

Effect of Tick Infestation on Quality of Leather

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Abstract

India is the world largest livestock holding country. It stands 1st in buffalo population and second in goat population. It contains world's 21% and 11% of large and small animal's population respectively. Today many animals in India are reared primarily for the meat, milk and leather products. But many indigenous dairy breeds are either low milk yielders or dry cows thus giving low returns to the farmers. Leather produced is also generally of poor quality due to tick infestation. Ticks in large numbers are found on the back and flanks of cattle. They make many small scars in the skin and when the skin is processed for leather, blemishes appear thus reducing the value of leather. Important tick's species such as *Amblyoma amaricanum*, *Boophilus spp*, *Ixodes spp*, *Rhipicephalus spp*, *Hyalomma spp*.etc are responsible for the skin or hide damage. Tick bite may damage host's skin at the site of attachment causing local injury, which may predispose it to secondary bacterial infection and at slaughter the value of hide and skin may be reduced. This affects the economy of the country terribly.

Key words: Cattle, Hide, Leather and Ticks.

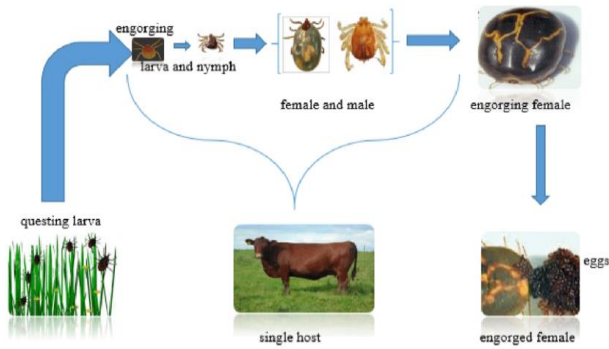
Introduction

Ticks are obligate, blood feeding ectoparasites of vertebrate, particularly mammals. Ticks transmit wide varieties of pathogenic microorganisms, protozoa, rickettsiae, spirochetes and viruses. When a tick feeds, a wound is created in the skin. This is usually a sterile abscess which heals to form a small scar thus degrading the quality of cow's hide which is crucial in manufacturing of leather product. Ticks in large numbers are found on the back and flanks of cattle. They make many small scars in the skin, so that when the skin is processed for leather, blemishes appear thus reducing the value of leather.

India is the world largest livestock holding country. It stands 1st in buffalo population and second in goat population. It contains world's 21% and 11% of large and small animal's population respectively. Today many animals in India are reared primarily for the meat, milk and leather products. Leather products available in the market are generally expensive and thus help farmers in fetching a good return for their finished goods. Therefore there has been an increasing emphasis on optimum utilization of available raw materials for maximizing export of leather goods. Since India is exporting much of the hide and skin to the other countries and if these are exported in

the form of finished goods it will help to boost country's economic growth.

Tick Life-Cycle



(South Africa journal of Animal Science, 2018)

Important Species of Ticks Responsible for Skin and Hide Damage

Amblyoma amaricanum:

These are three host ticks which parasitize a wide variety of mammalian host and reptiles. Immature stages of some species infest birds and can also play an important role in dispersing the ticks.

Boophilus:

These are one host ticks which cause considerable damage to hide/skin as their preferred feeding sites possess good leather potential.

Ixodes:

They have three host in their lifecycle and many species lives in nests and burrows, few Ixodes species parasitize larger mammals.

Rhipicephalus:

These are three host ticks and the adult one prefers to feed on the ears of its host.

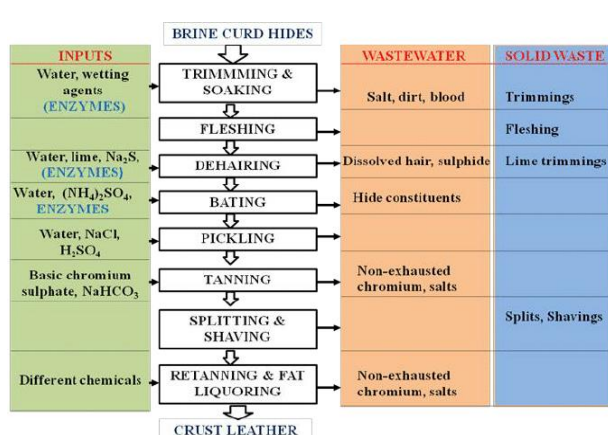
Hyalomma:

These ticks parasitize domestic/wild mammals and birds and are abundant in semi arid zones. These ticks actively run out from their resting sites when a host approaches.

Skin to Leather Conversion (Tanning)

(Ammare Gessesse et.al)

Tick infestation effects



Ticks directly or indirectly causes substantial financial loses to the livestock industry. Ticks bite may damage host's skin at site of attachment causing local injury, which may predispose it to secondary bacterial infestation. The lesions caused during feeding may predispose the skin to myiasis thus reducing the value of skin or hide at slaughter. A huge amount of foreign exchange earning was estimated to be lost from MESACO global tanner due to various skin defects.

