Chapter: 1

Introduction

Agriculture is the most important economic sector in Bangladesh. It contributes to GDP is significant and assists to sustain livelihoods through the country of employment to the majority of the rural population. The livestock subsector becomes enormous potential for improvement of livelihoods. Bangladesh produces 23.7million cattle, 1.4 million buffalo, 3.4 million sheep, 25.7 million goats (DLS, 2016). The livestock plays important roles for the production of meats, milks and Hides and skins. The term "hides" refers to the external surface layer of large animal (cattle, buffalo, camel, horse e t c) Whereas "Skin" refers to external surface layers of a small animal (sheep, goat, pig e t c) (Leach, et, al. 1995). Hides and skins contribute a significant portion of the value livestock output in Bangladesh and is an important source of foreign exchange earnings (Dey, et al. 1982). The hides and skins and leather industry in Bangladesh is one of the agricultural subsectors with a high potential towards commodity that address pertinent issue of socio-economic importance and positively impacts on rural development, creation of wealth and employment (Dey, et al. 1982). Eid-Ul-Azha is the festival of sacrifices which celebrate early September. The central effluent treatment plant at the saver estate is unlikely to be fully ready to pressure and process hides and skins by that time. At stake is the handling of 3.5 to 4 million pieces of hides and skins usually available on the occasion. About 50% of the country's total hides and skins are collected during Eid-Ul-Azha. But half of the factories are not ready for processing of those hides and skins. The tannery owners cannot be able to buy hides and skins because they are spending money on infrastructure. This will give an opportunity to the stock to buy skins and build stocks (Financial Express, Dhaka, Sunday, 20 August 2017). The suitability of a hide and skin for making a particular type of leather, as well as the peculiarities of the manufacturing process, is determined by skins and hides thickness over its area; by its size, weight and density; by the thickness of the epidermis and degree of development of hair covering; by the ratio of the papillose and reticular layers of the dermis; by the nature of the interlocking fibers and the thickness and conditions of the subcutaneous cell. The degree of development of the surface components and the chemical composition and properties of the protein substances; by the presence of defects (Abadi, et al. 2000). These factors are influenced

by the origin of animal (species, breed, sex, age) and the conditions of its life (climate, captivity, and feeding) and the method of the slaughtering of animal (skins taken from naturally died are significant lower quality) the methods of removing skins and hides from the carcass and the dressing, preserving and storing of the hides and skins (Bayout, et al. 2005). During slaughter the animal must be bled to the maximum. Blood remaining in the blood vessels of the skins of its lower quality (Boden, et al. 2005). The livestock subsector faces several challenges. The large number of hides and skins are discarded or their quality substantially reduced by the factors that can be avoided. Some of the factors are inherent to the production structure and animal husbandry practices, whereas others arise from the dispersal of the slaughter facilities, unfavorable marketing structure, poor handling (e.g. transportation and presentations) of the raw stock and insufficient preparation and collections for further processing and export(Abadi, et al. 2000)). The quality of raw hides and skins is largely depending on the extent of ante mortem and postmortem defects. Among postmortem defects those arising from faulty methods of flaying are very important for safeguarding the quality of hides and skins intended for conversion to leather. Quality of raw hides and skins is affected by ante mortem defects such as parasitic infestations, tick damage, warts, scratches, rub marks, brand marks, horn rake, yoke mark, scabies, pox mark, abrasions etc. and postmortem defects such as flay cuts, fleshing cuts, grain cracks (Leach, et al. 2009) .While postmortem defects are controllable to certain extent, ante mortem defects pose serious challenges to tanner. Infarcts that the quality raw hides and skins plays a decisive role in the quality of the produced leather and it constitutes about 50-70% of the cost of production, the raw materials is the most valuable and important of the production elements (Deusy, et al. 1989).

Objectives: To study the defects of hides and skins to protect defects and to know the impacts on national economy in Bangladesh.

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Materials and method

Study area: The study was conducted at Upazilla veterinary hospital, dairy farm, Qurbanir hat, slaughtering houses, homestead slaughtering places and physical visit to store in Cox's Bazar to determine the defects of hides and skins and its impacts on national economy.

