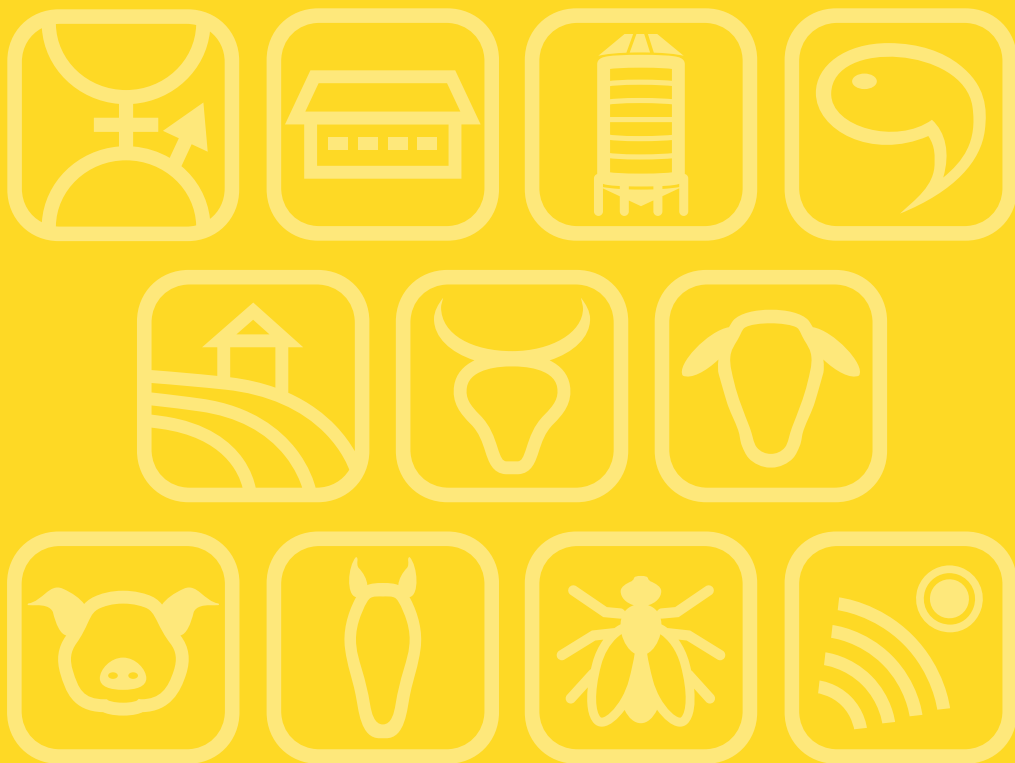


Book of Abstracts of the 73rd Annual Meeting of the European Federation of Animal Science



Book of abstracts No. 28 (2022)

Porto, Portugal

5 – 9 September, 2022

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European Federation of Animal Science**

Comparative study of fat-tailed and thin-tailed sheep carcass quality

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In dairy sheep production, fat-tailed sheep (FTS) are popular for their milk but not for their carcasses which are significantly undervalued compared to those of thin-tailed sheep (TTS). The latter view is dominant in Greece and hence, our objective here was to assess carcass quality of fat-tailed and thin-tailed sheep. In total, 146 fat-tailed and 97 thin-tailed dairy sheep crosses of both sexes were slaughtered at five different live weights comprising 5 slaughter groups (SGs). Withers height, carcass weight and carcass yield were recorded. Carcass pH was measured non-destructively, 1h after refrigeration. Samples of psoas major muscle, from 76 carcasses, were obtained for histomorphometry; muscle fibre minimum Feret's diameter was calculated. Samples from the quadriceps muscle (n=43) and the 13th rib (n=99) were collected 24h after slaughter; the latter were subjected to texture profile analysis (TPA), pH measurement and colorimetry. Double compression cycle tests were performed and TPA parameters were calculated (hardness 1 and 2, springiness, cohesiveness and chewiness). Meat colour lightness (L*), redness (a*) and yellowness (b*) were measured; chroma and hue angle were calculated based on a* and b*. Moisture, lipid and protein content of quadriceps samples were determined. Mann-Whitney U tests were used to compare fat-tailed with thin-tailed sheep concerning the above traits. To account for effects of sex and SGs and their interactions with sheep population, two-way ANOVA and Scheirer-Ray-Hare tests were used. Significant differences were observed regarding carcass yield and a* medians (P<0.05); FTS presented higher values for carcass yield and lower for a*. When accounting for sex and weight groups, effect of sheep population on the latter traits remained significant (P<0.05). Significant effects of interactions between sheep population and sex or SGs on meat quality traits were also observed (P<0.05). Results show that carcass and meat quality traits of FTS and TTS vary. Underestimated FTS carcass quality often exceeds that of TTS. Work was funded by GreQuM project (T1EDK-05479), co-financed by Greece and EU (EPAnEK 2014-2020, Partnership Agreement 2014-2020).

Loin intramuscular fat as a predictor of sheepmeat eating quality

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Sensory perception of sheepmeat is a key factor influencing consumer demand. This is strongly influenced by intramuscular fat percentage (IMF%), and therefore has been included as a positive predictor of sheepmeat eating quality in the Meat Standards Australia grading system. The IMF% value is determined in the loin, and relies on low to moderate correlations for IMF% between loin and other cuts to predict their eating quality. However, IMF% of individual cuts may account for more variability in eating quality. Therefore, we hypothesised that individual cut IMF% will provide a more accurate description of that cuts eating quality than using loin IMF%. Eating quality cuts were collected from lambs (n=3,119) from the Meat and Livestock Australia Resource Flock. Loin and topside cuts were collected of all lambs, whereas the knuckle, outside and rump cuts were additionally collected from 830 carcasses. In total, 8,479 cuts were collected for grilled sensory testing by untrained consumers to assess overall liking. IMF% was measured on every loin, as well as on most topside, outside and rump cuts of the 830 carcasses. Linear mixed effects models in R (Version 4.0.3) were used to analyse consumer scores for overall liking, including fixed effects for cut, production factors, and either loin IMF% or individual cut IMF% fitted as a covariate. A 1 unit increase in loin IMF% was associated with an increase (P<0.01) in overall liking of 1.9 and 1.1 units in the loin and the topside cuts. However, loin IMF% had no association with overall liking in the knuckle, outside and rump cuts. Alternatively, individual cut IMF% was associated with an increase (P<0.01) in overall liking by 1.4 and 1.3 units per unit IMF% for the topside and outside cuts. This partly supports our hypothesis with the individual cut IMF% for the topside and outside showing stronger associations with eating quality than loin IMF%. This suggests that the development of on-line measurement technologies with the capacity to measure IMF% within multiple cuts would enhance a sheepmeat eating quality prediction system.