Meat

The Relation of Feathering and Overflow Fat of Lamb Carcasses to the Grade of the Lamb, Degree of Marbling, and Market Value of the Lamb (Project 580)

R. L. MacIntosh, R. A. Merkel and C. S. Meeks

This project was undertaken during the spring of 1960 to attempt to determine the relationship, if any, of internal fat, overflow, and feathering to the degree of marbling in the longissimus dorsal muscle, the grade of the carcass, and the relationship of marbling to the palatability of the meat. Eighty-eight lambs were slaughtered in 1960; 318 in 1961; and about 50 will be slaughtered this spring.

Lambs run on western ranges produced highly acceptable lambs weighing 93 pounds in 82 to 175 days in 1960 (average 135 days) and from 88 to 150 days (average 121 days) in 1961. All lambs were graded and classified as prime, with a few ranges in好坏. Lambs by Suffolk rams and some of the same ewes are being studied this year.

Correlation coefficients for both 1960 and 1961 data show a highly significant relationship between feathering, fat streaking in the flank, estimated marbling, actual marbling, overflow fat, and thickness of fat. Feathered lambs were significantly related to fat and marbling, and, very likely, to the saleability of the carcass. The degree of marbling and percentage of fat in the longissimus dorsi were highly related to all saleability factors in 1960, but much less so in 1961. In general, external indices of quality used in grading lambs are highly satisfactory with“A” (young) maturity lambs.

The Relation of Packaging Material to the Keeping Quality of Frozen Pork (Project 231)

D. L. MacIntosh, R. A. Merkel, J. L. Hall, Dorothy L. Harrison and L. Anderson

Frost damage is used by an increasing number of families with high market prices. Several of these factors are those that make the meat more acceptable. The use of salt, pepper and sage before storage is stored, its maximum storage life is 4 to 6 months at 0°F. and then only when packaged material is placed between the meat and the packaging material. Poor packaging materials produce a poor quality of storage due to the fats in the meat. The amount of antioxidants to the storage increases the storage of fats. Cooling materials used with poor packaging materials. High relative values in test values early in the storage period have been common the last two years. The processing equipment has been modified and a study is now under way to try to determine why the high relative values occur.

The Effect of Level of Dietary Iron on Pork Muscle Characteristics

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Increasing undesirable muscle characteristics in pork carcasses make it necessary to alter or improve pork muscle quality desirable. Effects of various levels of dietary iron and copper (or nickel) on pork muscle were investigated in this experiment.

Procedure

Boluses and gels (18 of each), averaging 43 pounds, were randomly divided into 5 lots to receive treatments indicated in Table 42. The center
Control ration was essentially a sorghum grain-protein supplement ration. The EMIA added to lot 1 ration may tie up iron in a pig’s system and thus affect muscle characteristics. Rations fed to the low-iron lot contained about half the recommended dietary allowance for iron. Iron and copper were added to some rations to determine if that would increase myoglobin, the muscle pigment, or change color intensity of pork muscle. Rations were pelleted and fed free choice to pigs in concrete-fermented feeding pens. Water was softened so essentially no iron was available from it. Animals were individually taken off feed at 255 to 210 pounds and slaughtered after holding for 24 hours. After chilling for 24 hours at 30-34°F, standard cutting procedures were used.

Muscle samples were removed as follows:

- **Longissimus Dorsi ( loin eye muscle)**
  - 1. Ventral
  - 2. Dorsal

- **Rectus Femoris (a ham muscle)**
  - 1. Ventral
  - 2. Dorsal

- **Biceps Femoris (a ham muscle)**
  - 1. Ventral
  - 2. Dorsal

- **Semitendinosus (a ham muscle)**
  - 1. Ventral
  - 2. Dorsal

Expressible water, 14 hr. pH, other extract (E), total water, myoglobin (muscle pigment), and red color intensity were determined for these samples.

**Results**

The greatest average daily gain and best feed efficiency were achieved in the group of pigs receiving lower than the required iron level. Swine gains were observed in the lots where NaCl consumption was altered and in groups receiving the high level of added iron and copper.

Percentages of expressible water and of total water in pork muscle were not altered by any treatment used. Pigs receiving the high level of salt after reaching 180 pounds (lot 7) had a higher average 24-hour muscle pH than those receiving the agent that may tie up iron (lot 5). Muscle samples from pigs of lots 8 and 6 had higher intramuscular fat content than those from lot 1. A higher average muscle color and less muscle pigment were noted in pigs receiving the low dietary level of iron and copper. This is explained by insufficient iron being available for the animal to synthesize myoglobin. The highest myoglobin concentration and the most intense muscle color were noted in pigs receiving the 10% salt ration before being slaughtered, possibly as a result of stress caused by this abnormal treatment. It appears that certain muscle characteristics can be altered by some of the treatments used in this study.

### Table 13

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