BACKFAT THICKNESS AS A PRIMARY INDEX REFLECTING THE PORK MEAT YIELD AND TECHNOLOGICAL QUALITY TRAITS

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I. OBJECTIVES

Predicting aspects of lean meat yield and eating quality of pork based on particular carcass traits has become increasingly important from an economic profitability point of view. Therefore, the main objective of this study was to determine the effects of backfat (BF) thickness on the lean meat yield and meat quality traits of growing-finishing pigs.

II. MATERIALS AND METHODS

A total of 240 ([Landrace × Yorkshire] gilts × Duroc boars) crossbred pigs reared under identical conditions and harvested at around 180 d old were used. Twenty-four hours postmortem, the left side of each carcass was dissected for screening BF thickness. The BF thickness was measured at (i) between the 11th and 12th rib and (ii) between the last rib and first lumber vertebra using a Vernier caliper. The final BF thickness (millimeters) was determined by averaging the BF thickness at the 2 above measured areas. Four BF groups—12–15, 16–20, 21–25, and 26–30 mm—were classified. To determine the total lean meat yield, each carcass was separated into primal and subprimal cuts. After deboning, skinning, and trimming of all visual fats, their bones, skins, fat, and lean meat weights were separately recorded. The yields (percent) for the total lean meat and fat per carcass were calculated by their corresponding weights divided by the carcass weight multiplied by 100. Finally, *longissimus dorsi* muscles from BF groups were collected and used for meat quality analysis. Protein and intramuscular fat (IMF) were determined using a Food Scan™ Lab 78810. Meat pH was determined using a pH*K 21 meter. Instrumental color was determined using a Minolta Chroma Meter. Water-holding capacity (WHC) was determined using a centrifugation-based method. Cooking loss and shear force both were measured on a same block (3.0 cm in thickness) of each sample. The sample blocks were cooked to an internal temperature of 70°C. The shear force was determined by cutting cores (5 cores per sample) with a V-shaped blade of a Warner-Bratzler shear device. All data were analyzed by using the General Linear Model procedure of SAS (SAS Institute Inc., Cary, NC), and means were compared using Duncan's Multiple Range Test. Significance was set at $P < 0.05$. Pearson correlation coefficients between BF thickness and carcass and meat quality traits were also determined.

III. RESULTS

BF thickness was positively correlated with live weight and total fat yield ($r = 0.686$, $P < 0.001$), whereas it was negatively correlated with loin area and total meat yield ($r = -0.532$, $P < 0.001$). Increasing the BF thickness significantly decreased the total lean meat yield and loin lean area but increased the total fat yield ($P < 0.05$). Regarding the meat quality, BF thickness was positively correlated with IMF ($r = 0.237$, $P < 0.05$), L^* ($r = 0.420$, $P < 0.05$), and WHC ($r = 0.235$, $P < 0.05$), whereas it was negatively correlated with shear force ($r = -0.249$,

P < 0.05). The thickest BF group (26–30 mm) was higher in IMF content, pH, and WHC, whereas it was lower in shear force values compared to the thinnest BF group (12–15 mm) (*P* < 0.05). No differences occurred in the IMF, pH, and WHC between the 21–25 and 26–30 BF groups (*P* > 0.05).

IV. CONCLUSION

When the preharvest factors are kept the same, BF thickness could be considered as a primary index for predicting lean meat yield, and the minimal BF thickness of 21–30 mm is required to improve pork meat quality.

Keywords: backfat thickness, meat yield, pork, quality