmental impacts, and increased animal welfare associated with meats not raised in confinement systems on grain-based diets. Consumers valued cattle that were grass-fed relative to grain-fed, and were willing to pay more for this attribute because of a higher level of omega-3 fatty acids and tenderness of the meat.

Methodology

Data Collection

A questionnaire was developed, including questions adopted, with permission, from Govindasamy et al. (1998) to collect the data for the study. It had two major parts: attitudes and beliefs, and demographic information. The questionnaire was submitted to the Institutional Review Board, Human Subjects Committee of the Institution for approval before being administered. The questionnaire was administered to residents using convenience sampling. Convenience sampling was used in this case and was the most appropriate approach, because of a lack of a known sampling frame from which subjects could be drawn.

In the summer of 2013 through the spring of 2014, data were collected using self-administered techniques in several South Central Alabama Counties (Autauga, Barbour, Bullock, Dallas, Greene, Hale, Lowndes, Macon, Marengo, Montgomery, Perry, Sumter, and Wilcox). Extension agents and other technical personnel in the various counties as well as graduate students helped with collecting the data, which came from a sample of 432 respondents. The sample of 432 respondents was considered adequate for analysis.

Data Analysis

The data were analyzed by using descriptive statistics, namely, frequencies, percentages, and chi square tests. The chi-square test allows a researcher to formulate a null hypothesis (Ho), which states that two variables are independent of (or not related to) each other, and an alternative hypothesis (Ha), which states that two variables not independent of (or related to) each other. In this study, the null hypothesis and alternative hypothesis are stated generally on the basis of the test of independence for two sets of variables, for example, as:

Ho: Willingness to pay more for beef or goat meat certified as locally or regionally produced is independent of (or not related to) selected socioeconomic variables.

Ha: Willingness to pay more for beef or goat meat certified as locally or regionally produced is not independent of (or is related to) selected socioeconomic variables.

To determine the chi-square, χ^2 , the formula below is used:

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{(fo_{i,j} - fe_{i,j})^2}{fe_{i,j}}$$

Where

χ^2 = chi-square

fo = observed frequency

fe = expected frequency

i,j = values in the ith row and jth column, respectively

Σ = summation

The observed frequency is the frequency obtained from the survey, and the expected frequency is determined from each cell in a contingency table as row total times column total divided by the grand total. If the chi-square is significant, then the null hypothesis that the two variables are independent of each other is rejected; otherwise, it is not rejected. In the study, specifically, hypotheses were stated for willingness to purchase beef or goat meat certified as locally or regionally produced and socioeconomic variables. In the case of number of persons in household, for example, the hypotheses were stated as:

Ho: Willingness to pay more for beef or goat meat certified as locally or regionally produced is independent of number of persons in household.

Ha: Willingness to pay more for beef or goat meat certified as locally or regionally produced is not independent of (or related to) number of persons in household.

Similar hypotheses were stated for the other socioeconomic variables: gender, race/ethnicity, age, educational level, annual household income, and marital status. Identical hypotheses were stated for willingness to pay more for beef or goat meat certified as locally or regionally produced and meat attributes or variables. The data were input into SPSS 12.0[®] (MapInfo Corporation, Troy, NY), and frequencies and percentages were assessed. Chi-square tests were conducted to determine relationships.

Results and Discussion

Table 1 presents the socioeconomic characteristics of the respondents. Nearly 63% had 1-3 persons in their households, and 30% had 4-6 persons in their households. The mean number of persons in the household was six (not shown in Table). About 78% of respondents were the primary shoppers of food in their households; approximately 63% were males. Considering race/ethnicity and age, 88% were Blacks and 11% were Whites; also, 51% were 44 years or less and 48% were more than 44 years of age. Furthermore, looking at education and annual household income, 32% had high school or below education; about 36% had a two-year/technical degree or some college education; 63% earned \$30,000 or less annual household income and 28% earned over \$30,000 as annual household income. About 66% were singles, and 34% were married. The respondents comprised more males than females, more Blacks than Whites, more middle-aged or younger persons than older persons, with a fairly good educational level, with low to moderate household incomes, and more singles than married persons.

