_____ ABSTRACT _____

Genetic relationships between meat quality traits and fatty acid composition in Japanese black cattle

Keiichi Inoue, Noriaki Shoji, Takeshi Honda, Kenji Oyama

1 National Livestock Breeding Center, Nishigo, Fukushima, Japan.
2 Food Resources Education and Research Center, Graduate School of Agricultural Science, Kobe University, Kasai, Hyogo, Japan.
3 Yamagata Integrated Agricultural Research Center, Shinjo, Yamagata, Japan.

Genetic parameters were estimated to investigate the relationships between meat quality traits and fatty acid composition from 11 855 Japanese Black cattle. The meat quality traits included beef marbling score (BMS), beef color score, firmness of beef (FIR), texture of beef (TEX) and beef fat color score (BFS). The data on fatty acid composition included oleic acid and monounsaturated fatty acids (MUFA) contents, the ratio of MUFA to saturated fatty acids (MUS) and the ratio of elongation. The heritability estimates for meat quality traits ranged from moderate (0.30) to high (0.72). The strong genetic correlations between them were useful for simultaneous genetic improvement. In addition, high heritability estimates of fatty acid composition, ranging from 0.60 to 0.63, indicated that they could also be improved genetically. The genetic correlations of fatty acid composition with BMS, FIR and TEX were weak and negative. In contrast, positive and stronger genetic correlations were found between BFS and fatty acid composition, in particular, related to the level of unsaturation (0.77 and 0.79 for MUFA and MUS, respectively). This implies that improving the level of unsaturation makes fat darker (more yellow) and thus requires balancing with BFS.