

Assessment on Hide Branding and Related Pre-Slaughter Defects in Benatsemay and Dasenech Pastoral Districts of South Omo Zone, Southern Ethiopia

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Abstract

This assessment was conducted in two selected pastoral districts, Benatsemay and Dasenech of South Omo zone with the objective of assessing the practice of hide branding and related pre-slaughter defects and finally to recommend possible measure to be taken to avoid the traditional practice that downgrade hide quality at the tannery level. A total of 130 pastoralists, 75 pastoralists from four selected kebeles of Benatsemay and 55 pastoralists from three selected kebeles of Dasenech districts were participated in questionnaire survey of this study. A total of 5,590 cattle of different age groups and both sex owned by pastoralists who selected for questionnaire survey as well as that of pastoralists not selected for questionnaire survey were observed at the field level for the extent of hide branding and other pre-slaughter defects. Out of 130 pastoralists participated in questionnaire survey, 127 (98%) apply hide branding on their animal for skin and other infectious diseases prevention (94.48%), for identification (100%) and as cultural trends (3.9%). Although hide branding is the most extensive practice observed on cattle, there are also other pre-slaughter defects such as scratches (2.98%), horn marks (1.06%), damage by sharp objects (0.29%) and damages due to unknown cases (1.85%) that can downgrade cattle hide. During the survey, the herds owned by the pastoralists in the study area were visually observed for the presence of hide branding on their body parts. These visual observations were done before the releases of the herd to grazing land at the morning. Accordingly 650 bulls, 1300 ox, 1950 cows, 1040 heifers and 650 calves owned by the pastoralists were observed during the survey. During field observation for hide branding, 642 (98.72%) bulls, 1235 (95%) ox, 1832 (93.94%) cows, 960 (92.30%) heifers and 613 (94.30%) calves were branded from the total herd. Even though the study districts have large number of cattle population, their output especially hide produced by the community were not supplied to the local market due to lack of awareness about the advantages of hide other than household use, lack of market channel in the area and lack of extension service that promote its production. Therefore strong linkage between extension service and the pastoralists will be needed to fully exploit this resource and to avoid the constraints faced with the product such as traditional practices like hide branding and other pre and post slaughter defects that can downgrade the hide.

Keywords – branding, hide, pre-slaughter defects, pastoralists, cattle, Benatsemay, Dasenech

1. Introduction

Ethiopia is generously endowed with livestock resources. Its cattle population of more than 53 million, along with sheep and goat populations of 25.5 and 24.1 million, respectively, put the country first in Africa (CSA, 2013). The agricultural sector in Ethiopia, engaging 85% of the population, contributes 52% to the gross domestic product (GDP) and 90% to the foreign exchange earnings (CSA, 2008) and (FAO, 2013). The livestock is an important sub-sector within Ethiopia's economy in terms of its contributions to both agricultural value-added and national GDP. The role played by livestock in the economy of Ethiopia, as in many developing countries, is varied but substantial. Livestock contribute to the production of food (meat, milk, eggs and blood), industrial raw materials (wool, hair, hides and skins) input for crop production (draught power and manure) and export earnings (live animals, skin and hides). They also generate cash income which can be used to purchase food grain, seeds, fertilizer and farm implements (Ayele *et al.*, 2003 and Azage, 2006).

Hide and skins are the basic raw materials for the leather industry. Currently there are about 27 tanneries in the country and have an average capacity of processing 4,000 pieces of hides and 30,000 pieces of skins per day (EEA, 2007/08). Based on the off -take rate 3%, 33% and 35% for cattle, sheep and goat respectively, it is expected to produce 3.1 million hides, 7.8 million sheep skins and 8.2 million goat skins (CSA, 2004 and CSA, 2007)

However, the sector faces several challenges. Large numbers of hides and skins are discarded or their quality is substantially reduced by factors that can be avoided. Some of these factors are inherent to the

production structure and animal husbandry practices, whereas others arise from the dispersal of the slaughter facilities, unfavorable marketing structures, poor handling (e.g. presentation and transportation) of the raw stock, and insufficient collection and preparation for further processing and export.

