Factors Related to Grade “A” Maturity Lambs.


Work on this phase of the lamb project was completed in the spring of 1962 and data for four years’ work are involved. A total of 314 spring lambs were slaughtered. Slaughtered, carcasses, 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 the fat in the flank steak, overhang fat and kidney and pelvic fat were all significantly related to carcass grade. Marbling and percentage of fat in the longissimus dorsi 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.


A group of 32 whole beef ribs, from cattle of known history, ranging in grade from high standard to high seed, were used. A longissimus dorsi (rib eye muscle) sample was removed at the 12th rib and used to obtain (phl) water-holding capacity and cooking data. Another longissimus dorsi sample from the 6-11th rib was chemically analyzed for protein, moisture, and other extract and buns (spurious process distal) were removed for practioner readings and included determinations. The 6-11th rib section was weighed and cooking data (cooking time and losses) were obtained from all factors. Sensory evaluations by a subjective panel were obtained by personnel of the Department of Foods and Nutrition. Correlation coefficients were calculated between various factors.

Age in days, rackability grade, muscle pH and muscle moisture to protein ratio of raw or cooked samples were not good indicators of eating qualities. A higher color tended to be associated with more desirable flavor (r = .346).** Greater juiciness (r = .413)** and higher initial tenderness scores (r = .592).** Water-holding capacity as measured by the centrifuge method was significantly related to shear value (tenderness) (r = .468).** Panel tenderness (r = .590).** and panel juiciness (r = .411).** 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 .741.*

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.

Influence of Sire on Quality of Beef.


Seventy head of fed Hereford steers, sired by four different bulls, were slaughtered in Kansas City and the rib cut from 10 to 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 or better, and only three graded Choice in the carcass due to lack of marbling. The following table gives gross measure of the observations.

<table>
<thead>
<tr>
<th>Rib 1</th>
<th>Rib 2</th>
<th>Rib 3</th>
<th>Rib 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. slaughter grade</td>
<td>12.7</td>
<td>11.9</td>
<td>11.8</td>
</tr>
<tr>
<td>Av. carcass grade</td>
<td>8.46</td>
<td>8.2</td>
<td>8.0</td>
</tr>
<tr>
<td>Av. marbling</td>
<td>11.8</td>
<td>10.2</td>
<td>10.0</td>
</tr>
</tbody>
</table>

Final distribution of the carcass grades was: Low Choice, 3; High Good, 2; Average Good, 12; Low Good, 44; High Standard, 4. Palatability data not yet available.

Meat

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


Sixty-one steer calves owned by Martin E. Ely and sired by the same bull were selected randomly from the 1962 fall calf crop. The calves were randomly selected and were divided into eight groups and placed in the feedlot. The first group was shipped to Kansas City for slaughter. The sixty-five 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 months, with marbling evaluated subjectively at each location and samples taken for chemical analyses. Data are being analyzed. Early information indicates gradual decrease with time of the yield of primal cuts and an increase in dressing percentage; normal daily rate 2.3 pounds; gradual increase in carcass grade; first choice carcass after 112 days on feed, all choice after 224 days on feed. Muscle yield increased gradually throughout the year, and an increase in marbling was evident.

Other observations will become apparent with data analyses. A second phase of this project involving 14 cattle of the same breeding, which were grazed during the summer of 1963, then were slaughtered at the end of the wintering period, eight steers will be slaughtered and the balance summered on grass. At the end of the grazing season (August), eight steers will be slaughtered and the balance placed on full feed for 110 days, then slaughtered.

1. Supported in part by a grant from the American Angus Association.