Meat

Influence of Breeding and Length of Feeding Period on Carcass Characteristics and Palatability of Beef.[1]

D. L. Mackintosh, D. H. Kropf, D. L. Harrison, E. R. Moore, and G. Ahlschwede

Sixty-four steer calves owned by Martin K. Eby and sired by the same bull were selected randomly from the 1962 fall calf crop. The calves were randomly selected and sorted into eight groups and placed in the feedlot. The first group was shipped to Kansas City for slaughter. Fifty-six days later Lot 2 was shipped and each 28 days thereafter eight steers were slaughtered for dressing and carcass data.

Muscle measurements were made at 14 points, with marbling evaluated subjectively at each location and samples taken for chemical analyses. Data are being analyzed. Early information indicates gradual decrease with time in the yield of primal cuts and an increase in dressing percentage; normal daily gain 2.3 pounds; gradual increase in carcass grade, first choice carcass after 112 days on feed, all choice after 224 days on feed. Muscle area increased gradually but at a decreasing rate, and an increase in marbling was evident.

Other observations will become apparent with data analyses.

A second phase of this project involves 24 calves of the same breeding, which were grazed during the summer of 1963, then wintered. At the end of the wintering period, eight head will be slaughtered and the balance summered on grass. At the end of the grazing season (August) eight head will be slaughtered and the balance placed on full feed for 140 days, then slaughtered.

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Influence of Sire on Quality of Beef.

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Seventy head of fed Hereford steers, sired by four different bulls, were slaughtered in Kansas City and the rib cut from 40 (10 for each sire) returned to Manhattan for detailed analysis. Cooking data are now available on the ribs and are being prepared for the Statistical Laboratory, along with other data. All steers graded Choice on foot, but only three graded Choice in the carcass due to lack of marbling. The following table gives gross measure of the observations.

	Sire 1	Sire 2	Sire 3	Sire 4
Av. slaughter grade	12.7	11.9	11.8	12.0
Av. carcass grade	8.45	8.2	8.0	8.7
Av. marbling	11.8	10.2	10.6	11.6

Final distribution of the carcass grades was: Low Choice, 3; High Good, 4; Average Good, 13; Low Good, 46; High Standard, 4.

Palatability data not yet available.

Factors Related to Grade "A" Maturity Lambs.

D. L. Mackintosh, D. L. Harrison, D. H. Kropf, R. A. Merkel,[1] and J. C. Forrest[2]

Work on this phase of the lamb project was completed in the spring of 1963 and data for four years' work are involved. A total of 311 spring lambs were slaughtered. Slaughter, carcass, and palatability data for the four years have been tabulated and are now in the Statistical Laboratory for analysis. Earlier observations indicated that the subjective measurements of quality in grading lamb carcasses correlate highly with quality of the flesh. Conformation, fat streaking of the flank steak, fat streaking of the other flank muscles, quantity of external fat, color of lean in the flank steak, overflow fat and kidney and pelvic fat were all significantly related to carcass grade. Marbling and percentage fat in the longissimus dorsi muscle were both significantly related to grade. Percentage of fat in the longissimus dorsi was more consistently related. Marbling was observed to be the best indicator of quality as evaluated by a taste panel.

1. Now at Michigan State University.
2. Now at University of Wisconsin.

The Relationship of Certain Physical and Chemical Factors to Cooking and Sensory Evaluations of Beef.

David R. Moe, D. H. Kropf, D. L. Mackintosh, Dorothy L. Harrison, and Lois Anderson

A group of 32 wholesale beef ribs, from cattle of known history, ranging in grade from high standard to high good, were used. A **longissimus dorsi** (rib eye muscle) sample was removed at the 12th rib and used to obtain color, pH, water-holding capacity and cooking data. Another **longissimus dorsi** sample from the 9-10-11th rib cut was chemically analyzed for protein, moisture and ether extract and buttons (spinous process-distal portion) were removed for penetrometer readings and calcium determinations. The 6-7-8th rib section was roasted, and cooking data (cooking time and losses), sensory evaluations by a subjective panel and objective measures were obtained by personnel of the Department of Foods and Nutrition. Correlation coefficients were calculated between various factors.

Age in days, carcass grade, muscle pH and muscle moisture to protein ratios of raw or cooked samples were not good indicators of eating qualities. A lighter color tended to be associated with more desirable flavor ($r = .360$),* greater juiciness ($r = .448$)** and higher initial tenderness scores ($r = .353$).* Water-holding capacity as measured by the centrifuge method was significantly related to shear value (tenderness) ($r = .466$),** panel tenderness ($r = .589$),** and panel juiciness ($r = -.441$).* Water-holding capacity measured by either the press or weight method was not significantly related to sensory data.

Shear value was a good indicator of sensory tenderness as shown by a correlation of $-.703$.**

Penetrometer readings or calcium content of "button" samples was not closely related to age of animal at slaughter or to carcass grade.

* Significant at 5% level of probability.
** Highly significant at 1% level of probability.