Defects are generally classified as pre-slaughter, slaughter, and post-slaughter defects (Leach 1995). The pre-slaughter defects include cockle (*ekek*), which is due to an allergic skin hypersensitivity reaction to parasitic infestation, grain scratches, pox lesions, warts, tick damage, branding, age (shrinkage) and poor substance (thickness of the skin or hide, toughness of the fibres and the closeness of the texture of the fibres). The major slaughter defects are flay cuts (scores), holes (a complete perforation of the skin or hide resulting from a knife or flaying appliance), poor pattern (an asymmetric skin or hide due to bad opening cuts or distortion during drying because of uneven tension), and vein marks (traces of blood vessels in the skin where the blood was not completely drained). Post-slaughter defects include heating or putrefaction (bacterial and enzymatic breakdown due to improper curing), hide beetle damage, machine damage and grain crack (ESGPIP 2009; Quality Standard Authority of Ethiopia 2008).

Traditionally household producer slaughter their animals at backyard system with improper flaying and by unskilled person. This has a significant negative effect on the quality of the hides or skins produced from poor flaying and preservation effect. Hides and skins are meat by-products and there is still little consideration given to the care required for the handling, collection and processing of the hides and skins in to high quality leather (Adugna, 2004)

There is no detail study conducted to determine the extent of hide branding and related pre-slaughter defects of hide in South Omo zone. Therefore the main objective of this study is to determine the extent of hide branding and related pre-slaughter defects of hide in pastoral communities of the South Omo Zone and to recommend possible methods to avoid/reduce the practice

2. Materials and Methodology

2.1. Study Area Description

This study was conducted in two selected pastoral districts of South Omo Zone, namely Benatsemay and Dasenech districts. Benatsemay and Dasenech districts were found about 42km and 200km from the capital city of the zone, Jinka respectively. Benatsemay woreda is one of the eight wordas found in south omo zone which covers an area of 2923 km² and has human population estimated 67797. The population density of the woreda is 20 persons per km². The woreda is divided in to 29 rural and 2 urban PA. Generally, the altitude of the woreda ranges between 600-1500 m.a.s.l. Its astronomical locations are 5.010N -5.730N latitudinal and 36.380E - 37.070E longitudinally. There are three major agro ecologies namely bereha, kola and woynadega 5%, 81.3and 13.7% found in the woreda respectively. The mean annual RF ranges between 800-1300mm and the mean annual temperature ranges between 18-38°C. The woreda has an animal resources with an estimated of about 459,779 cattle, 146,868 sheep, 741,237 goats, 97205 poultry local and improved, 28877 equines.

Dasenech woreda is also one of the 8 woreda found in south omo zone SNNPRS region located around 234 kms far from the zonal town jinka and 5.14°N latitude, 36.44°E longitudinal and has a human population of 66,230. The woreda is divided into 40 rural PAs and 1 urban. Generally, the altitude of the woreda ranges 350 - 400 m a.s.l. the woreda has only one agro- ecology, arid. Rainfall pattern in the area is monomial. The mean annual rainfall ranges 250-400 mm and the mean annual temperature ranges 20 - 45 °c. Livestock has a great role in the livelihood of the area since they use pastoral farming system. In Dasenech pastoral area the total livestock species are estimated to be 224,621 cattle, 24,337 sheep, 381,427 goats, 23,412 poultry, 22,400 donkeys, and 300 camel.

2.2. Study Animals

The study animals were local cattle breeds owned by the pastoralists of the communities of the districts. These local breeds were characterized by low productivity but they have potential to resist harsh environmental condition as well as different diseases occurring in the area. The pastoral communities of the study districts follow extensive management system by grazing their large number of animals in grazing lands available in the area.

2.3. Study Design

A cross- sectional study type was followed to conduct this study. There was also observational type of study followed to observe the extent of skin branding in selected herds of pastoral community. The study districts and their respective study kebeles were purposively selected based on the community skin branding practice. According to the information from South Omo Zone livestock and fishery development department Benatsemay, Hammer and Dasenech districts were known by skin branding practice, therefore these districts were selected for this study. From the selected districts, the study kebeles were selected purposively on the same bases. From the selected study districts, 20 pastoralists of both sexes were selected for the questionnaire survey.

