

European cattle breed cluster accordingly to their meat quality parameters

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ABSTRACT

The concept of breed is rather questionable and it's used more as a tool for "labelling" production systems than as a biological category. Here, production system is intended as a whole set of animal units, techniques, breeding schemes, marketing, etc. However, man has demonstrated to be very quick in capturing and disseminating good characteristics when they appear in a breed by mutation or by selection. Therefore, it might be expected that breeds, nevertheless of recent origin, could bear distinguished productive characteristics. Due to the quantitative nature of them, more characteristics should be measured in order to obtain a clear and statistically significant distinction. We have measured several meat characteristics in 15 European breeds (30 individuals for each breed), mostly with beef attitude, reared in similar conditions. This was accomplished to better reveal the genetic background of breeds. A canonical discriminant analysis showed a clear distinction among breeds. In particular lipid composition of meat was able to assign individuals to breeds with 57% and 63% of individuals correctly classified respectively for neutral and phospholipids. The classification is generally good for all breeds except for the Spanish ones, indicating probably some crossing in the past for these breeds. Neutral lipids can classify double muscled breeds with high precision (84% and 95% in Asturiana de los Valles and Piedmontese respectively). Tenderness related measures (collagen, μ -calpain, m-calpain, calpastatin, MFI) poorly assign individuals to breeds (average 22%). The good classification of individuals to breeds for lipid composition suggests distinctive genetic features and encourages to look further to genetic determination of fat composition in the meat, as well as to exploit particular breeds to obtain products suitable for categories of consumers needing/searching for special components in their diet.