Effect of Some Sudanese Traditional Hot Iron Branding on Cattle Hide Quality

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A R T I C L E I N F O	A B S T R A C T
	This study was designed in order to assess and evaluate the effect of hot iron branding on cattle hide quality. 62 shapes of hot iron branding were detected and classified. Branding damage was evaluated depending on: purpose of application, location in the animal body, branding area, tribe which applied and hide degree. The results showed that, Baggara tribes branding were causing the greater damage on cattle hides; where 71.4% of its brands placed in the abdominal and animal back area (middle of the hide); in proportion to Misseriya Zuraq tribes (68.4%). According to the location of branding, the less tribe that causing damages to the cattle hides were Darfur tribes (14.3%). In terms of branding area Darfur tribes were causing the most branding damages where 42.8% of its brands on cattle hides were between 20-30cm, followed by Baggara tribes where 57.1% of its brands were between 10-20cm then Misseriya Zuraq tribes by 52.6%, and finally North Kordofan tribes of 37.5%. grading of cattle hides depending on the presence of the brand marks the study revealed that, Misseriya Zuraq tribe's brands were obtained the highest percentage (89.4%) of the rejected hides (*Scarto*= 4 and 5 grades), when compared with North Kordofan tribes (87.5%). For commercial reason brand's were mostly done in the area of 5-10cm but, their effect on cattle hide quality was greater, where 81% of the hides were classified as *Scarto*.

Introduction

Sudan is endowed with a very large livestock population. The animal herd of Sudan was estimated at about 134.57 million heads, being the largest in Africa and Middle East. It consists of about 39.76 million cattle, 48.91 million sheep, 42.18 million goats and 3.72 million camels (MAR, 2004) Based on the quoted figures Sudan ranks on the 7th place with respect to cattle population, the 6th place on sheep population and the 4th place on goat population worldwide (FAO, 2001).

However, such large stock provides annually a relatively small quantity of hides and skins. There is a wide disparity between the livestock population and the hides or skins output. The main reasons for that been the low off-take of about 6% for bovine lower than African average 8% and the lack of meat industry (Rodriguez, 2010). Sudan hides and skins are characterized by a fine quality of its fiber network composition and grain surface which make it suitable for the manufacture of many articles such as garments and gloves (FAO, 1991). Hides and skins represent renewable sources with a great economic value to the Sudan. In spite of this facts, still the production of raw material, hides and skins, is faced by many constraints. Defects always detract from the ability of producing valuable and price-able hides and skins (Habib et al., 2015 and Ebrahiem et al., 2015a and b). This trial was designed to assess and evaluate the effect of hot iron branding which detracting from the potential value and quality of cattle hide.

Material and Methods

The Study Area

The Study Area North Kordofan State lays between latitudes 11°20' to 16°36' N and longitudes 27°13' to 32°24' E and area occupies an amount to almost 25 million ha. Out of this area, 14.5 million hectares are rangeland (Africover, 2004). The state is considered among the leading regions of Sudan in terms of animal and range resources, where more than million heads of sheep, goat, camel and cattle are raised (RPA, 2005). Animal production in the state is mainly practiced under traditional extensive systems, depending on natural rangeland (Cook and Fadlalla, 1993). The average monthly temperature according to Nimer (2000) was 34.60°C, and the coldest months were December and January with mean temperatures of 14.10°C and 13.50°C, respectively. The hottest months were April, May and June with an average mean temperature exceeding 40°C. The soil of the site lies within the sand dune area locally known as "Goz" soil, these soils are inherently poor, but their high permeability and easy penetration of roots, compensate for their inherent poverty (Rabeeh et al., 2015).

Data Collection

62 different shapes of hot iron brands on cattle hides were obtained from Elobaied animals market, North Kordofan state, Sudan during the period 2/3/2016 to 3/3/2016. The detected shapes of hot iron branding were randomly recorded as photographs images. For this purpose micro digital camera was used. Hot iron brands images then classified depending on: purpose of application, location in the animal body, branding area, tribe which applied and hide degree according to the branding damage.

Statistical Analysis

The data were analysed using Statistical Package for Social Sciences (SPSS) v.14.0 software package (SPSS, 1996).

Results and Discussion

Table 1 showed the classification of the traditional hot iron brands on cattle hides to their tribes which applied and reason for implementation. It was clear that branding for commercial or trade reasons represent as the major causes of damages on cattle hides in north Kordofan region. Ebrahiem et al., (2015a) mentioned that Branding damages were clearly observed on hides especially in western parts of the Sudan, where most of meat consumption take-off in this area were from Kordofan and Darfur cattle's. Branding, another important source of damage, is generally used as means of proving ownership, as treatment for some diseases or for superstitious and religious reasons. Hot iron branding is usually applied on cattle hides in the valuable regions as it is observed in cattle of Kordofan and Darfur tribes (Figure 1 and 2).

