

The Value of Flavor

Tenderness alone won't cut it for most consumers, but they will pay for marbling, according to Nebraska research.

BY STEVE SUTHER

Tender beef can leave much to be desired — in a word, flavor. Whether that can be quantified by marbling, and what it is worth to consumers, is answered in a beef checkoff-funded study published in the 2001 *Nebraska Beef Report*.

University of Nebraska meat science graduate student Karen Killinger and her advisor, meat scientist Chris Calkins, conducted a study with the primary goal of finding the value of flavor, Killinger says.

"Everybody's trying to sort for tenderness," Calkins points out. "The beef industry's Long Range Plan identifies it, and studies show consumers would pay more for a guaranteed tender product. If we get to the point where we can — through technology or sorting — guarantee tenderness, will marbling count for anything?"

That was the central question in our research."

Parallel to the tenderness data, research had shown people prefer the flavor of more highly marbled beef, Calkins says. "What's unique here is that



we removed tenderness from the picture by holding it constant so we can see the value of marbling," he explains.

The study included a visual and taste comparison of high-

vs. low-marbling strip loin steaks, but it also compared color preferences and the taste of U.S. and Argentine beef, Calkins says.

"We used the upper two-thirds of Choice [the standard for the *Certified Angus Beef*® (CAB®) brand] for high marbling and Select grade for the low-marbling beef," he explains. "The idea was to set up a contrast."

A bid for marbling

The stage was being set for 124 consumer panelists in Chicago and 124 in San Francisco — cities "chosen to represent two dramatically different populations," Calkins says. He credits Killinger with a "heroic effort" in setting up details. "When you have consumers at the door, it has to work flawlessly."

In each location, Killinger used the phone to screen and to ensure an appropriate mix of gender, ethnicity and economic status between 19 and 59 years of age, primary shoppers willing to eat beef.

Strip loins had been aged and frozen, samples thawed, cooked and shear-tested for tenderness, and paired to approximate equal tenderness for the taste panelists. For the visual evaluation, steaks were purchased at retail, packaged alike and labeled with codes. Consumers were asked to choose the steak they would purchase if shopping in a grocery store, tell why they chose it and what they would pay.

Killinger and Calkins gave the panelists cash — \$25 in Chicago and \$35 in San Francisco — to participate in a silent-auction system that had them putting their money where their mouth was. The top three bidders in each group of up to 12 panelists won the bid and paid the fourth-high bidder's price.

Panelists tasted a pair of steaks, bid, then learned of their bid's success before tasting two more for the same process.

"They had two chances to tell us what marbling level they preferred," Calkins explains. Only those who validated their first choice with the same type of steak the second time were considered as having shown a clear preference.

Most panelists were enthusiastic participants, and for good reason: "This is the best way in the world to buy beef, because you get to taste it and bid on steaks from the same loin as the piece you tasted," Calkins says. Top bidders had to take two other steaks from that loin home for cooking, consumption and follow-up evaluation to return by mail.

Eyes vs. taste buds

"Our data support the previous observations that consumers say they want lean, but their palate says otherwise," Calkins reports. "In the visual evaluation, more than 75% chose the low-marbling steak, but when they tasted it, preference went the other way."

Significantly, about two-thirds of the taste panelists made no clear choice, but of those who did show a consistent preference, it was three-to-one in favor of higher marbling in Chicago and two of three with the same preference in San Francisco.

In the visual phase, consumers' reasons for choosing were enlightening.

"If they preferred high marbling, they were much more likely to use the word 'marbling' or talk about eating quality — which suggests they linked marbling to cooked-meat quality," Calkins notes. "People who preferred low marbling were far more likely to talk about fat."

It's an information and education issue, Calkins says. Visual preference for steaks is influenced by consumer perception of marbling as a negative factor (fat) or a positive factor (increases flavor and juiciness).

"In the taste-panel phase, participants rated the high- and low-marbling steaks that had been paired for tenderness, using an 8-point scale for juiciness, tenderness and overall



Chris Calkins

Karen Killinger

acceptability,” Calkins explains. “Averaged over both cities, panelists found a flavor advantage, a juiciness advantage and an overall acceptability advantage to the high-marbled steaks.” As expected, there was no significant difference in tenderness ratings (see Table 1).

Tender is not enough

In the final analysis, the researchers found little correlation between expressed marbling preference in the visual-evaluation phase and the taste-panel phase. That indicates a big educational task for retailers who want to sell the more highly marbled beef, Calkins says.

“If people really understand what marbling does, and if you can explain that those extra flecks don’t substantially alter the fat in their diet, then you have a much better chance of succeeding,” he says. “It’s pretty clear from our work that people don’t know that.”

It’s also clear that producers

Table 1: Palatability rating for high- and low-marbled strip steak samples, 8-point scale

Attribute	High-marbled	Low-marbled
Flavor	5.6 ^a	5.3 ^b
Juiciness	5.0 ^a	4.5 ^b
Tenderness	5.4 ^a	5.3 ^a
Overall acceptability	5.4 ^a	5.1 ^b

^{a,b}Within a row, means without a common superscript differ (P<0.01).

Table 2: Auction bids (\$/lb.) for high- and low-marbled strip steaks when consumers were grouped based on consistent overall acceptability ratings in Chicago and San Francisco

Marbling level	Chicago			San Francisco		
	Liked high marbling n=30	Liked low marbling n=9	Indifferent n=78	Liked high marbling n=23	Liked low marbling n=13	Indifferent n=73
High-marbled	3.15 ^a	1.02 ^a	2.26 ^a	3.64 ^a	0.90 ^a	2.75 ^a
Low-marbled	2.02 ^b	2.42 ^b	2.17 ^a	2.17 ^b	2.84 ^b	2.82 ^a
Difference	1.13	1.40	0.09	1.47	1.94	0.07

^{a,b}Within a column, means without a common superscript differ (P<0.01).

cannot ignore marbling and count on tenderness leading the way back to consumers.

“Without marbling and its impact on flavor and juiciness, beef cannot continue to win back consumer demand,” says Jim Riemann, president of Certified Angus Beef LLC

(CAB). “This research breaks new ground in defining consumer preferences beyond tenderness to address the impact of marbling — something the market already rewards with premium prices.”

“The scientific evidence that consumers will pay for higher

levels of marbling when tenderness is the same confirms the foundation on which the *Certified Angus Beef* brand was built,” Riemann says. “It should cause some concern, however, for anyone basing a branded future on the ‘guaranteed tender’ concept alone.”