Tick bites damage the hide and skin of ruminants. In ruminants tick infested results in inflammation of skin and hide thus degrading the quality of the skin. On histo-pathological examination, the damaged skin and hide reveals granuloma, collagen degeneration, eosinophilic folliculitis, pustule formation, dermal infiltration. On gross examination, the skin and hide of ruminants reveals crust and scab at the site of tick bite. These degrade the quality of leather and in turn affect the economy of the country.

At the site of tick bite focal dermal necrosis and haemorrhage is followed by an inflammatory response, often involving eosinophils, leading to a hypersensitivity reaction that causes sufficient damage to the hide and skin. Tick bite wound can be infected with *Staphylococcus* bacteria, causing local cutaneous abscesses or pyaemia

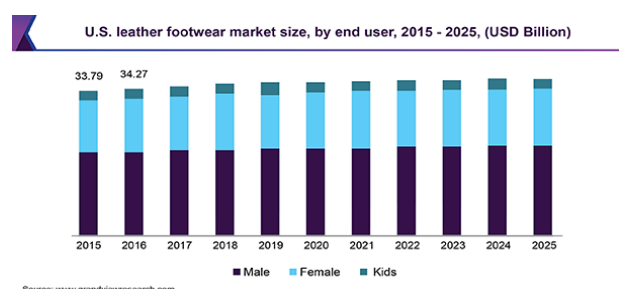
Heavy tick infestation can result in significant blood loss, reduced productivity, reduced weight gain, decreases the quality of leather production and can cause restlessness

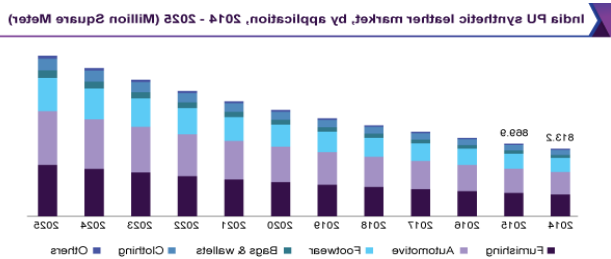
End Use of Leather and Share of Leather By Different Animals



It is estimated that leather made from all other animals = less than 0.5%

(International council of tanners)





When the milk production of cows in the dairy industry declines, their skin is made into leather. The hides of their calves, which are frequently raised for veal, are transformed into high-priced calf skin. The economic success of slaughter houses and dairy farms is directly linked to the sale of leather goods.

Most leather produced and sold in U.S. is made from the skins of cattle and calves, but leather is also made from sheep, lambs, goats, and pigs. Other species which are hunted and killed specifically for their skins includes zebras, bison, kangaroos, elephants, crocodiles, alligators, ostriches, lizards, and snakes.

What is the need to produce leather?

India is the world largest livestock holding country. It stands 1st in buffalo population and second in goat population. It contains world’s 21% and 11% of large and small animal’s population respectively. Today many animals are reared primarily for their meat. Abattoir is a facility where animals are slaughtered for consumption and by-products are processed for various utilisations. About 40 -45 % of the animal part is converted into edible product i.e. meat, 15% of the waste are converted into by-products such as leather, soaps, candles, and adhesives.

The hides of animal are the left over products of the meat industry. The skin and hides from the meat industry may create major pollution and environmental problem. This had led to the evolution of big leather tanneries for leather production. Leather industries are of great economic importance as they add value to the raw hides. Leather production does not encourage the killing of more animals rather it makes sure that no part of the animal is wasted. Therefore there has been an increasing emphasis on optimum utilization of available raw materials for maximizing export of leather goods.

Control And Treatment for Ticks

Acaricides are the pesticides that can be used to kill the ticks. Ascaricides include chlorinated hydrocarbons, organo-phosphorus

(OP) compounds, carbamates, pyrethroids, formamidines and ivermectins. The pyrethroids are the safest and most effective pesticides and are now widely used for tick control. One of the simplest method used to recover ticks from Pasteur is to drag a blanket over the ground to which unfed tick become attached. Traditional methods, such as a burning of pastures can be practiced during the dry period before monsoon, when ticks are inactive.

Currently there are various preparations available for control of ticks in cattle on the basis of route of application.

1. Dip and Spray formulation
2. Pour-on formulation
3. Use of Endectosides
4. Herbal preparations

Reference

Abunna, F., Tura, J., & Regassa, A. (2012). Status of Tick Infestation in Small Ruminants of Bedelle District, Oromia Region. *Ethiop. Glob. Vet.*, 8(5), 459-462.

Jongejan, F., & Uilenberg, G. (2004). The global importance of ticks. *Parasitology*, 129(S1), S3-S14.

Latif, A. A., Bakheit, M. A., Mohamed, A. E., & Zwegarth, E. (2004). High infection rates of the tick *Hyalomma anatolicum anatolicum* with *Trypanosoma theileri*. *Onderstepoort Journal of Veterinary Research*, 71(4), 251-256.

Mullen, G. R., & Durden, L. A. (Eds.). (2009). *Medical and veterinary entomology*. Academic press.

Taylor, M. A., Coop, R. L., & Wall, R. L. (2015). *Veterinary parasitology*. John Wiley & Sons.

Wall, R., & Shearer, D. (2001). Ticks (Acari). Ch 3. *Veterinary ectoparasites: biology, pathology, and control*. 2nd ed. Oxford: Blackwell Science. p, 55-82.