Table 1. Socioeconomic Characteristics (N = 432)

Variable	Frequency	Percent
Number of Persons in Household		
1-3	270	62.5
4-6	131	30.3
7-9	18	4.1
10 or more	1	0.2
No Response	12	2.8
Primary Shopper of Food		
Yes	338	78.2
No	91	21.1
No Response	3	0.7
Gender		
Male	274	63.4
Female	158	36.6
Race/Ethnicity		
Black	379	87.7
White	47	10.9
Other	6	1.4

Table 1. Continued

Variable	Frequency	Percent
Age		
20-24 years	44	10.2
25-34 years	89	20.6
35-44 years	89	20.6
45-54 years	78	18.1
55-64 years	73	16.9
65 years or older	58	13.4
No Response	1	0.2
Educational Level		
High School Graduate or Below	140	32.4
Two-Year/Technical Degree	71	16.4
Some College	84	19.4
College Degree	67	15.5
Post-Graduate/Professional Degree	62	14.4
No Response	8	1.9
Annual Household Income		
\$10,000 or less	89	20.6
\$10,001-20,000	106	24.5
\$20,001-30,000	76	17.6
\$30,001-40,000	25	5.8
\$40,001-50,000	19	4.4
\$50,001-60,000	20	4.6
\$60,001-70,000	28	6.5
Over \$70,000	27	6.3
No Response	42	9.7
Marital Status		
Single, never married	186	43.1
Married	147	34.0
Separated	16	3.7
Divorced	42	9.7
Widowed	39	9.0
No Response	2	0.5

Table 2 shows reflects attitudes and beliefs about using chemicals and additives, and willingness to pay for certified locally or regionally produced beef or goat meat. About 66% of respondents agreed or strongly agreed that purchasing locally or regionally produced beef or goat meat is safer than purchasing similar products produced non-locally or regionally. Exactly 87% indicated that residues from pesticides in beef or goat meat produced and sold locally or regionally is a serious or somewhat serious hazard. Approximately 85% of respondents indicated that residues from antibiotics in beef or goat meat produced and sold locally or regionally is a serious or

somewhat serious hazard. Nearly 90% stated that growth stimulants or hormones in beef or goat meat produced and sold locally or regionally is a serious or somewhat serious hazard. About 85% stated that artificial fertilizers in pastures used to raise beef cattle or meat goats produced and sold locally or regionally is a serious or somewhat serious hazard. Almost 82% indicated that using additives and preservatives in beef or goat meat produced and sold locally or regionally is a serious or somewhat serious hazard. About 79% indicated that using artificial coloring in beef or goat meat produced and sold locally or regionally is a serious or somewhat serious hazard.

Table 2. Attitudes and Beliefs about Using Chemicals, Additives, and Willingness to Pay for Locally or Regionally Produced Beef or Goat Meat (N = 432)

Variable	Frequency	Percent
Purchasing Locally or Regionally Produced Beef Cattle, Meat Goat, and Product is Safer		
Strongly Agree	84	19.4
Agree	200	46.3
Neutral	104	24.1
Disagree	28	6.5
Strongly Disagree	12	2.8
Residues from Pesticides		
Serious Hazard	130	30.1
Somewhat of a Serious Hazard	246	56.9
Not at all a Hazard	55	12.7
No Response	1	0.2
Antibiotics		
Serious Hazard	100	23.1
Somewhat of a Serious Hazard	268	62.0
Not at all a Hazard	61	14.1
No Response	3	0.7
Growth Stimulants or Hormones		
Serious Hazard	150	34.7
Somewhat of a Serious Hazard	237	54.9
Not at all a Hazard	45	10.4
Artificial Fertilizers in Pastures		
Serious Hazard	107	24.8
Somewhat of a Serious Hazard	258	59.7
Not at all a Hazard	67	15.5
Additives and Preservatives		
Serious Hazard	86	19.9
Somewhat of a Serious Hazard	267	61.8
Not at all a Hazard	79	18.3

