牛枝肉の規格格付に関する研究

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Studies on the Beef Carcass Grading System

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1.　Early prediction of carcass traits on live fat animals must be a useful mean for their sire selection and on the other hand for the decition of their feeding programs and marketing chance.

In this experiment, serial ultrasound measurement records on subcutaneous fat thickness, intermuscular fat thickness, rib-eye area and the degree of marbling at 6th-7th rib section on 215 steers, included in 15 sets of the progeny testing program in Miyazaki and Kagoshima Testing Stations, were used for multiple regression analyses on these real carcass measurements after slaughtering.

Progressive developmental features of carcass traits were characterized each other. Rib-eye area showed a rapid and linear developing pattern at the early and middle stages of the fattening period, while subcutaneous fat thickness at *latissimus dorsi* section, as well as intermuscular fat thickness, tended to have a developmental impetus after middle stage of fattening. The degree of marbling showed a steady increase according to the progress of the fattening period.

It was confirmed by the multiple regression analyses, that the rib-eye area at slaughtering could be estimated by equations including ultrasound estimates, and some body measurements, which obtained after 6 months of the fattening period, at 73.6-87.6% of the coefficient of determination. The subcutaneous fat thickness measured on carcass rib section was estimated by similar regression equations at 62.1-65.1% level of R^2 after 8 months of fattening period. The intermuscular fat thickness at slaughtering seemed to have some difficulties, showing low level of R^2, such as 24.3-46.9%, in any equations, in which ultrasound estimates obtained at any stage of the fattening period were used as an independent variable. The estimated degree of marbling reached to 52.5-64.8% of R^2 level after 8 months of the fattening period.

2.　It is an unavoidable problem at the chilling room of carcass markets, to take a picture of ribbed surface of carcasses by oblique camera angle, because wide opening of ribbed section is restricted by ususl treatment and handling of carcasses. This restriction has obstructed the development of accurate measurement of rib-eye area and the evaluatoion of the degree of marbling in it by photographic and electronic procedures.

In this experiment, an electronic steel camera, introduced in the previous report, was used with a hood to get a constant distance and the middleline of the camera lens was fixed at 40° to the ribbed surface, when information on the image inputed in 2 inch video floppy. In order to correct the distorted image information

on rib-eye area, a multiple regression equation was successfully designed by using vertical and horizontal axes and 1cm² grid units on digital image. Accurate total rib-eye areas were obtained by this correction procedure on 6 steer carcasses, comparing with those measurements on images by right angle and real measurement on carcasses.

3. There is no reliable objective measurement to standardize the evaluation on meat firmness and texture of beef carcass at present.

In this experimental field, apparent elasticity of beef measured by a Creep Meter RE-3305 has been taken up as a possible indicator of firmness and/or texture. The apparent elasticity may relate also with raw meat tenderness. Although further data on this physical characteristics were needed to make sure the relationship with meat quality traits, some additional data in this year on 6 kinds of muscles of 2 steers cross-bred between Japanese Black and Holstein were presented in this report.