



THE OHIO STATE UNIVERSITY

Executive Summary

Preferences and Complaints associated with American Lamb Quality in Retail & Foodservice Markets

**Submitted to the American Lamb Board,
Denver, CO**

April 2015

T. W. Hoffman¹
K. E. Belk¹
D. R. Woerner¹
J. D. Tatum¹
R. J. Delmore¹
R. K. Peel¹
S. B. LeValley¹
D. L. Pendell¹
K. A. Maneotis¹
H. N. Zerby²
L. F. English²
S. J. Moeller²
F. L. Fluharty²

¹Center for Meat Safety and Quality, Department of Animal Sciences, Colorado State University, Fort Collins, CO 80523-1171; Phone: (970) 491-5826

²Department of Animal Sciences, The Ohio State University, Columbus, OH 43210

EXECUTIVE SUMMARY

Customers' needs and expectations are always changing, and Lamb Quality is a moving target that means different things to the supply chain and sheep/lamb industry stakeholders. Dr. W. Edwards Deming, often considered the father of Total Quality Management, believed in process control in the quest for continuous improvement and that people, not products were the ultimate determinant of quality. Quality may be defined as the satisfaction of the customer, yet an accumulation of quality attributes (while differing) are necessary to provide any product that meets and exceeds expectations. The customer value proposition encourages a quest for the highest quality lamb to meet the price-value relationship of a lamb product that is comparatively expensive to red meat alternatives in both retail and foodservice. Consequently, an understanding of the preferences and complaints of the most important quality attributes at the retail and foodservice sectors can provide a roadmap to reduce quality outliers in a fragmented supply chain and identify the trait(s) that most greatly impact customer satisfaction.

The objectives of this study, funded by the American Lamb Board, were to determine U.S. lamb retail and foodservice rank, definition, and relative preference for seven quality attributes including: 1) Origin; 2) Sheep Raising Practices; 3) Eating Satisfaction; 4) Weight/Size; 5) Product Appearance/Composition; 6) Product Convenience/Form; and 7) Nutrition/Wholesomeness. Best-worst scaling, shares of preference computation, and a willingness-to-pay (WTP) assessment provided a rank and quantification of attribute preference, the likelihood of "must have" quality attributes for purchase, and an estimate of percent increased value of lamb products when a quality attribute was guaranteed for lamb.

Structured (to generate first impression responses and to prevent "leading responses" to a given answer) interviews (N = 120) were conducted (May 2014 to March 2015) with protein purchaser representatives of retail (n = 60), foodservice (n = 45), and purveyor (n = 15) sectors in the lamb supply

chain. Interviews were conducted using an interactive computer software program (Qualtrics[®]). Interview respondents ranked the most and least important traits defining lamb quality using choice rank sets of three attributes. Multinomial logit models in SAS[®] MDC and Monte Carlo simulation were used to estimate shares of preference. Open-ended definitions for each quality attribute were qualitatively aggregated to central themes, and WTP probabilities were estimated using the PROC GLIMMIX function in SAS[®]. Least squares means were calculated and separated at $\alpha = 0.05$.

Shares of preference for all participants (N = 120) indicated that Eating Satisfaction was the most important quality attribute (38.90%; most commonly defined as flavor/taste) when purchasing lamb. All seven attributes were statistically different from each other in rank of preference. Two credence attributes, Origin (17.22%; most commonly defined as locally raised, and subsequently American) and Sheep Raising Practices (13.55%; most commonly defined as grass-fed) were second and third in rank, respectively. Product Appearance/Composition (10.51%) and Weight/Size (8.45%) ranked fourth and fifth, respectively, and were of greater importance to purveyors than either retail or foodservice purchasers. Nutrition/Wholesomeness (7.13%) ranked sixth, and Product Convenience/Form (4.22%) was seventh in relative importance. Origin (25.8%) and Sheep Raising Practices (20.0%) had the greatest likelihood of being a non-negotiable requirement for lamb purchasers. Eating Satisfaction was most likely to return a premium (71.7%), and product assurance of Eating Satisfaction generated the greatest average WTP premium (18.6%).