Table 2. Continued

Variable	Frequency	Percent
Artificial Coloring		
Serious Hazard	75	17.4
Somewhat of a Serious Hazard	267	61.8
Not at all a Hazard	89	20.6
No Response	1	0.2
Willingness to Pay More		
No	105	24.3
Yes, between 1 and 5 cents more	202	46.8
Yes, between 6 and 10 cents more	50	11.6
Yes, between 11 and 15 cents more	17	3.9
Yes, between 16 and 20 cents more	15	3.5
Yes, over 20 cents more	40	9.3
No Response	3	0.7
Frequency of Purchasing Locally or Regionally Produced Beef or Goat Meat		
Always	65	15.0
Very Often	59	13.7
Often	138	31.9
Quite Often	57	13.2
Not At All	111	25.7
No Response	2	0.5

Overall, at least, 79% thought adding chemicals or additives to locally or regionally produced and sold beef or goat meat is a serious or somewhat serious hazard. The results are similar to those obtained by Halbrendt et al. (1991); Van Ravenswaay (1991), Food marketing Institute (1996), Lusk et al.(2001[b]), Grannis and Thilmany (2001), Lusk and Fox (2002), and Hwang et al. (2005) who found that consumers were concerned about chemicals and additives in food or meat products.

Approximately 24% indicated they would not pay more for their favorite beef, goat meat, or related product if it were certified as locally or regionally produced. However, nearly 75% indicated they were willing to pay more for their favorite beef, goat meat, or related product if it were certified as locally or regionally produced. The spread went mostly to the first two groupings; 47% indicated they would pay between 1-5 cents more; and nearly 12% indicated they would pay between 6-10 cents more. In effect, 58% were willing to pay between 1-10 cents more; but, as the increases in price go beyond 10 cents, the percentages generally dropped (Table 2). This distribution gives an idea of the premium placed on the product. The findings are in agreement with those of Lusk et al. (2001[b]), Grannis and Thilmany (2001), Lusk and Fox (2002), Thilmany et al. (2003), McClauskey et al. (2005), Loureiro and Umberger (2007), Lusk and Parker (2009), and Daley et al. (2010) who reported that consumers were willing to pay

more for preferred meat attributes. Furthermore, nearly 74% indicated that they purchased locally or regionally produced beef or goat meat, at least, quite often, including 29% stating very often and always (Table 2). There appears to be some loyalty to purchasing locally or regionally produced beef or goat meat; a good sign for the local or regional economy.

Table 3 reflects attitudes and beliefs about selected attributes of locally or regionally produced beef or goat meat. Nearly 67% agreed or strongly agreed that locally or regionally produced beef or goat meat is generally safe to consume (safety); 40% agreed or strongly agreed that there is no difference between the safety of locally or regionally produced beef or goat meat and non-locally or regionally produced beef or goat meat (no difference); 73% agreed or strongly agreed that they would buy locally or regionally produced beef or goat meat if it were more readily available (availability); 67% agreed or strongly agreed that they would buy locally or regionally produced beef or goat meat if it were cheaper (affordability). Moreover, about 68% agreed or strongly agreed that they would buy locally or regionally produced beef or goat meat if it were of equal quality [taste and appearance] as non-locally or regionally produced beef or goat meat (quality); 69% agreed or strongly agreed that they would buy locally or regionally produced beef or goat meat if it were of equal desirability [appearance and smell] as non-locally or regionally produced beef or goat meat (desirability); 47% agreed or strongly agreed that they would buy locally or regionally produced beef or goat meat not worrying about how it was raised if it appeared hygienic and wholesome (hygiene).

Table 3. Attitudes and Beliefs about Selected Attributes of Locally or Regionally Produced Beef or Goat Meat (N = 432)

Variable	Frequency	Percent
Locally or Regionally Produced Beef or Goat Meat is Generally Safe to Consume		
Strongly Agree	58	13.4
Agree	230	53.2
Neutral	111	26.6
Disagree	20	4.6
Strongly Disagree	9	2.1
No Difference between Safety of Locally or Regionally Produced Beef or Goat Meat and Non-Locally or Regionally Produced Beef or Goat Meat		
Strongly Agree	24	5.6
Agree	149	34.5
Neutral	118	27.3
Disagree	99	22.9
Strongly Disagree	42	9.7

