Better Beef

Assessing the Economic Impacts of Improved Beef Cutability and Palatability

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Colorado State University

Knowledge to Go Places

Cattle and calves in the United States were valued at $2.6 billion in 2001, and the beef industry is the largest component of Colorado agriculture. But Stephen Koontz, associate professor of agricultural and resource economics at Colorado State University, wants to make the industry better, not simply bigger. "Many agricultural experiments are aimed at producing more of a product, which ultimately lowers prices," Koontz explains. "My research is intended to improve a product in order to enhance demand."

Koontz's research was inspired by the declining demand for beef that has occurred over the last 30 years. This trend is due to a number of factors, but a significant part of the decline can be attributed to palatability problems. Tenderness is probably the most important quality that contributes to palatability of beef, and Koontz claims that consumers rate between one-out-of-four and one-out-of-five beef eating experiences as unsatisfactory.

Koontz and his colleague R. Mark Enns, who is an assistant professor of animal science and a geneticist, are using funds from the Agriculture Experiment Station along with checkoff dollars from the National Cattleman's Beef Association to measure the benefits and costs of developing tenderness EPDs (Expected Progeny Differences) for beef cattle breeds and to assess the economic benefits of making beef more palatable.

EPDs are how seedstock producers improve different characteristics of beef animals. For example, there have long been EPDs on animal weight and growth performance. As a result, producers are able to look across the pool of breeding stock and select animals that will produce offspring that are larger and will grow faster. In a national project to investigate EPDs, Colorado State University worked with Kansas State University, Texas A&M University, Cornell University, and the USDA Agricultural Research Service Meat Animal Research Center. Partial funding for the project was provided by the National Cattlemen's Beef Association and the participating beef cattle breed associations. The research conducted on EPDs allows producers to select carcass characteristics, including tenderness. This EPD research also fits well with other research conducted at Colorado State. Specifically, the BeefCam Tenderness Evaluation System, a video-imaging technology developed by Keith Belk and Gary Smith, allows producers to get a picture of carcass tenderness and use that information to adjust their management practices.

What makes for a quality piece of beef? Koontz says tender beef is a result of good genetics, good management, good harvest and fabrication, slight aging, and knowledgeable preparation.

Would consumers be willing to pay more for a more tender product? Koontz was unwilling to rely on consumer surveys to answer this question. "Surveys are somewhat unreliable; people may not do exactly what they say they will do when it comes to spending their own money." Instead, Koontz and former Colorado State graduate student Megan Bruch looked at grocery store data – specifically the National Beef Tenderness Survey conducted by the National Cattleman's Beef Association – to discover how much more consumers will pay for a more tender product. Through the data, they determined that more tender cuts are priced at a premium.

Koontz found that a 10 percent improvement in tenderness would result in a 3.5 to 4 percent increase in retail beef prices. If the resulting product improvements would cause consumers to bring new money to the beef industry, the potential benefit to the industry could be huge. The short-term cost of improving beef palatability would be more than offset by permanent increased industry revenue.

Citing the fact that producers have not yet set up a system for making sure that high-quality producers get paid more and tough beef gets discounted, Koontz claims, "There needs to be a way to track beef tenderness through the marketing system and across different producers. There need to be changes in the beef pricing, marketing, and grading system." Koontz says, "In the short-term, it likely will be niche and high-end marketers who adopt this new technology and develop a system to make it work. Then if changes can be made in the industry grading system, the technology has the potential to be very successful across the industry as a whole."

"It is research like this that has the potential to help farmers and ranchers improve their income," Koontz says of his findings. "Declining beef demand has hurt this industry." Koontz feels that the findings and technology offered by the Colorado State University research stands to improve the end product and increase demand.

CSU Develops a New Tool for Evaluating Beef

Colorado State University researcher, Keith Belk and his colleagues have created a revolutionary tool called BeefCam®, which helps the beef industry attract new customers and be more profitable. Based on color vision technologies, BeefCam® is becoming the technological foundation for improving beef grading and marketing around the world.

BeefCam® is a video-imaging technology that scans beef carcasses into color-differentiated images from which the subsequent eating quality can be determined with a high degree of predictability. For instance, BeefCam® can measure lean color as it relates to the pH of the lean tissue, which can be an indicator of beef tenderness. BeefCam® helps beef processors channel the most palatable carcasses toward value-added marketing programs. The result is a higher-quality, more consistent product that keeps customers coming back for more.

BeefCam® research began with Colorado State University and Hunter Labs of Virginia in 1997. SmartMV, a Hunter Labs subsidiary and Research Management Systems (RMS) worked with Colorado State University to commercialize the system. BeefCam® was incorporated into the RMS Computer Vision System (CVS) technology. The commercial BeefCam® System, first operational May 2000, continues to operate for the Nolan Ryan Tender Aged Beef program.