When asked to define quality in open-ended questions, over 1/3 of respondents (45 out of 120) identified lamb flavor and/or taste as part of their definition of quality. The most frequent responses were simply “flavor or taste” (n = 23); six respondents answered “good flavor” and another six respondents noted “flavorful” as a definition of quality. Few interview respondents actually chose to describe lamb flavor, reinforcing the vague interpretation of lamb eating satisfaction, yet most common

descriptors included “rich flavor” and “mild or medium flavor.” Open-ended questions warranted responses that lamb flavor of American lamb was mentioned 34 times as a strength, 14 times as a weakness, 21 times as an opportunity, and 11 times as a threat to the industry. When lamb industry respondents closest to the consumer were asked what is the image of American lamb, respondents identified lamb as having “good flavor” (n = 5), “milder flavor” (n = 4), flavorful (n = 3), and “different than grass flavor” (n = 3). Responses regarding the image of imported lamb resulted in lamb described as “less flavorful” (n = 6), “gamey flavor” (n = 5), “different flavor” (n = 5), “stronger flavor” (n = 4), and “consistent flavor” (n = 3). According to the retail and foodservice sectors interviewed, an overall perception of American lamb (that is primarily grain-fed) was an overall milder, and more approachable flavor for American consumers. Yet, a perception that a majority of lamb in the U.S. are grass-fed existed among those closest to the consumer.

Compared to the 2011 National Beef Quality Audit (Igo et al., 2013), where food safety ranked first in importance, interview respondents in the present study only ranked the combination of product wholesomeness and nutrition as sixth in importance. Previous experience suggests that most sheep producers believe that product composition is the primary detrimental characteristic causing loss in consumer demand. However, results of the present study suggested that color, attractiveness, and freshness were more important than cutability to those that display lamb at retail, and overall lean to fat challenges of the industry are mitigated at the processing fabrication floor and only were ranked fourth in importance by the retail and foodservice sectors.

Lamb loin and rib chops purchased at U.S. retail markets indicated that U.S. lamb is larger, and more muscular with loin eye (*Longissimus dorsi*) area of loin chops from U.S. origin (3.03 in²) greater than chops from Australia (2.60 in²), and which were greater than chops from New Zealand (2.25 in²). Rib chops of U.S. origin had the greatest total surface area, partially due to increased muscularity and

greater tail length. Australian loin chops were the trimmest of external fat at the middle (50% location) and closest to the loin tail (100% location), and Australian rib chops were trimmest over the lower rib (100% location). Australian and New Zealand loin and rib chops were more tender than loin and rib chops originating from the U.S., yet the mean for all chops was well below a threshold considered to be “very tender.”

Nearly, one-third of respondents indicated that an American Certified Lamb program would not be a good idea for a variety of reasons, and there was little agreement on what traits, if any, would be preferred or required. Respondents suggested that a Certified American Lamb program would not benefit the industry.

This research indicated that, across all sectors, Eating Satisfaction, defined as lamb flavor/taste, was the most imperative quality trait to those who purchase lamb. While Eating Satisfaction is difficult to visually ascertain, retailers and foodservice representatives identified that credence attributes can be monetarily beneficial. Further, label claims of lamb shoulder chops (N = 148) collected at retail markets from 46 stores in 11 states reinforced that source branded product (+ \$1.94/lb), locally raised designation (+ \$1.69/lb), and grass-fed lamb (+ \$1.12/lb) were worth premiums to American consumers.

A strategic emphasis on quality attributes identified in this research should strive to ensure that eating satisfaction and lamb flavor are optimized for American lamb, and to produce lamb with credence attributes that may be valuable for sheep producers and requested by retail and foodservice sectors, and inevitably American lamb consumers. Results from this study can be used to identify areas within each sector, as well as across all sectors, that the sheep and lamb industry needs to focus on to achieve continuous improvement and to increase demand for American lamb.