

Defect Assessment of Ethiopian Hide and Skin: The Case of Tanneries in Addis Ababa and Modjo, Ethiopia

Bisrat Gebremichael Urgessa

Ethiopian Leather Industry Development Institute (LIDI)
Leather Manufacturing Technology Directorate, Addis Ababa, P.O. Box 5, Code 1058, Ethiopia

Abstract: A study to examine the prevalence of sheep and goat skins and cattle hide defect was conducted from march to April 2013 with the objective of identifying the major causes of defects that down grade skin and hide examined at wet blue skin and hide stage at eight tanneries in Addis Ababa and Modjo cities of Ethiopia. A total of 1406 (556 sheep and 450 goat skins and 400 cattle hides) ungraded samples were randomly selected and examined visually for defects. The study showed that there were different defects responsible for the decline in quality of skin and hide. Ekek (47.1%), scratch (35.2%), flay cut(7.0%), wound(6.8%), scar(1.8%), machine defect (1.3) and pox (0.71) were major sheep skin defects and nothing with no defect. In goats skin, scratch (37.3% was the dominant defect followed by ekek (24%), flying defect (18.7%), scar (15.3%), flying defect (11.6%) and wound (3.8%) were major defects. In cattle hide, ekek(48.6%), flying cuts (18.7%), putrefaction (16.7%), Scratch (10.7%), branding (1.7%), scar (0.3%), Wound(0.3%), and smoking(3%) were important major defects. Prevalence of ekek was higher in cattle hide (48.6%) than sheep skin (47.1%) and goat skin (24%). However; scratch was significantly higher ($p < 0.05$) in goat (37.3%) than sheep(35.2%) and cattle hide(10.7%). This study prevailed that prevalence of different hide and skin defects were observed in the surveyed tanneries and this implies that integrated efforts towards improved livestock husbandry and better health care are vital issues for production of better quality hide and skin. In addition, continuous intensive awareness on the prevalence, detail causes and effects of skin and hide defects are worthwhile. Coordinated detailed studies on the distribution, seasonal occurrence and the direct and indirect economic impact of ecto-parasites should also be given due attention so as to make Ethiopian leather sector competitive in the international market.

Key words: Ekek • Sheep Skin • Goat Skin • Cattle Hide • Defect • Wet Blue

INTRODUCTION

Ethiopia is endowed with a very large and diverse livestock resource in the world. Ethiopia's livestock population was estimated to be 44.3 million cattle, 23.6 million sheep and 23.3 million goats. Based on the off-take rate of 7.0%, 33.0% and 35.0% for cattle, sheep and goat respectively. So, expected to produce 3.1 million hides, 7.8 million sheep skins and 8.2 million goat skins [1]. So the country is ideal for leather production and making leather products.

Hides 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 4,000 pieces

of hides and 30,000 pieces of skins per day [2]. However they are working under capacity even if the country has a potential to supply around 20 million pieces of hides and skins per annum. The potential supply of hide and skins depend on the scale of meat production, not on the size of livestock population. Thus, the product, i.e. hides and skins, becomes available when meat is needed, not when it is appropriate for leather processing and so it is not primary agricultural commodity. This means that hide and skin supply does not respond to price change [3]. As a result, the industry in the country has tremendous potential for domestic and foreign exchange earnings and the capacity to attract profitable foreign investment. Though Ethiopia has very good potential to produce

Corresponding Author: Bisrat Gebremichael Urgessa, Leather Manufacturing Technology Directorate,
Ethiopian Leather Industry Development Institute, Addis Ababa, P.O. Box 5, Code 1058, Ethiopia .

substantial quantities of skins over the last 10 years, there are indications that quality of raw hide and skins supplied has deteriorated with an increasing number of poor grades. The reason behind is the appearance of skin disease called ‘ekek’ due to external parasites, shortage of supply of hides and skins to meet the demand of tanneries and absence of effective market demand, absence of credit, high marketing cost, inappropriate management of animals, faults during slaughtering and improper handling of skin and hide before it reached at tannery [4]. This has resulted in an ever increasing number of complaints about the quality of skins and hides available to market. In combination it has adversely affected all aspects of the industry.

In this respect, analysis and identification of the defects that deteriorate skin is not thoroughly investigated. Therefore, this study describes skin and hides defects responsible for quality deterioration and their prevalence at tanneries in Addis Ababa and Modjo cities of Ethiopia.

