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Popular Article

## Common Ticks of Bovine in Odisha

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### Abstract

Tick infestation is a common problem affecting cattle in Odisha and causes major economic and health losses. The most prevalent species are *Rhipicephalus (Boophilus) microplus* and *Hyalomma anatolicum anatolicum*. These ticks reduce productivity by causing blood loss, skin damage, and transmission of various diseases. This article highlights their prevalence, identification, effects on cattle, and important control measures used for their management.

### Introduction

Approximately 80% of cattle worldwide are affected by ticks and tick-borne pathogens, which are extensively distributed, particularly in tropical and subtropical areas (Dehuri et al., 2017). Tick infestation is a common problem in cattle and is a major issue in their milk production, health and fertility status (Patra et al., 2010).

Ticks hold the second position after mosquitoes in transmitting diseases and are capable to spread a broad spectrum of pathogens like bacteria, viruses, protozoa, and rickettsial organisms (Deepika and Dehuri, 2024).‘

### Prevalence

The distribution and intensity of tick infestation differ with seasons, geographic areas, vegetation types, habitat conditions, and the age of animals. The most prevalent ticks in Odisha are *Rhipicephalus (Boophilus) microplus* and *Hyalomma anatolicum anatolicum* (Dehuri et al., 2017). Tick infestation persists year-round, but peaks during hot and humid seasons (Latha et al., 2004).

### Identification

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Being the most prevalent ticks of cattle in Odisha both *Rhipicephalus (Boophilus) microplus* and *Hyalomma anatolicum anatolicum* can be distinguished from each other by their morphological characters.

***Rhipicephalus (Boophilus) microplus***: This tick has a short and straight capitulum (brevirostrate) with an inornate body and no festoons. Coxa I bears small paired spurs, the basis capituli is hexagonal, and the spiracular plate is oval in shape. Males are much smaller than females. **Dorsal view**: In males, the body is nearly oval with distinct cornua and clearly visible caudal appendages, while festoons are absent. In females, the body appears almost square-shaped, and the scutum is restricted to the anterior region only. **Ventral view**: Males possess distinct adanal and accessory shields along with a narrow caudal appendage. In females, the posterior margin of the genital aperture is characteristically U-shaped (Patel et al., 2024).



**Fig 1.** Dorsal (Left) and Ventral (right) view of *Rhipicephalus microplus*. (A) Female tick (adult), (B) Male tick (adult). (Source : Jiao Xu et al., 2023)

***Hyalomma anatolicum anatolicum***: This tick has elongated body with long mouthparts (longirostrate). The basis capituli is broadly hexagonal, and pale ring-like markings are present on the legs. It also shows distinct convex eyes, festoons and comma-shaped spiracles. Coxa I bears large internal and external spurs, while the anal groove lies behind the anus. **Dorsal view**: In males, the conscutum is convex with light punctations. The lateral grooves are short, and a distinct postero-median groove is present, which does not extend up to the parma. In females, the posterior margin of the scutum is smooth, and the scapular grooves extend to the posterior border of the scutum. **Ventral view**: In males, adanal, accessory adanal, and sub-anal shields are present. The small sub-anal shield lies directly behind the adanal shield. The adanal shields are parallel to each other. In females, the genital operculum appears bulged, small, knob-like, and circular in shape (Patel et al., 2024).





**Fig 2.** Adult male and female (engorged) *Hyalomma anatolicum* (Source: Frédéric Stachurski et al., 2018)

### Effect on host

Ticks harm the host through their bites and make them more vulnerable to attacks by blowflies, screw-worm flies, and other biting flies. They suck large amount of blood from cattle. A female tick may suck up to 0.5 to 2.0 ml of blood in a day. This may lead to anaemia. They also transmit different protozoan, bacterial, rickettsial diseases. They also cause tick paralysis due to release of toxins. Secondary complications of tick infestation include local infections, suppurative (pus-forming) lesions, and pyaemia, as observed in lambs (Bhatia et al., 2022).

### Collection and preservation

Ticks can be found on different parts of the animal's body. Before removing them, apply chloroform locally to desensitize them, and then can be collected gently with forceps without damaging their mouthparts. Following collection, ticks are fixed in 70% alcohol and then subsequently preserved in 70% glycerinated alcohol (Sethy, 2016). It is then labelled denoting the host, centre of collection, site of infestation, date of collection and sample number (Mishra et al., 2016).

### Control and Treatment

Different types of acaricides and insecticides can be used for control. Dipping the animal in a tank containing different aqueous solutions, suspensions and emulsions also practiced. Burning tick-affected pastures is an effective way to kill many larvae and other stages of ticks (Soulsby et al., 1982). Biological control of ticks is also possible by exposure of certain hymenopteran insects like *Hunterellus hookeri* and *Ixodiphagus* spp. that feed on the nymphs of the ticks. Recombinant vaccines like Gacac<sup>TM</sup> have been also used to control tick infestation (Bhatia et al., 2022).



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