Methodology: The report study is based on synthesis of questionnaire. Besides previous documents reviewed in included specific studies, progress reports and various articles in newspaper. A questionnaire was developed for data collection from selected source. The report was designed in collaboration with various personals who are engaged in veterinary hospital, dairy farm, Qurbanir hat, hides and skins markets and butchering and slaughtering of animal especially during Eid-Ul-Azha to study the defects of hides and skins in domestic's ruminants which reduce the economic value of skins and hides in various areas of Bangladesh. There were examined ante-mortem and postmortem defects. Observations of post mortem defects of hides and skins in the slaughter houses and slaughtering animal in homestead during Eid-Ul-Azha for developed questionnaire. The record of ante mortem defects such as various skin diseases and conditions damaging skin of cattle and goats from veterinary hospital, dairy farm and Qurbanir hat. The record of various postmortem defects such as flaying cuts, fleshing cuts, abrusing e t c was made. Cause and type of defects were record in a questionnaire. The data were collected for only one time.

Data analysis: The data was entered and managed into Microsoft Excel. Descriptive statistics was run to give pictures, tables, and percentage.

Types of ante mortem defects of hides and skins in ruminants

Picture 1: Abscess

Picture 2: Wound

Picture 3: Scratches

Picture 4:   parasitic lesions

Picture 5: Pox marks

Picture 6: Nodule marks
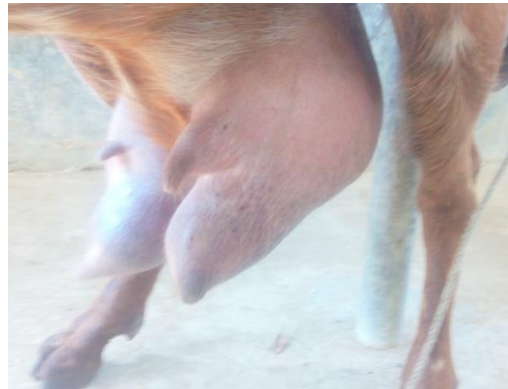
Picture 7: Saddle sore

Picture 8: Tick damage

Picture 9: Fracture mark

Picture 10: Surgical defects

Picture 11: Abrasions

Picture 12: Hardening of skin structure

Types of post mortems defects of hides and skins in ruminants

Picture 13: Badly bled skin

Picture 14: Badly shaped head

Picture 15: Badly shaped shank

Picture 16: Flay cuts

Picture 17: Gouge marks

Picture 18: Poor pattern

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Results

In the study, 444 hides and skins were studied from Upazilla veterinary hospital, dairy farm, Qurbanir hat from pre slaughter animal and homestead slaughter, slaughter houses, hide markets from slaughtered animal. Out of total 444 hides and skins, 412 hides and skins were selected from pre slaughter animal and 32 hides and skins were selected from slaughtering animal. The defects of hides and skins of animal were observed in the selected source on the basis of ante mortem and post mortem defects. Besides, causes of the defects of hides and skins also studied.

Ante mortem defects:

 The details of the data collected from different sources and types of lesions studied are given in table 1. Table 1 shows occurrence of most common ante mortem defects followed in descending order observed were abscess 4.8%, wounds 15.1%, scratches 1.2%,parasitic marks 6.6%, pox lesions 1.2 %, branding marks 2.9%, yoke marks 1.2%, horn marks 0.5% nodule marks 0.1%, hump sore 0.7% tick marks 1.7%,   fracture marks 4.1% and surgical marks 5.3%. The highest occurrence of defects due to wounds which caused by accidental or diseased condition of animal.

Table 1: Ante mortem defects of hides and skins collected from Upazilla veterinary Hospital and dairy farms.

Serial no.	Name of defects	No. of defects	Percentages of defects
1	Abscess	20	4.8%
2	Wounds	62	15.1%
3	Scratches	5	1.2%
4	Parasitic defects	27	6.6%
5	Pox lesions	5	1.2%
6	Brandings marks	12	2.9%
7	Yoke marks	5	1.2%
8	Horn marks	2	o.5%
9	Nodule marks	4	0.1%
10	Hump sore	3	0.7%
11	Tick damage	7	1.7%
12	Fracture damage	17	4.1%
13	Surgical defects	22	5.3%

Postmortem defects:

The details of data collected from different sources and types of lesions studied are given in table 2. Table 2 shows the occurrence of the most common postmortem defects observed were badly bled skin 21.9%, badly shaped head 12.5%, badly shaped shanks 25%, flay cuts 9.3%, gouge marks 6.2%, abrasions 9.2% and poor pattern 43.7%. The highest occurrence of defects was poor pattern due to not enough time and lack of skilled butchers.