2.4. Sample size

A total of 130 pastoralists, 75 pastoralists from four selected kebeles of Benatsemay and 55 pastoralists from three selected kebeles of Dasenech districts were participated in questionnaire survey of this study. All cattle owned by the pastoralists selected for the questionnaire survey as well as those from not selected were used for observational study. Accordingly 5,590 cattle of different sex and age groups from both districts were observed on the field, of these 650, 1300, 1950, 1040 and 650 were bulls, ox, cow, heifers and calves respectively as shown on table 1 below

Study district	Kebeles						Total
	Enchete	Bura	Murugolla	Luka			
Benatsemay N=3488		No	No	No	No	No	
	Ox	191	Ox 200	Ox 212	Ox 198		
	Cow	333	Cow 278	Cow 329	Cow 300		
	Bulls	102	Bulls 123	Bulls 117	Bulls 98		
	Heifers	95	Heifers 147	Heifers 132	Heifers 183		
	calves	90	calves 114	calves 135	calves 111		
Total	811	862	925	890	3488		
Dasenech N=2102	Kebeles						
	Haddo	Naikia	Ocholo				
		No	No	No	No	No	
	Ox	143	Ox 122	Ox 234			
	Cow	240	Cow 228	Cow 242			
	Bulls	65	Bulls 80	Bulls 65			
Heifers	170	Heifers 153	Heifers 160				
calves	55	calves 73	calves 72				
Total	673	656	773			2102	
Grand Total						5590	

2.5. Data Analysis

Data were collected, coded, entered, managed and stored into Microsoft Excel and analyzed using Statistical Package for Social Sciences (SPSS, version 20) (SPSS, 2012) software. Descriptive statistics were used to analyze data.

3. Results and Discussion

Total number of respondents participated in questionnaire survey and their household characteristics were shown on table 1 below.

Total no of respondents	sex	Age (year)	Educational level Grade)	Marital status
N= 130	Male (93) 71.53%	15-30 year (42) 32.30%	Illiterate (87) 66.92%	Single (25) 19.23%
	Female (37) 28.46%	30-45 year (70) 53.84%	1-6 grade (30) 23.07%	Married (98) 75.38%
		>45 year (18) 13.84%	7-8 grade (10) 10%	Divorced (4) 3.07%
			High school (0) 0%	Widowed (3) 2,31%

3.1. Herd structure, trends and management system

During this survey and observational study, the total number and structure of herds owned by the pastoralists in the study area were addressed and visually observed. Accordingly the average herd size of the respondents in both study districts were 4,423 and from these 650, 1300, 1950, 1040 and 650 were bulls, ox, cow, heifer and calves respectively. Since there is no breed improvement practice through crossing with more productive exotic breeds (according to participants) in the area, all animals participated in this study were local breeds with their specific characteristics. According to the pastoralists of the two districts, they practice extensive management system by grazing their herd in range land available in the area and without any housing to keep their animal from extreme environmental condition. In grazing land there is mixing of herds from different area, thus branding is very important to differentiate their own animal.

3.2. Reasons for hide branding

The participant pastoralists have different reason to brand their animals but the most probable reasons were listed on table 2 below

Table 2 Reason for branding cattle

R. no	Reason for branding cattle	Number of respondent (N=127)	%
1	To prevent skin and other diseases	120	94.48
2	For identification	127	100
3	Cultural trends	5	3.9
4	Heroism	0	0

From 130 of the pastoralists participated in questionnaire survey, 127 (98%) were practicing cattle hide branding. Since branding is one of pre-slaughter defect that results in downgrading of hide, the result of this survey is higher than that of pre-slaughter defects reported by Bayou (2005) who reported 65% of inclusive (including all pre-slaughter defects) pre-slaughter defect. Only 1.87% of the pastoralists in two study districts weren't practice branding, rather they either leave their animal without any identification on nearby pasture land without mixing with other herds or use ear identification (by cutting the ear). This survey result shows very high and extensive branding practice in the study districts as compared branding practice in smallholder Zimbabwe pastoralists reported as 10-40% of the value of the hide is lost by the unsightly and irreparable damage caused by branding (Jabbar et al., 2002). The pastoralists have different reason for branding practice, all respondents' shares most common reasons. Accordingly all participant pastoralists (100%) brand their cattle for identification, to prevent skin and other diseases (94.4%), and as cultural trends (3.9%).

