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Prevalence of Ectoparasite in livestock and their effect

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Abstract

The majority of Indian farmers use a mixed farming system, which combines crop and animal husbandry. Domesticated animals like cows and buffaloes give the owners a steady source of income, individuals via the selling of milk. Ticks and flies, or ectoparasites, cause serious harm to numerous vertebrates, including domestic animals like cows, which causes weakness and anemia disruption or even the host animal's demise. Invertebrates like flies, ticks, mites, and lice need the skin of their hosts to grow, multiply, and survive. The current review will be intended to study different ectoparasites from the town and rural areas, their impact on livestock, and their management measures in India. This review will help to study the intensity of the infestation caused by ectoparasites. This review will also study the efficacy of different control measures (Cultural, Chemical, physical and biological methods) to protect livestock from ectoparasitic infestation.

Key words:- cow, livestock, mites, myiasis, ticks

Introduction

The core of the Indian economy is agriculture. The largest industry is cattle breeding in agriculture. The Ministry of Farmers' Welfare and Agriculture, According to an annual report (2020–21) released by the Indian government, roughly 57.8 percent of its rural residents still rely heavily, either directly or indirectly, on agriculture, and its related industries like the breeding of cattle. The majority of Indian farmers engage in mixed farming system that combines the husbandry of crops and animals. Another important source of income is cows. Since its milk is a source of food. The livestock census indicates that the quantity of cows in the roughly 192.49 million people live in the nation. The people get a steady income from domestic animals like cows and buffaloes, by means of milk sales. Ticks and flies, which are ectoparasites, cause serious harm to numerous vertebrates, including domestic animals like cows, which cause weakness and anemia disruption or even the host animal's demise. Other domestic animals, such as cows, are more susceptible to ectoparasite attacks from flies and ticks. Utilizing control is essential and steps to shield animals from ectoparasite attacks because ectoparasites are neglected ultimately have an impact on domestic animal health, which lowers livestock revenue defenders. Ticks, flies, mites, and lice are examples of ectoparasites that live on host skin in order to grow and multiply and enduring life.

Ticks and flies are more common ectoparasites in the different areas of India due to a lack of knowledge, unsanitary habits, inadequate and poor veterinary care, inadequate preventative tactics, and ideal weather conditions for the ectoparasite growth. An infestation of ectoparasitic insects (flies and ticks) presents a significant risk to health and upkeep of live animals. As stated by Kilic and Altunsoy (Altunsoy et al., 2012), weight Cattle gains could be lowered by 0.1 kg per day if they are consistently attacked by roughly 65 insects that feed on blood. Therefore, it is imperative to take decisive action to stop cattle from the fly and tick assault. The majority of cattle populations globally are heavily infested with a variety of ectoparasites, primarily insects, ticks, mites, fly larvae, etc. Both the production of food and health declined as a result of the infestation (Wall et al. 2001). Each ectoparasite has distinct qualities and traits, but the farming system's features also affect how frequently an infestation occurs. For this reason, farmers need to receive training on good cattle

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herd management techniques. Another method used to prevent the introduction of ectoparasites into the herd of cattle is biosecurity. Ectoparasites can be eliminated using a variety of strategies and tactics, including mechanical, biological, and veterinary medication approaches. However, frequent application of ectoparasiticides can have certain negative effects, such as ectoparasite resistance. As a result, various techniques are combined to manage cattle ectoparasites sustainably (Leon et al. 2020).

Common Cattle Ectoparasites- As ectoparasites, various dipteran species—two-winged insects—bite cattle to feed on their blood, causing problems for the animals in the process. Some flies cause myiasis (larvae invading living soft tissue) in the adult stage. This article provides a brief overview of common active flies that have an impact on cattle health and productivity:-

Black Flies

In the presence of flowing water, the larvae of the Simulium species of black flies (Simulidae family) develop. These flies' attack has had a significant negative impact on both the productivity and health of the cattle. These flies can cause such severe blood loss in animals that they can be fatal. These black flies' females also consume cattle blood at their exposed body parts, in addition to their larvae. Black flies consume cattle, including sheep, goats, and buffalo. In addition to biting, these flies can spread diseases like river blindness. Ruminants should be protected from black fly swarms by providing them with cover. Nonetheless, ectoparasiticide spraying is recommended in cases of severe infestation that result in simuliotoxicosis (Veer 2022).

