



Influence of nutrition and age at slaughter on sheep leather quality

Manuel A. C. Jacinto^{*1}, Karina L. Mendonça², Luciana Shiotsuki³, Olivardo Facó³, Sergio N. Esteves¹

* Scientific Researcher, Embrapa Southeast Livestock; Rodovia Washington Luiz, km 234; São Carlos, SP, Brazil; ¹Embrapa Southeast Livestock, São Carlos, SP; ²Universidade Federal de São Carlos, São Carlos, SP; ³Embrapa Caprinos e Ovinos, Sobral, CE

*manuel.jacinto@embrapa.br

The densities of hair follicles and collagen fiber bundles in the sheep skin are inversely proportional. This fact is also related to the qualitative aspects of the leather, because as the density of hair follicles is increased, the density of collagen fiber bundles and consequently the tensile and tear strengths decrease; the latter two being important indicators of the qualitative aspects. Aiming to evaluate the influence of nutritional aspects on the quality of leather from 32 Morada Nova lambs, 16 animals were supplemented in the creep-feeding system during the first 120 days of life. Finishing took place in the municipality of Morada Nova, CE, in confinement, with a diet consisting of 50% roughage and 50% concentrate. The slaughter of the lambs and removal of their skin for tanning and quality-assessment occurred at four, five, six and seven months of age. Two qualitative variables were analyzed: tensile strength (N mm^{-2}) and tear strength (N mm^{-1}), considering eight treatments in a 2×4 factorial arrangement (two types of nutrition: with and without creep feeding; and four slaughter ages: four, five, six and seven months), with four animals per treatment. The ages were considered repeated and the model utilized was: $y_{ijk} = \mu + \alpha_i + \delta_{ij} + t_k + (\alpha t)_{ik} + \varepsilon_{ijk}$, in which y_{ijk} is the response variable evaluated at age k , in individual j and in treatment i ; μ is the overall mean effect; α_i is the effect of treatment i ; δ_{ij} is the random effect of individual j in treatment i ; t_k is the effect of age k ; $(\alpha t)_{ik}$ is the effect of the interaction between treatment and age and ε_{ijk} is the random error. Tensile and tear strengths were not affected by the type of nutrition. The slaughter ages did not affect the tear strength ($P > 0.05$), although the tensile strength of the leathers from the lambs slaughtered at four months of age was lower ($P < 0.05$) than those at the other ages. Regarding the interaction between nutrition and age at slaughter, for both the tensile (N mm^{-2}) and tear (N mm^{-1}) strengths of the leathers only the age of four months showed lower values ($P < 0.05$) compared with the slaughter ages of the older lambs. Tear strength was not influenced ($P > 0.05$) by the slaughter age. Although the nutritional condition is a prevailing factor in weight gain and body development in an animal, it did not affect the quality of leather from Morada Nova sheep. The quality was affected by the weaning age (four months), which coincides with the change of birth-hair or -wool cover to adult cover. Sheep with the skin covered by hair show, from birth to approximately 70 days of age, their coverage composed of a high density of hair follicles in the region that could be occupied by collagen fiber bundles. The density of collagen fiber bundles is directly linked to the leather resistance, and this fact may be related to the low resistance of the leathers from lambs slaughtered at four months of age.

Keywords: sheep, Morada Nova, skin, leather, quality

Acknowledgments: Brazilian Agricultural Research Corporation (Embrapa)