Table 3. Continued

Variable	Frequency	Percent
Would Buy Locally or Regionally Produced Beef or Goat Meat if More Readily Available		
Strongly Agree	63	14.6
Agree	251	58.1
Neutral	90	20.8
Disagree	18	4.2
Strongly Disagree	10	2.3
Would Buy Locally or Regionally Produced Beef or Goat Meat if Cheaper		
Strongly Agree	65	15.0
Agree	225	52.1
Neutral	100	23.1
Disagree	28	6.5
Strongly Disagree	14	3.5
Would Buy Locally or Regionally Produced Beef or Goat Meat if of Equal Quality as Non-Locally or Regionally Produced Beef or Goat Meat		
Strongly Agree	60	13.9
Agree	235	54.4
Neutral	103	23.8
Disagree	18	4.2
Strongly Disagree	16	3.7
Would Buy Locally or Regionally Produced Beef or Goat Meat if of Equal Desirability as Non-Locally or Regionally Produced Beef or Goat Meat		
Strongly Agree	52	12.0
Agree	247	57.2
Neutral	93	21.5
Disagree	27	6.3
Strongly Disagree	13	3.0

Table 3. Continued

Variable	Frequency	Percent
Would Buy Locally or Regionally Produced Beef or Goat Meat not Worrying about how Raised if it Appeared Hygienic or Wholesome		
Strongly Agree	31	7.2
Agree	172	39.8
Neutral	96	22.2
Disagree	87	20.1
Strongly Disagree	46	10.6

Generally, at least, 67% agreed or strongly agreed with statements on the selected attributes, except in the cases of the safety and hygiene attributes where only 40% and 47%, respectively, agreed or strongly agreed. This means that respondents do not see “strict” or unique differences in terms of safety between locally or regionally produced beef or goat meat and non-locally or regionally produced beef or goat meat. They may be purchasing locally or regionally produced beef or goat meat out of loyalty and/or supporting the local economy rather than based solely on other attributes. This latter point is buttressed by the nearly 73% of respondents agreeing or strongly agreeing that they would buy locally or regionally produced beef or goat meat if it were more readily available. Also, the response to the hygiene statement appears a contradiction, taking into consideration the responses on the attitudes and beliefs about chemicals and additives. It is possible respondents are willing to substitute hygiene for whether the beef or goat meat was treated with some chemicals or additives.

Table 4 depicts the chi-square test results between willingness to pay more for certified locally or regionally produced beef or goat meat and socioeconomic variables. Gender, education, and annual household income were significant, respectively, $p = 0.013$; $p = 0.000$; and $p = 0.002$. This means that gender, education, and household income are not independent of willingness to pay more for certified locally or regionally produced beef or goat meat; the null hypotheses are rejected. For gender, it probably implies that males more than females were willing to pay more for certified locally produced meat. For education, it could mean the higher education one gets the more willing one is to pay more for certified locally or regionally produced meat. Also, for household income, the higher the income, the more willing one is to pay more for certified locally or regionally produced meat. Number of persons in household, age, and marital status were not significant. The null hypotheses that these variables are independent of willingness to pay more for beef or goat meat certified as locally or regionally produced are not rejected.

Table 5 shows the chi-square test results between willingness to pay more for certified locally or regionally produced beef or goat meat and meat attributes or variables. Safety, no difference, affordability, desirability, and hygiene were significant, respectively, $p = 0.030$; $p = 0.001$; $p = 0.002$; $p = 0.100$; and $p = 0.000$. This implies that safety, difference, affordability, desirability,

Table 4. Chi-Square Tests between Socioeconomic Variables and Willingness to Pay More for Beef or Goat Meat Certified as Locally or Regionally Produced

Variable	df	χ^2	<i>p</i> value
Number of Persons in Household	15	14.566	0.483
Gender	5	14.438***	0.013
Race/Ethnicity	10	13.243	0.210
Age	25	16.581	0.896
Education	20	67.972***	0.000
Household Income	35	64.279***	0.002
Marital Status	20	26.779	0.142

*** Significant at 1%

and hygiene are not independent of willingness to pay more for certified locally or regionally produced beef or goat meat; the null hypotheses are rejected. Considering safety, it may mean that as respondents perceive locally or regionally produced beef or goat meat generally safe to consume, they are willing to pay more for certified locally produced meat. Similarly, for no difference, it may mean that as respondents perceive that there is no difference between safety of certified locally or regionally produced beef or goat meat and the safety of non-locally or regionally produced beef or goat meat, they are willing to pay more for certified locally or regionally produced meat, but on the basis of loyalty to the local economy.