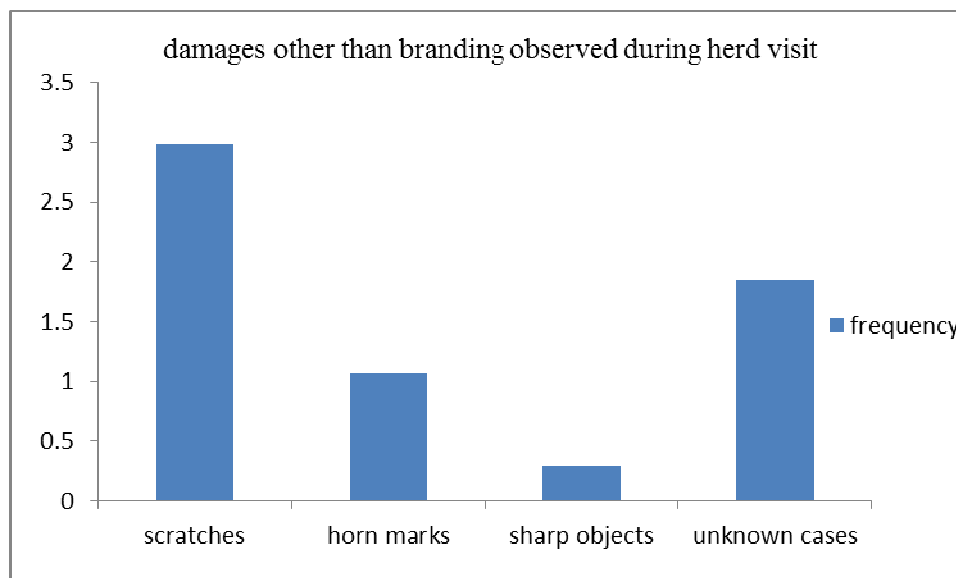
According to the questionnaire survey, most of the pastoralists who practice branding use back and ramps (87%) to brand their animal followed by pre-scapular and scapular area (9.65%) and other body parts such as auricle and facial areas (3.35%). These body parts, especially back, ramps, scapular and pre-scapular areas were the most valuable parts of hide in tannery.

3.3. Category of herd mostly branded

During the survey, the herds owned by the pastoralists in the study area were visually observed for the presence of hide branding on their body parts. These visual observations were done before the releases of the herd to grazing land at the morning. Accordingly 650 bulls, 1300 ox, 1950 cows, 1040 heifers and 650 calves owned by the pastoralists were observed during the survey. During field observation for hide branding, 642 (98.72%) bulls, 1235 (95%) ox, 1832 (93.94%) cows, 960 (92.30%) heifers and 613 (94.30%) calves were branded from the total herd. But very low (2.8%) of branding practice was reported by Jarso (2014) in and around Asella and Sagure town indicating that in current study area the practice of hide branding will be the major problem in the future if the practice of producing and selling hide and skin is established and supplied to the leather industry. This survey result indicates non-significant difference among different herd groups observed on the field. Each pastoralist have his/her own branding style differentiating his/her herd from the neighboring herd but pastoralists of the same family (relatives) share the same branding style, that means they brand their animal on similar body parts as well as they share the same brand mark on their herd.