MATERIALS AND METHODS

The Study Area: The study was carried out from march to April 2013 at Ethio-leather industry plc, Dire, China Africa overseas, Ethiopia, East Africa, Kolba, Friendship and Addisababa tanneries. Most of sampled tanneries are located at Modjo town of Oromiya region located 75km from capital Addis ababa. It is located in the central part of Ethiopia with a population of about 29,272. The area is mainly arid and semiarid with hot temperature for most of the year.

Sampling: Random sampling method was used for identification of sheep, Goat skins and cattle hide defects at wet blue stage at tanneries. A total of 1406

(556 from sheep, 450 from goat and 400 from cattle) ungraded skin and hide at wet blue stages were randomly sampled and examined for the defects by the skin selectors and graded accordingly as grade1, grade2, grade3, grade4, grade5, grade 6 and grade7 (reject) based on skin grading on defects set by Ethiopian Standard Authority in 2008.

Data Collection and Analysis: Data’s from each skin and hide were collected, decoded, entered and managed into Microsoft Excel and Computation of descriptive statistics and data analysis was employed using Statistical Package for Social Sciences (SPSS, version17) software.

RESULTS

Prevalence of Skin and Hide Defects: Of the 1406 wet blue skins and hide examined during the study period, all are not free from defects. These include defects due to external parasites(mange mites and keds(wingless flies)) and other diseases, natural/environmental causes(type, nutrition and climate), pre slaughter/ante-mortem causes involving human activities, post mortem/post slaughter defects (incorrect shape, cuts/holes, knife cut, putrefaction.

Cockle “Ekek” was significantly higher in sheep (47.1%) than cattle hide(42.5%) and goat (21.5%). flaying cut was significantly ($P>0.05$) high in cattle 21.3% than goat 11.6% and sheep 7%. Scratch was higher in goat 37.3% than sheep 35.2% and cattle 13.5%. This might be associated to the browsing habit of goats where they browse in thorny bush area which may expose them to much damage as compared to sheep.

Table 1: Major defects of skin and hide

Major defects	Sheep skin		Goat skin		Cattle hide	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Ekek	272	47.1	109	24	170	42.5
Scratch	180	35.2	168	37.3	54	13.5
Flay cut	39	7.0	52	11.6	85	21.3
Wound	38	6.8	17	3.8	1	0.3
Scar	10	1.8	69	15.3	1	0.3
Putrefaction	10	1.8	12	2.7	63	15.8
Machine defect	7	1.3				
Pox	4	.71	14	3.1		
Wart			4	0.9		
Crack			1	0.2		
Smoking			2	0.4	16	4.0
Branding					10	2.5
Total examined	556	100.0	450	100.0	400	100.0

Table 2: Identified grades

Grades	Sheep skin		Goat skin		Cattle hide	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
First	1	.2	0	0	0	0
Second	8	1.4	2	.4	0	0
Third	19	13.1	1	.2	2	0.5
Fourth	73	13.1	28	6.2	22	5.5
Fifth	204	36.7	146	32.4	69	17.3
Sixth	179	32.2	198	44.0	185	46.3
Rejected	72	12.9	75	16.7	122	30.5
Total	556	100.0	450	100.0	400	100.00

Wound in sheep 6.8% higher than 3.8% in goat and hide 0.3%. Scar 15.3% in goat was significantly higher than sheep 1.8% and hide 0.3%. Putrefaction in cattle 15.8% was higher than goat 2.7% and sheep 1.8%. were all major components of defects found during the study period (Table 1). From the total sampled, most of the sampled lied in grade 5 (36.7%) for sheep and grade 6 for goat (44%) and cattle (46.3%). This is indicative that majority are poor grades (Table 2).

DISCUSSION

The prevalence of ekek in the present study was higher than (40.71%) the prevalence reported by Asp and Tauni [5] at Awash tannery and by Ababayehu and Kibrom[6] at Sheba tannery and the report (45.4%) from impact assessment of parasite control in amhara and tigray region in 2011 [7]. while lower than a higher prevalence of 58.3% the report by M. ASSEFA1, D. TESFAYE and M. TAYE [8], at Bahirdar tannery and lower than 76% from the report by [9].

Current prevalence of ekek in goats was higher than (11.3%) [9]. Ekek (24%) which is lower than (45.4%) impact assessment of parasite control in amhara and tigray region reported in 2011[7] and higher than (22.4%) [9]. Scar (15.3%), Wound(3.8%), Pox(3.1%), Putrefaction (2.7%), Wart(0.9%), flying cuts (11.6%), poor substance(.7%) and smoking (0.2) were other major defects in goats.

