

HIDE AND LEATHER QUALITY IN RELATION TO CATTLE BREED, SEX AND AGE

D.R. Cooper and A.C. Galloway

Leather Industries Research Institute, Rhodes University, Grahamstown

OPSOMMING: DIE KWALITEIT VAN HUIDE EN LEER IN VERHOUDING TOT BEESRAS, GESLAG EN OUDERDOM

'n Studie is gemaak om die verband tussen ras, geslag en karkasgraad van Suid-Afrikaanse beeste en die kwaliteit van die leer wat van huide van sulke diere gemaak is, te bepaal. Dit blyk uit hierdie studie dat die huide van vleisrasse oor die algemeen beter bolear lewer as dié van melkrasse. Os- en vers-huide lewer beter bolear as koeihuide en beter huide word van dié beeste met hoër karkasgrade verkry.

SUMMARY

A study has been made of the relation between breed, sex, age and carcass grade of South African cattle and the quality of leather produced from the hides of these animals. From this study it is evident that the hides of beef breeds generally produce better upper leather than those of dairy breeds, that ox and heifer hides yield better upper leather than cow hides, and that the better hides come from the cattle with higher carcass grades.

In general the dairy or beef farmer is not conscious of the economic and industrial importance of his cattle hides. Therefore only limited consideration is given to protecting the hides on the live animal from physical defects such as brand marks, barbed wire scratches, whip marks, tick bites, horn pokes, thorn scratches or any other form of physical damage which produces scar tissue on the hide. This type of physical damage, plus the breed of the animal, the sex, the age at slaughter, and the nutrition, all affect the leather value of the hide, and can cause considerable economic losses to the country. To this must be added the effect of bacterial decay caused during the curing or preservation of the raw hide by the farmer, the country butcher or the curer at the abattoir. This curing, which is a reversible process usually done by saturating the water in the hide with salt, is necessary so that hides may be transported from the source of supply to the tanner, either here or overseas, who then produces the finished leather. Therefore the tanner who brings into reality the commercial value of the hide stands at the end of this long chain of events over which he has no control, but which can adversely affect the quality of his raw material.

South Africa produces about 2,5 million hides a year, of which about 600 000 are processed locally into leather and the rest are exported mainly to Europe. In spite of this excess hide production over local consumption by the tanners, some 300 000 hides are imported because the local production does not yield enough top quality hides of the desired weight range for the production of leather for shoe uppers, which is today the main outlet for hide leather.

Considerable improvement has been achieved in the quality of cured hides by such studies as reported here, where the factors pertinent to hide and leather quality are brought to the notice of farmers and the hide and skin industry. There remains, however, a great deal more to

be achieved in this field to meet the competition from synthetic materials in the leather industry, change in attitude is required because hides, and for that matter skins as well, are unfortunately regarded as a by-product.

This first study deals with the effect of breed, age, sex and nutrition on the leather value of hides, while subsequent reports will deal with the effect of the other factors.

Procedure

A total of 454 first grade hides from the controlled area abattoirs at East London, Port Elizabeth, Kimberley, Johannesburg and Pietermaritzburg were cured in these centres by the normal curing methods used to produce wet salted hides and then railed to a tannery in Kingwilliams-town or Port Elizabeth. At these tanneries the hides, which had been selected in the green state to be of the right weight range for shoe upper leather production (i.e. up to about 25 kg wet salted weight), were converted into chrome tanned shoe upper leather by the normal commercial methods of these two tanneries. The leather just prior to finishing was graded by the method used in many experiments on leather quality (Galloway & Cooper, 1967, 1968; Cooper & Galloway, 1969, 1970a, 1970b, 1971), which has been shown statistically to be reproducible both within and between experiments (Cooper, Russell & Galloway, 1971).

At the time of slaughter of the cattle each hide and carcass was given a number, which was retained through to the finished leather, so that the leather grade could be correlated with the carcass grade. The latter grades were those allocated at the abattoir by the official meat graders. The breed, age and sex of the animals was also recorded.

A total of 454 hides were used to determine the relation between carcass grade and leather grade (Table 2), while 329 of these hides were used to relate leather grade

in general from the hides of cattle yielding better carcass quality. The data for heifers is not so clearly defined.

Acknowledgments

This work was financed by the annual grants of the Livestock and Meat Industries Control Board, the Hide and Skin Industry and the Council for Scientific and Industrial Research. The authors wish to acknowledge the assistance of the Meat Board officials and the Tanners involved.

References

- BISSCHOP, J.H., GARDNER, A., SEBBA, J. & SHUTTLEWORTH, S.G., 1943. *J. Soc. Leather Trades' Chem.* 27, 94.
- COOPER, D.R. & GALLOWAY, A.C., 1969. Unpublished results, Leather Industries Research Institute Res. Bull. No. 514.
- COOPER, D.R. & GALLOWAY, A.C., 1970a. Unpublished results, Leather Industries Research Institute Res. Bull. No. 542.
- COOPER, D.R. & GALLOWAY, A.C., 1970b. Unpublished results, Leather Industries Research Institute Res. Bull. No. 554.
- COOPER, D.R. & GALLOWAY, A.C., 1971. Unpublished results, Leather Industries Research Institute Res. Bull. No. 575.
- COOPER, D.R., RUSSELL, A.E. & GALLOWAY, A.C., 1971. Unpublished results, Leather Industries Research Institute Res. Bull. No. 570.
- DOWNIE, N.M. & HEATH, R.W., 1970. *Basic Statistical Methods*. New York: Harper and Row.
- GALLOWAY, A.C. & COOPER, D.R., 1967. Unpublished results, Leather Industries Research Institute Res. Bull. No. 459.
- GALLOWAY, A.C. & COOPER, D.R., 1968. Unpublished results, Leather Industries Research Institute Res. Institute Res. Bull. No. 509.
- RAISTRICK, A.S., 1971a. Unpublished results, British Leather Manufacturers Research Association Lab. Rep. 50, 37.
- RAISTRICK, A.S., CORNING, D.R. & ARNOLDI, H.W. 1971b. Unpublished results, British Leather Manufacturers Research Association Lab. Rep. 50, 46.