Table 2: Postmortem defects of hides and skins collected from homestead slaughtering house and slaughter house during Eid-Ul-Azha.

Serial no.	Name of defects	Number of defects	Percentages of defects
1	Badly bled skin	7	21.9%
2	Badly shaped head	4	12.5%
3	Badly shaped shank	8	25%
4	Fly cuts	3	9.3%
5	Gouge marks	2	6.2%
6	Abrasions	3	9.3%
7	Poor pattern	14	43.7%

Comparison of prices:

The comparison of prices between normal and defective hides and skins are presented in table 3. Cattle hide price was reduced from normal to defective 50%, buffalo hide price was reduced from normal to defective 43%, goat skin price was reduced from normal to defective 67% and sheep skin price was reduced from normal to defective 38%.

Table 3: Comparative prices of normal and defective hides and skins during Eid-Ul-Azha.

Name of hide and skin	Normal hide and skin price(Tk per hide or skin)	Defective hide and skin price (Tk per hide or skin)	Reduced price Percentages
Cattle hide	400-600	200-300	50%
Buffalo hide	350-500	200-350	43%
Goat skin	60-100	20-40	67%
Sheep skin	40-80	25-50	38%

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Discussion

The study was determined to discuss about the defects of raw hides and skins to protect defects and to know the impacts on national economy in Bangladesh. Defects of hides and skins divided into two categories – 1. Ante mortem defects 2. Postmortem defects

Causes and types of ante mortem defects–

Abscess: Occurrence of abscess in ruminants was observed 4.8% at Cox's Bazar which is higher than the prevalence of abscess in goat which is 1.3 % (Leach, et al. 2009). Cutaneous abscess formed by the pyogenic organisms of different genera affecting either the grain or flesh side of the skins or even hydrolysis skin proteins leading to perforations (Leach, et al. 2009).

Wounds: Occurrence of wounds was observed 15.1% at Cox's Bazar which is higher than the prevalence of wounds in goat which is 3.2 % (Deusy, et al. 1989). Defects formed by the accidental, surgical or infectious cause (Deusy, et al. 1989).

Scratches: Occurrence of scratches was observed 1.2% at Cox's Bazar which similar with prevalence of scratches in cattle which is 1.2% (Ian, et al. 2009). Scratches occur when the animal rubs against barbed wires or rough objects. A scar is left in the skin (Ian, et al. 2009).

Parasitic defects: Occurrence of parasitic defects in ruminants was observed 6.6% at Cox's Bazar which is higher than the prevalence of parasitic defects in small ruminants which is 1.7 % (Boden, et al, 2005).

Pox mark: Occurrence of pox marks in ruminants was observed 1.2% at Cox's Bazar which is lesser than the prevalence of pox marks in ruminants which is 5.2 % (Abadi, et al. 2000). Hard, circular, lesion based defects leaving scar marks on the grain and at times even found penetrating the full thickness of the hides (Abadi, et al. 2000).

Branding marks: Occurrence of branding marks in ruminants was observed 2.9% at Cox's Bazar which is mostly higher than the previous prevalence of branding marks in cattle which is 8.2 %

(Leach, et al. 2009). Man-made mark on cattle hides and skins generally used for identification with either a hot or cooled iron or chemical products (Leach, et al. 2009).

Yoke marks: Occurrence of yoke marks in ruminants was observed 1.2% at Cox's Bazar which is higher than the prevalence of yoke marks in cattle which is 0.8 % (Elliot, et al. 1985). Patch of hardened skin on the shoulder caused by the pressure and rubbing of the hide against the yoke (Elliot, et al. 1985).

Horn marks: Occurrence of horn marks in ruminants was observed 0.5% at Cox's Bazar which is similar with prevalence of horn marks in large ruminants which is 0.4 % (Bayout, et al. 2005). Damage to the grain caused by animal horns (Bayout, K. T. et al. 2005).

Nodule marks: Occurrence of nodule marks in ruminants was observed 0.1% at Cox's Bazar which is mostly lesser than the prevalence of nodule marks in ruminants which is 2.8 % (Elliot, et al. 1985).