From the total goat skins examined, most of the sampled skins lied in grade 6 (44%) which is comparable with(48%) six month summary report from Modjo tannery and higher than (26.54%) from Ethiopia tannery, grade 5 (32.4%) higher than the report from modjo tannery(19.7%) but lower than (47.65% from Ethiopia tannery), grade 4(6.2%) slightly lower than the report from modjo tannery(7.5%) and slightly lower than the report from Ethiopia tannery(6.90%), rejected (16.7%) which is higher

than(2.6%) summary report of six month from mojo tannery but slightly lower than (17.39%) from Ethiopia tannery grade 3(0.2%), grade 2(0.4%) and grade 1(0%). All grades from 1-3 is significantly lower than six month summary report from modjo tannery(3.6%). All these report agree with other recent reports which indicate it is hardly possible to find grades 1-3.

Prevalence of Ekek (42.5%) in cattle hide which is higher than (33%) from summary report of the last twelve month,. flying cuts (21.3%) lower than the twelve month report from Ethiopian tannery(25%), Putrefaction (15.3%), Scratch (13.5%), branding (2.5%), scar (0.3%), Wound(0.3%),, and smoking(4%) were important major defects(table 4)

From the total cattle hide sampled, most of the sampled skins lied in grade 6 (46.3%) which is higher than the report from modjo tannery (22.6%) and ethiopian tannery (21.8%) but lower than the first semi annual report of 2012/13 from ethio-leather industry pvt.Ltd.co (81.88%) [11].

The present study for rejected hide is also higher (14.8%) than the report from modjo tannery [10] and (6.49%) report from Ethio-leather industry pvt.ltd.Co semi annual report [11].

For grade 5 (17.3%) lower than the report (43.5%) from modjo tannery [10], 41.6% from Ethiopian tannery [12] and but higher (11.40%) the report from Ethio-leather industry pvt.Ltd.Co [11].

In hide grade 4(5.5%) is higher than 0.19% semi annual report from ethio-leather industry pvt Ltd.co and for grade 3(0.5%), grade 2(0%) and grade 1(0%) which is comparable with the report from ethio-leather pvt.Ltd.Co (0%).

CONCLUSION

Integrated efforts towards improved livestock husbandry and animal health care and application of

insecticide and acaricide to minimize the effect of ectoparasites, awareness creation on the danger of the defects and establishing slaughtering facilities are very serious to minimize the burden on the economic product of skin and hide.

ACKNOWLEDGEMENTS

My colleagues Teklay Asgedom, Efreem Yohanese, Bamlaku Alene and Getachew Bekele are all acknowledged for their unreserved participation and cooperation during defect assessment study. Special thanks goes to the owners of sampled tanneries and their staff for allowing us to collect defect assessment data from their tanneries.

REFERENCES

1. CSA (Central statistical authority), (2004 & 2007). Ethiopia Agricultural Sample Enumeration, statistical report on livestock population, part 4, Addis Ababa, Ethiopia.
2. EEA, 2007/08. Report on the Ethiopian Economy: Volume VII 2007/08. Addis Ababa: Ethiopian Economic Association.
3. FAO, 1998. Control of Sheep and goat Skin Diseases for Improved Hide and skins (phase II), Ian, B. C. and Bayou, K. (eds.), Proceedings on hide and skin Improvement, pp: 13–14 Feb. 1998, FAO, Addis Ababa.
4. Abadi, Y., 2000. Current problem of leather industry. In: R.C. Merkel, G. Abebe, & A. . Goetsch (Eds.), The opportunities and challenges enhancing goat production in East Africa.
5. Asp, J. and M. Tauni, 1988. Skin disease of Ethiopian sheep and their effect on pickled skin, a minor field study. Sweden University of Agriculture Science, Upsala, pp: 27.
6. Abebayehu, T. and M. Kibrom, 2010. Study on Ectoparasitic defect of processed skin at Sheba tannery, Tigray, Northern Ethiopia. Tropical animal health prod, DOI 10.1007/s11250-010-9625-z.
7. Unpublished report by engineering capacity building in, 2011. Evaluation of the impact of ecto-parasite control on the quality of sheep and goat skins in Amhara and Tigray Regions.
8. Assefa1, M., D. Tesfaye1 and M. Taye, 2012. A study on the prevalence of sheep and goat skin defects in BAhirdar tanner, Ethiopia.
9. Zenaw Zemene, M., 2012. Assessment of Major Factors That Cause Skin Defects at Bahir Dar Tannery, Ethiopia. IDOSI Publications.
10. First half six month summary report of 2012 from Modjo tannery, Ethiopia.
11. Ethio-leather industry pvt.ltd.Co semi annual report of 2012, Ethiopia.
12. First half six month summary report of 2012 from Ethiopia tannery, Ethiopia.