It observed that, more than 70% of Baggara tribe's branding was located in the Abdomen and back area, though these brands were affected greater negatively on cattle hides' quality (Figure 3 and 4). In turns most of Misseriya Zuraq tribe's brands (68.4%) were also implemented in the same area (abdomen and back area), so it comes as 2nd in detraction of cattle hides quality.

The abdomen and back area are usually the most valuable area of the hide or skin, and it knows as the middle area of the hide or skin and always given the name (butt area). In this area the hide or skin is almost known by it is good quality and uniformed texture (Figure 5 and 6). Ibrahim, (1983) mentioned that large brandings are usually made in the best part of a hide and hence destroy the finished leather of that part. The damage caused by the brand marks could be avoided, if smaller marks were placed on less valuable parts of the hide and would still be equally satisfactory. Branding of native cattle for tribal or religious customs might present greater difficulty because its elimination might be met with strong opposition (Table 2).

Branding for commercial or trade reasons were acting as the greater source of damages to cattle hides. In spite of its small size on cattle (10-20cm.), but it has greater effect on cattle hides quality. Whereas 66.7% of damages were caused as a result of these hot iron brands in comparison to Baggara tribes brands (57%) and North Kordofan tribes brands (37%) for the same brand size (Table 3).

Grading based on hot iron brand marks damages results cleared that more than 89% of Misseriya Zuraq tribe's branding were caused the deteriorate of cattle hide grade to Scarto grade or reject (4th and 5th grade). North Kordofan State tribe's branding come as the second source of damaging and it was detracted the grade of the hide to Scarto by 87% (Figure 7). Thus, the above mentioned tribes were detracted from the marketable potential and price-able of the hide as a result of using traditional branding methods. Said et al. (1999) estimated 10-40% of hide lost as a reason for hot iron branding methods (Table 4).

Conclusion

In general, traditional hot iron branding has a greater effect on cattle hide quality and it is responsible from about 81-89% of cattle hides damaging and wasting as *Scarto* or reject leathers.

Table 1 Classification of the collected brand shapes

Tribe	No	%
Misseriya Zuraq tribes	19	30.7
North Kordofan tribes	8	12.9
Darfor tribes	7	11.3
Baggara tribes	7	11.3
Commercial brands	21	33.8
Total	62	100.0

Table 2 Brand location on cattle hides

Brand location	Misseriya Zuraq tribe's		North Kordofan State tribe's		Darfur tribe's		Baggara tribe's		For trade reason	
	%	No.	%	No.	%	No.	%	No.	%	No.
Hindquarters	47.6	10	0.00	0.00	14.3	1	0.00	0.00	10.5	2
Forequarters	23.8	5	28.6	2	71.4	5	25	2	15.8	3
Abdomen and back	23.8	5	71.4	5	14.3	1	50	4	68.4	13
Neck	4.8	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Head	0.00	0.00	0.00	0.00	0.00	0.00	12.5	1	5.3	
Total	100	21	100	7	100	7	100	8	100	19

Table 3 Hot iron brand size on cattle hides

Area in cm.	Misseriya Zuraq tribe's		North Kordofan State tribe's		Darfur tribe's		Baggara tribe's		For trade reason	
	%	No.	%	No.	%	No.	%	No.	%	No.
10-20	66.7	14	57.1	4	28.6	2	37.5	3	52.6	10
21-30	33.3	7	28.6	2	42.8	3	37.5	3	26.3	5
31-40	0.00	0.00	0.00	0.00	14.3	1	25	2	15.8	3
41-50	0.00	0.00	14.3	1	14.3	1	0.00	0.00	5.3	1
Total	100	21	100	7	100	7	100	8	100	19

Table 4 Grading of cattle hides depending on hot iron branding

Hide grade	Misseriya Zuraq tribe's		North Kordofan State tribe's		Darfur tribe's		Baggara tribe's		For trade reason	
	%	No.	%	No.	%	No.	%	No.	%	No.
Grade 1	9.5	2	0.00	0.00	12.3	1	0.00	0.00	5.3	1
Grade 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade 3	9.5	2	14.3	1	0.00	0.00	12.5	1	5.3	1
Scarto*	81	17	85.7	6	85.7	6	87.5	7	89.4	17
Total	100	21	100	7	100	7	100	8	100	19

*Grade4 and 5

Figure 1 Hot iron branding applied on the hindquarter.

Figure 2 Hot iron branding applied on animal hindquarter and abdomen.

Figure 3 Hot iron branding applied on abdomen and animal back.

Figure 4 Hot iron branding applied on animal back, hindquarter and abdomen.

Figure 5 Hot iron branding applied on animal abdomen.

Figure 6 Hot iron branding for trade reason applied on animal hindquarter.

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