Hump sore: Occurrence of hump sore in ruminants was observed 0.7% at Cox's Bazar which is lesser than the prevalence of hump sore in cattle which is 1.7 % (Leach, et al. 2009). The disease in the cattle caused by the nematode stephanofilaria assamensis results in the formation of scabs and crusts, loosening of the hair and thickening to hides. The lesion spreads in the hump region (Leach, et al. 2009).

Tick damage: Occurrence of tick damage in ruminants was observed 1.7% at Cox's Bazar which is higher than the prevalence of tick damage in ruminants which is 1.5 % (Solomon, et al. 2011). Ticks affect the hides and skins quality to a considerable extent (Solomon, et al. 2011).

Fracture defects: Occurrence of fracture defects in ruminants was observed 4.1% at Cox's Bazar which is higher than the prevalence of fracture defects in ruminants which is 2.3 % (Ahmed, et al. 2016).

Surgical defects: Occurrence of surgical defects in ruminants was observed 5.3% at Cox's Bazar which is higher than the prevalence of surgical defects in ruminants which is 1.1 % (Ahmed, et al. 2016).

Causes and types of postmortem defects-

Badly bled skin: Occurrence of badly bled skins in ruminants was observed 21.9% at Cox's Bazar which is higher than the prevalence of badly bled skin in ruminants which is 4.3 % (Dey, et al. 1982).Inadequate bleeding of the animal at the time of slaughter results in coagulated blood remaining in blood vessels, visible on the flesh side of the skin. This defect particularly concerns calf skins (Dey, et al. 1982).

Badly shaped head: Occurrence of badly shaped head in ruminants was observed 12.5% at Cox's Bazar which is higher than the prevalence of badly shaped head in ruminants which is 3.45 % (Boden, et al. 2005). Irregular trimming of the hide at the head (Boden, et al. 2005).

Badly shaped shanks: Occurrence of badly shaped shanks in ruminants was observed 25% at Cox's Bazar which is higher than the prevalence of badly shaped shanks in ruminants which is 6.2 % (Elliot, et al. 1985).

Flay cut or scar mark: Occurrence of flay cuts in ruminants was observed 9.3% at Cox's Bazar which is higher than the prevalence of flay cuts in ruminants which is 1.8 % (Dey, et al. 1982). Cut produced on the hide or skin by a knife or a flaying appliance, cutting into dermis or skin substances without there being actual perforation (Dey, et al. 1982).

Gouge mark: Occurrence of gouge marks in ruminants was observed 6.2% at Cox's Bazar which is higher than the prevalence of gouge marks in marks which is 2.1 % (Elliot, et al. 1985). Thinning of the hide or skin caused by a knife, a flaying appliances, or a fleshing machine without there being actual perforation (Elliot, et al. 1985).

Poor pattern: Occurrence of poor pattern in ruminants was observed 9.3% at Cox's Bazar which is higher than the prevalence of poor pattern in ruminants which is 4.7 % (Elliot, et al. 1985). Irregular shape of the hide and skin.

 Abrasions: Occurrence of abrasions in ruminants was observed 43.7% at Cox's Bazar which is higher than the prevalence of abrasions in ruminants which is 7.2% (Solomon, et al. 2011).

Limitation:

Sample size was very small and period of time was very short.

Conclusion

It is not realistic to expect animal hides and skins to be perfect and defects are always almost present to some extent. Such defects causes depreciations in the value of the hides and skins and consequences is that farmers, traders and the tanning industry suffer considerable financial losses. We found pre-slaughter defects to be more common than post slaughter defects. To improve the quality of hides and skins, animal health service delivery needs to be strengthened and there is a need for effective strategic planning, monitoring and assessment of diseases control programs. Awareness build up, training and increased collaborations among the Bureaus of agriculture, international and regional organizations, research institutions and Bangladesh Leather Associations can address unnecessary losses in the leather industry.

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I am Saddam Hossain, son of Mr. Abu Siddik and Mrs. Mobassara Begum. I am native to Coxs bazar. I have completed my secondary (2009) and higher secondary (2011) education from Chittagong successfully. Then I got myself admitted in Doctor of Veterinary Medicine Course under Chittagong Veterinary and Animal Sciences University. During my internship Programme I got a short time research on defects of hides and skins and its impacts on national economy in Bangladesh. I believe all these will be helpful in progress of my career in future.