Other than branding there were also marks on the hide from physical trauma and damage such as scratches, horn marks, damage by sharp objects and unknown disease cases. According to field observation and information from the participant pastoralists, from the total of 4,423 herds observed, scratches 132 (2.98%), horn marks 47 (1.06%), damage by sharp objects 13 (0.29%) and due to unknown cases 82 (1.85%) were identified which indicates non-significant difference among different mechanical damages observed on the animal body. But Jarso (2014) reported horn rake (40.6%), damage by sharp objects (17.7%) and whip lash (38.9%) in and around Assela and Sagure town which is higher than the current result with non-significant difference.

The age at which the branding applied was almost similar according to the participant pastoralists, they brand their animal at the age of 6 month to 1 year when the calves were able to graze with adult animals at the pasture. But if the animal was bought from those who do not use branding, the age at which the animals become branded may be differ from the above mentioned age.



3.4. Advantage/Disadvantage of Branding

About 78.46% of the respondents said that there is no disadvantage of branding their animal rather they said they are advantageous in branding their animal because they can easily identify their animals if the animals were taken by the thief. The respondents also said that they heal their animals from infectious diseases such as Black leg and trypanosomiasis and other skin diseases by branding. But among the respondents, 19.43% said that the disadvantage of skin branding associated with long time taking of the branded hide to heal due to pus formation (bacterial infection) and annoyance of the animal by flies and very few (2.11%) of the respondents also said that branded hide is not comfortable for bedding.

3.5. Economic Features of Hide in the Study Area

Table 3:- show economic features of hide in the study area

R.no	No of respondents	Purpose of hide	frequency	%
1	N=130	For bedding and chair	130	100
2		For grain storage	77	59.23
3		House coverage during rainy season	34	26.15
4		For clothing	14	10.76
5		Tying material during shelter construction	23	17.69

According to this survey result, the whole hide produced in the study pastoral districts were used for household purpose, especially for bedding and chair, for grain storage, to cover house during rainy season, for clothing and as tying material during shelter construction. But the use of hide and skin for domestic consumption was very low in Wolaita Zone as reported by Kuma and Assefa (2016), who reported the domestic use of hide and skin especially for bedding “kurbet (37%)”. But the same Authors reported the domestic use of hide and skin for tying material or “miran” (44%), which is higher than the current report (17.69%). According to the report of Tesfaye et al., (2015), most of (87.9%) the producers in the Shashemene area reported to sell hide and skin after they slaughter their cattle but the rest (12.11%) ascertained that they sometimes keep products for household use.

All respondents (100%) in the study pastoral districts replied that they have no practice of selling hide at the market level. They confirmed hide and skin have no value at their local market level and they haven’t seen any one who sell and buy hide and skin at local or district level market. During the survey, the study district’s municipal and livestock and fishery office concerned bodies were also asked about the practice of utilization of hide and skin at the community level and they replied that there is no practice of selling hide and skin in the district and also the extension service to curve the situation very poor because of cultural trends the community adopted in the area. There is also no market channel created in study pastoral areas to motivate the community to supply hide and skin to the local market.

4. Conclusion and Recommendations

Ethiopia is a resourceful country bestowed with the largest livestock resource in the Africa continent. But this resource was not fully exploited due to different constraints facing the sector. Since pastoral areas/ regions owned more than 60% of cattle population of the country, their contribution to the economic growth of the

country is very high. This study showed that the quality of cattle hide in Benatsemay and Dasenech districts of South Omo Zone declined due to various defects produced mainly by hide branding and other pre-slaughter defects such as scratches, damage by sharp objects, horn marks and different infectious diseases and also due to unknown cases. From this study, it shown that hide branding was the most extensive traditional practice applied by all pastoralists in the study area as identification, treatment for diseases and as cultural trends. Since branded hide become out of use in tannery, the practice of hide branding needs intervention to replace it by other modern technology for identification and improvement in animal health service because pastoralists brand their animals to cure some infectious diseases. Therefore integrated efforts towards good animal husbandry and animal health care are very important. Furthermore, rigorous awareness and training should be given to the pastoralists on the advantage of hide, disadvantage of branding on its value, how to produce and supply raw hide to the local market and also market channel should be established in the area to enhance economic development of the sector.

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