Table 5. Chi-Square Tests between Meat Attributes or Variables and Willingness to Pay More for Beef or Goat Meat Certified as Locally or Regionally Produced

Variable	df	χ^2	<i>p</i> value
Safety	20	33.414**	0.030
No Difference	20	47.335***	0.001
Availability	20	26.762	0.142
Affordability	20	42.620***	0.002
Quality	20	27.668	0.117
Desirability	20	28.408*	0.100
Hygiene	20	50.262***	0.000

***Significant at 1%; **Significant at 5%; *Significant at 10%

Considering affordability, it probably implies that respondents would be willing to pay more for certified locally or regionally produced beef or goat meat if they perceive it to be affordable. Moreover, for desirability, it may mean that respondents would be willing to pay more for certified locally or regionally produced beef or goat meat if they perceive it to be of equal desirability as non-locally or regionally produced beef or goat meat. For hygiene, it could mean

that respondents would be willing to pay more for certified locally or regionally produced beef or goat meat not worrying about how the animal was raised if they perceive it to be hygienic and wholesome. Availability and quality were not significant. The null hypotheses that these variables are independent of willingness to pay more for beef or goat meat certified as locally or regionally produced are not rejected.

Conclusion

The study assessed Alabama consumer attitudes and beliefs on locally or regionally produced livestock and products. Specifically, it identified and described socioeconomic characteristics; described and assessed attitudes and beliefs about chemicals in beef or goat meat; described and assessed attitudes and beliefs about selected attributes of beef or goat meat; and assessed relationships between socioeconomic variables as well as meat attributes or variables and willingness to pay more for beef or goat meat certified as locally or regionally produced. The socioeconomic characteristics reflect more males than females, more Blacks than Whites, more middle-aged or younger persons than older persons, with a fairly good educational level, with low to moderate household incomes, and more singles than married persons. A majority (at least 79%) thought adding chemicals or additives to locally or regionally produced and sold beef or goat meat was a serious or somewhat serious hazard.

Not surprisingly, 58% were willing to pay 1-10 cents more for their favorite beef, goat meat or related product if it were certified as locally or regionally produced. Also, most (at least 67%), agreed or strongly agreed with the perceptions on selected meat attributes, except in the cases of the safety and hygiene attributes. The chi-square tests showed that gender, education, and annual household income had statistically significant relationships with willingness to pay more for beef or goat meat certified as locally or regionally produced. Furthermore, safety, no difference, affordability, desirability, and hygiene had statistically significant relationships with willingness to pay more for beef or goat meat certified as locally or regionally produced.

Based on the foregoing of high concern for chemicals or additives being in beef or goat meat, there is a need to stress the low use of chemicals or additives in locally or regionally produced livestock or products. Alternatively, producers can take advantage and raise livestock in a manner that does not use these chemicals or additives, or at least, use only minimal quantities of the chemicals or additives. In this regard, topics such as sustainable beef cattle and goat management could be incorporated into, or made the cornerstone of a local livestock program. Also, since selected meat attributes were generally rated high (agree or strongly agree), these attributes should matter in local or regional livestock programs. In fact, research and Extension can help articulate these attributes.

In addition, since gender, education, and annual household income appear to be important in willingness to pay more for beef or goat meat certified as locally or regionally produced; and safety, no difference, affordability, desirability, and hygiene appear to be important in willingness to pay more for beef or goat meat certified as locally or regionally produced, these factors should be considered in the production of any local or regional beef cattle or meat goat, and/or products in the study area. It is suggested that future studies involving in-depth statistical analysis be conducted. A limitation of the study is the use of convenience sampling. It can lead

to under-representation or over-representation of particular groupings. Despite this, it is still used in research because of its ability to generate quick and important information that would not be otherwise possible.

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