BEEF CATTLE RESEARCH UPDATE

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Consumer Acceptance and Value of Domestic, Canadian, and Australian Grass-Fed Beef

Nebraska researchers[1] recently used 24 taste panels of 273 consumers in Denver and Chicago to determine whether there were sensory and value differences among US consumers for grass-fed Australian, grain-fed Canadian (generally fed barley-based diets), and domestic, corn-fed beef. Two pairs of strip loin steaks (1 inch thick steaks) were evaluated for flavor, juiciness, tenderness, and overall acceptability in each taste panel using an eight-point scale (1 = extremely undesirable to 8 = extremely desirable). One pair consisted of an Australian grass-fed steak and a domestic steak, whereas, the other pair included Canadian and domestic steaks. The pairs were matched to similar Warner-Bratzler shear values (measure of tenderness) and marbling scores to decrease variation associated with tenderness and juiciness. However, the aging period (time from the vacuum-packaging date to the date the steaks were frozen for storage) varied between 8 to 11 days for domestic beef, 24 days for Canadian beef, and 67 to 73 days for Australian beef. A silent, sealed bid auction was conducted among taste panelists to determine the value of each pair of steaks.

Consumers gave significantly higher scores for flavor, juiciness, tenderness, and overall acceptability for domestic beef compared with Australian beef. Consumers placed an average value of $2.48/lb for Australian steaks versus $3.68/lb for domestic steaks. Consumers gave significantly higher scores for flavor, tenderness, and overall acceptability for domestic steaks compared with Canadian steaks and tended to score juiciness higher for domestic steaks. The differences in scores between domestic and Canadian samples were not as great as between domestic and Australian samples (about 1/3 as much). Consumers placed an average value of $3.95/lb for domestic steaks and $3.57/lb for Canadian steaks.

Although the majority of consumers preferred the flavor (based on overall acceptability score) of domestic steaks compared to Australian or Canadian steaks, some consumers preferred the flavor of Australian or Canadian steaks. More consumers favored domestic (64.5%) versus Australian (19.0%) steaks with the remaining consumers expressing no preference (16.5%). More consumers preferred domestic (44%) versus Canadian (29.3%) steaks with 26.7% showing no preference. Consumers were willing to pay more for their preference. Consumers who preferred Australian over domestic steaks paid $1.38/lb more and consumers who favored Canadian over domestic steaks paid $1.37/lb more. In contrast, consumers who preferred domestic over Australian steaks paid $2.23/lb more and consumers paid $1.67/lb more for domestic versus Canadian steaks.

In summary, in this study, the majority of US consumers seemed to prefer the taste of domestic, corn-fed beef over that of Canadian grain-fed or Australian grass-fed beef.

Changes in Gain Through the Feeding Period

Recent Nebraska research[2] documented changes in daily gain and feed conversion of feedlot cattle on a live weight basis and carcass weight basis by compiling data from three previous feedlot trials conducted at the University of Nebraska. The data set included 115 pens of steers consisting of 930 head with an average initial weight of 750 lb. The steers were fed for 120 to 150 days and were weighed approximately every 30 days (four or five interim weights collected for each steer). Interim carcass weights were calculated using a dressing percentage based on the amount of time steers had been on feed. These researchers developed an equation relating dressing percentage with time on feed using data from two published serial slaughter trials. This equation was used to calculate expected carcass weight from shrunk body weight (full weight X 0.96) at various times during the feeding period. This equation explained 94% of the variation between days on feed and dressing percentage ($r^2 = 0.94$).

The analysis of this data suggested that both body weight and carcass weight increased linearly through the feeding period. However, daily body weight gain decreased through the feeding period, while daily carcass weight gain remained constant through the feeding period. The percentage of body weight gain that was transferred to the carcass increased linearly through the feeding period and approached 100% at the end of the feeding period. These data suggested that every pound of additional body weight gain at the end of the

feeding period was transferred to the carcass resulting in an additional pound of carcass weight. Similar results were reported in 1987 Oklahoma research.[3] In this study, crossbred steers (703 lb initial weight) were slaughtered at 100, 114, 128 or 142 days on feed. For cattle fed 142 days, carcass gain was 104.5% of live weight gain over the last 14 days of the feeding period.

Feed conversion (feed/gain ratio) increased linearly (poorer conversions) through the feeding period on both a live weight basis and carcass weight basis. However, feed conversion expressed on a live weight basis increased at more than double the rate of conversion expressed on a carcass weight basis.

These researchers concluded that this information may prove useful to producers in determining optimal marketing strategies. If cattle are marketed on a liver weight basis, it may be beneficial to market cattle earlier since live weight gain and feed efficiency are decreasing. Whereas, if cattle are marketed on a carcasses basis or on a grid formula, feeding cattle longer may be beneficial since carcass weight gain is not reduced. This conclusion is supported by previous Nebraska research that suggested that producers marketing on a grid formula may benefit by continuing to feed cattle until 10 to 15% are discounted because carcass weights are increasing.[4]

Effect of Auction Exposure on Health and Performance of Weaned Calves

Recent Canadian research[5] evaluated differences in health and performance between ranch-direct and auction sourced calves. In this 84-day trial, 240 crossbred steers (584 lb) from a single ranch were either shipped directly from the ranch to the feedlot (120 hd, 249 miles) or to an auction market (120 hd) and then to the feedlot. Calves that were shipped to the auction barn were held overnight without feed or water, co-mingled, sorted and run through the auction ring, and then transported to the feedlot (~6 miles away) to simulate typical sale barn activities. Sale barn cattle were lighter than ranch cattle at the start of the trial (568 vs 601 lb). Weight loss resulting from increased time without feed and water as well as the sorting and handling at the sale barn probably contributed to the lighter initial weight of the sale barn cattle. However, no performance differences between groups were noted over the trial. Perhaps, this occurred because of a very low incidence of sickness (only two calves were treated).

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[1] Sitz, B. M., C. R. Calkins, D. M. Feuz, W. J. Umberger, and K. M. Eskridge. 2005. Consumer sensory acceptance and value of domestic, canadian, and australian grass-fed beef steaks J. Anim. Sci. 83:2863-2868.

[2] MacDonald, J. C., T. J. Klopfenstein, G. E. Erickson, and K. J. Vander Pol. 2007. Changes in gain through the feeding period. Nebraska Beef Report MP 90:55-57. Available: http://beef.unl.edu/beefreports/2007.pdf.

[3] Hicks, R. B., F. N. Owens, D. R. Gill, J. J. Martin, H. G. Dolezal, F. K. Ray, V. S. Hays, and C. A. Strasia. 1987. The effect of slaughter date on carcass gain and carcass characteristics of feedlot steers. Okla. Agr. Exp. Sta. Res. Rep. MP-119:351-358.

[4] Feuz, D. 2002. A simulated economic analysis of altering days on feed and marketing cattle on specific value-based pricing grids. Nebraska Beef Cattle Report MP 79-A:39-41.

[5] Gibb, D. J., K. S. Schwartzkopf-Genswin, T. A. McAllister, B. M. A. Genswein, and M. Streeter. 2006. Effect of sub-therapeutic antibiotics and auction exposure on health, performance, and feeding behavior of weaned calves. Can. J. Anim. Sci. 86:457-460.