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Ectoparasitic Infestation of Cattle in India- A Review

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Abstract: Most of the cattle in India are prone to infestation with various ectoparasitic agents, such as insects, ticks, mites etc. These contribute a great loss on health as well as in production. Ectoparasitic infestation management in cattle has been an important issue to enhance the production. A review of common ectoparasitic infestation is presented in this article so that an integrated approach can be developed to manage cattle ectoparasite in a suitable manner.

Keywords: Cattle, Ectoparasite, Flies, Infestation, Myiasis, Ticks, Mites

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Introduction

Maximum population of cattle worldwide are heavily infested with variable ectoparasites mainly insects, ticks, mites, larvae of flies etc. The infestation cause decline in health as well as in production of food also (Wall *et al*., 2001). Every ectoparasite has unique characteristics and property, however, characteristics of farming system also influences the infestation frequency. Therefore, farmers must be trained for healthy practices for cattle herds. Biosecurity is also a practice used to avoid introduction of ectoparasites into cattle herd. There are different methods and techniques used to eradicate ectoparasites such as veterinary drugs, biological methods and mechanical methods. But there are also some side-effects of intense use of ectoparasiticides which develops resistance in ectoparasites. Therefore, different methods are used in combination for sustainable cattle ectoparasite management (Leon *et al*., 2020).

Common cattle ectoparasites

Different dipteran species (two winged insects) act as ectoparasites, they bite to feed on blood of cattle (haematophagous) and cause problem to the animals. During the adult stage, some flies cause myiasis (larvae invade living soft tissue). A brief review of common active flies affecting health of cattle and production is presented in this article.

Buffalo flies:

Haematobia exigua or *Haematobia irritans* are commonly called as buffalo flies and horn flies.

These flies are cosmopolitan blood feeding ectoparasites. Generally adult individual spent maximum life on host and congregate on the shoulders and back of cattle. During high temperature the adult shift under belly. Larvae of these flies breed on dunk pats and warmer months are suitable for development of these larvae. These flies are also vectors of other bacteria causing mastitis. In India the impact of *Hematobia* fly was studied in Namakkal district of Tamil Nadu during December 2019. The flies avoidance activities includes tail and ear flicks, head throws, skin twitches and leg stamps, all these activities are higher in evening than morning. It has also been observed that dark skin coloured animals are more frequently infested than light skin colour animals (Anbarasi *et al*., 2021).

Black flies:

The larvae of black flies *Simulium* (of the family Simulidae) develop in the presence of flowing water. Cattle health as well as productivity has also been highly affected by attack of these flies. These flies are so much harmful that animal can die due to severe blood loss. Not only larva but females of these black flies feed on blood of cattle at the expose body parts. Black flies feed on cattle like buffalo, sheep, goats etc. These flies not only bite but also transmit various diseases such as river blindness. From the attack of swarms of black flies ruminants should be provided shelter. However, in heavy infestation, which cause simuliotoxicosis, spraying of ectoparasiticide is preferred (Veer, 2022).

Tabanids:

Tabanidae is the family of flies which includes horse flies of the genera *Tabanus*. The development of larvae takes place in aquatic and semi-aquatic environment where these larvae prey on other insects. The female of this family is haematophagous; these have cutting lapping mouthparts through which these cause painful bites to feed on blood. Fly infestation result in detrimental effects on behavior, health, productivity and daily activity of dairy animals by causing pain and irritation during biting. To control these flies trap method and ectoparasiticide can be used, however, large population of tabanid flies need efficient mechanical vectors of pathogen (Metri *et al*., 2020).

Biting midges:

Biting midges are of very small size belonging to family Ceratopoginidae which are also considered to cause economic loss due to impact on cattle health. Haematophagous female feed on blood by their mouth parts that lacerate the skin. Eggs are laid by females in semiaquatic or aquatic environment. Adults are minute and difficult to identify. These not only cause painful bite but also transmit blue tongue and epizootic hemorrhagic disease viruses. To control biting midges ectoparaciticide treatment as well as prevention of breeding sites are effective ways (Ilango, 2006).

Sand flies:

Several species of *Lutzomyia* and *Phlebotomus* are ectoparasites of cattle in different parts of India. Adult is greater than 5 mm in length and have hairy wings. Female will suck blood from cattle which result in skin irritation. It is important to protect the cattle from biting of sand flies because feeding of sand flies can distress cattle and leads to decrease production. Ectoparaciticides can be used to control sand flies. In India visceral leishmaniasis has been observed in cattle which is caused and transmitted by the biting of infected *Phlebotomus argentipes* (Poche *et al*., 2020).

Myiasis causing flies:

The infestation of immature stage (by maggot) of different fly species that feed on tissues to complete life cycle is called myiasis. Generally flies belonging to the family Muscidae, Sarcophagidae, Calliphoridae and Oestridae are most damaging. These flies do not bite but lay their eggs on wounds in cattle, produced by common farm practices such as dehorning; castration etc. From eggs larvae develops which feed on flesh of cattle. These flies not only infest cattle but humans are also affected. When myiasis is left untreated it

results in mortality of cattle. In India goat, sheep, cow, buffalo and bull have been infested by larvae. The most frequently infested body parts include peri-anal region, fractured horn, neck, tail base among males and vulvar lips, hooves, fractured horn, neck among females (Chabbra and Pathak, 2009; Singh and Singh, 2016).

Lice:

Lice belong to order Phthiraptera. These are of very small size 2.5 to 3 mm, these have dorsoventrally flattened body. These have sucking and chewing mouthpart. *Bovicola bovis* is commonly known as cattle biting louse, it complete all the stages of its life cycle on the host. These are abundant in summer; heavy louse infestation causes itching and cause severe anaemia. Ectoparaciticides can be used to control lice (Sonule *et al*., 2011).

Ticks:

Ticks are close relative of mites and they are larger in size also. These belong to Arachnid subclass. These even attached at the bite side for days to feed on blood of host. Besides having direct effect on host, ticks are also vectors of pathogens including protozoa, bacteria and viruses. Mated adult females drop off the host to lay their eggs on the ground where they develop. Ectoparaciticides can be used to control ticks (Patolia *et al*., 2022).

Conclusion

Different group of Arthropods cause severe loss to the cattle. Ectoparasites affect health of cattle by taking or obtaining nutrients from cattle and completing their life cycle in them. Different dipteran insects and flies, lice, ticks are the most important cattle ectoparasite. Different ecto-parasites have different ecology, therefore, different veterinary drugs, mechanical, biological and genetic methods have been used to manage ectoparasites. Significant amount of parasiticide are used to control ectoparasite of livestock or cattle, therefore, these ectoparasite develop resistance making control very difficult. Hence, there should be an alternative to paraciticides so that suitable control method can be used for sustainable ectoparasite management.

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