Tabanids

The family of flies known as Tabanidae is comprised of horse flies belonging to the Tabanus genera. Larvae develop in environments that are semi-aquatic or aquatic, where they feed on other insects. The female member of this family is hemophagous; she bites people in order to obtain blood through her sharp, lapped mouthparts. Dairy animals that are infested with flies experience pain and irritation from their bites, which negatively impacts their behavior, health, productivity, and everyday activities. Ectoparasiticide and the trap method can be used to control these flies, but effective mechanical pathogen vectors are required for large populations of tabanid flies (Metri et al. 2020).

Biting Midges

Because they have an adverse effect on the health of cattle, biting midges, which are extremely tiny members of the Ceratopoginidae family, are also thought to cause financial loss. Female hemophagous insects consume blood through skin-piercing mouthparts. Females in aquatic or semiaquatic environments lay their eggs. Adults are tiny and challenging to recognize. These not only bite painfully but also spread the viruses that cause epizootic hemorrhagic disease and blue tongue. Effective methods of controlling biting midges include treating them with ectoparaciticide and preventing breeding sites (Ilango 2006).

Sand Flies

In various regions of India, cattle are ectoparasites to several species of Lutzomyia and Phlebotomus. Adults have hairy wings and measure more than 5 millimeters in length. Females will suck cattle blood, which irritates their skin. Since feeding sand flies can upset cattle and reduce productivity, it is crucial to protect the cattle from being bitten by these insects. Sand flies can be managed with the use of ecoparaciticides. Cattle in India have been reported to have visceral leishmaniasis, which is contracted by biting an infected Phlebotomus argentipes (Poche et al. 2020).

Myiasis Causing flies

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Myiasis is the term for the infestation of immature stages (by maggots) of various fly species that consume tissues to finish their life cycle. The most harmful flies are typically those in the Muscidae, Sarcophagidae, Calliphoridae, and Oestridae families. This family of flies does not bite; instead, they lay their eggs on wounds in cattle caused by routine agricultural procedures like castration, dehorning, etc. The eggs hatch into larvae that consume the flesh of the cattle. These flies not only afflict cattle but also people. In cattle, myiasis causes death if treatment is not received. Larvae have infested goats, sheep, cows, buffaloes, and bulls in India. According to Chabbra and Pathak (2009) and Singh and Singh (2016), the most commonly infected body parts are the perianal region, fractured horn, neck, and tail base in males and the vulvar lips, hooves, and neck in females.

Lice

The order Phthiraptera includes lice. These have a dorsoventrally flattened body and are incredibly small, measuring only 2.5 to 3 mm. They have mouthparts for chewing and sucking. Known by most as the cattle biting louse, Bovicola bovis completes all stages of its life cycle on the host. These are common in the summer and can cause severe anemia and itching due to heavy louse infestation. Lice can be managed with ectoparaciticides (Sonule et al. 2011).

Ticks

Ticks are larger than mites and are closely related to them. They are a part of the subclass Arachnids. To feed on the host's blood, these even stayed attached for days at the bite site. In addition to directly affecting their hosts, ticks can carry bacteria, viruses, and protozoa as well as act as pathogen vectors. Adult females who have mated abandon their host to deposit their eggs on the ground, where they hatch. Ectoparaciticides can be used to control ticks (Patolia el al. 2022).

Conclusion- A distinct group of arthropods seriously harms cattle. Because they complete their life cycle in cattle and take nutrients from them, ectoparasites have an impact on cattle health. Ticks, lice, and various other dipteran insects are the most significant ectoparasites for cattle. Since the ecology of each ectoparasite varies, various veterinary medications as well as mechanical, biological, and genetic techniques have been employed to manage ectoparasites. Since a large amount of parasiticide is used to control the ectoparasite of cattle or livestock, these ectoparasites become resistant, making control extremely challenging. Therefore, there needs to be a substitute for parasiticides so that an appropriate control strategy for long-term ectoparasite management can be implemented.

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