



The science of beef quality

John Maday, Managing Editor, Drovers CattleNetwork | Updated: 12/19/2012

A great steak doesn't just happen. A long list of factors ranging from genetics to aging and cooking techniques influence the beef-eating experience, and as a meat scientist at Colorado State University, Dale Woerner, PhD, devotes considerable study to those factors.

Woerner updated an international group of beef producers and processors on beef-quality research last week during Novus International's Global Beef Roundtable in Colorado.

Steady growth in carcass weights of U.S. beef cattle plays a role in efforts to maximize beef quality, Woerner explains. Economic signals generally provide incentives for feeders to finish cattle at heavier weights, resulting in larger beef cuts. The 2011 National Beef Quality Audit (NBQA) shows an average ribeye area of 13.7 inches, and Woerner says a 13-inch ribeye steak, cut one-inch thick, weighs about 15 ounces. That's more than the average restaurant customer wants to eat, but cutting the steak thinner detracts from the eating experience. Meat scientists and processors now are working on ways to separate individual muscles from the ribeye roll primal, producing additional high-value cuts for other uses while reducing the weight of the steak from 15 ounces to 10.

Marbling, of course, tops the list of indicators of beef quality and beef flavor. Woerner cites a study in which taste panels of chefs at culinary schools rated blind samples of different types of beef. In each test, the steak samples were ground before cooking to eliminate tenderness as a variable while focusing on flavor.

In one test, the panels compared premium, high-Choice Angus, low-choice Angus, low-choice Holstein and Select Angus beef. In this test, the premium Angus product rated highest for beefy flavor and overall flavor desirability, while the two low-choice products were similar and the Select product rated lowest for flavor.

Another test compared dry-aged Prime Wagyu beef with dry-aged Prime Angus and dry-aged upper-Choice Angus. The Wagyu product finished slightly ahead of the Prime Angus for overall flavor desirability and both topped the upper-Choice Angus steak.

Growth-promoting tools such as implants and beta agonists have sometimes been implicated in reductions in beef quality, but in this test, comparisons between beef from implanted cattle, cattle implanted and fed a beta agonist and cattle receiving neither product found only minor differences in flavor that typical consumers probably would not detect, Woerner says.

In a comparison of beef from grass-finished versus grain-finished cattle, the grain-finished beef finished well above grass-finished for overall flavor desirability. Panelists detected more "gamey," grassy, liver-like flavors in the grass-finished product. Woerner acknowledged a couple points that could bias this test. First, he says, the U.S.-based taste panelists are accustomed to the flavor of grain-finished beef. Panelists from a country where grass-finished beef is the norm might have reversed the ratings. Also, the U.S.-based grass-finishing program that produced the beef used in this test is not as well-refined in terms of genetics, forages and management as some grass-finishing systems around the world.

One more test compared the results of different beef-aging processes. Beef that was dry-aged for 46 days actually ranked lowest for overall flavor desirability in this test. Beef that was wet-aged for 14 days was intermediate, and the winner for overall flavor desirability was beef that was first wet-aged for 14 days then dry-aged for another 14 days.

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