



Blood Protozoa and Its Effect on Income of Animal Owners

*Pankaj Yadav, Dr. Sarjna Meena, Dr. S.K. Rewani, Dr. Subhash Chand,
Dr. Ashok Baidha, Neeraj Jangir and Vijay Kumar Meena

Post Graduate Institute of Veterinary Education and Research (PGIVER),
Jaipur, Rajasthan, India

*Corresponding Author's email: pyada4974@gmail.com

Blood protozoan diseases are among the most important haemoparasitic infections affecting livestock worldwide, particularly in tropical countries like India. These diseases are mainly transmitted through ticks and biting flies and include babesiosis, theileriosis, trypanosomiasis and anaplasmosis. Infection leads to anemia, fever, weight loss, reduced milk production, infertility and mortality, resulting in significant economic losses to livestock owners. The present article reviews major blood protozoan diseases, their clinical manifestations based on ICAR veterinary medicine references and their direct and indirect impact on farmers' income. Effective prevention through vector control, early diagnosis and improved management practices is essential for sustainable livestock production.

Keywords: Blood protozoa, livestock economy, income loss, tick-borne diseases.

Introduction

Livestock contributes significantly to rural livelihoods by providing milk, meat, manure, and draft power. However, haemoprotozoan diseases remain a major constraint to profitable animal husbandry. Blood protozoa invade red blood cells or lymphocytes, causing systemic illness and production losses.

In tropical climates, vector populations remain active throughout the year, increasing disease prevalence and economic burden on animal owners.

Major Blood Protozoan Diseases

Babesiosis

Etiology

Caused by *Babesia bigemina* and *Babesia bovis* transmitted by ticks.

Clinical Signs (ICAR Medicine)

- High fever (40–41°C)
- Hemolytic anemia
- Hemoglobinuria (red urine)
- Pale or icteric mucous membrane
- Tachycardia and weakness
- Sudden fall in milk yield
- Nervous signs (severe cases)

Economic Importance

- Reduced dairy productivity
- Mortality losses
- High treatment expenses

Theileriosis



Nasal discharge, drooling



Unable to rise

Etiology

Theileria annulata affecting mainly crossbred cattle.

Clinical Signs

- Persistent fever
- Enlargement of lymph nodes
- Severe anemia
- Lacrimation and nasal discharge
- Dyspnea
- Progressive emaciation
- Reduced milk production

Economic Impact

- High mortality of exotic breeds
- Loss of high genetic value animals
- Reduced reproductive efficiency

Trypanosomiasis



Etiology

Trypanosoma evansi transmitted by biting flies.

Clinical Signs

- Intermittent fever
- Progressive anemia
- Edema of brisket and limbs
- Weight loss
- Weakness and lethargy
- Abortion and infertility
- Nervous signs (chronic stage)

Economic Impact

- Reduced work capacity
- Poor growth rate
- Increased veterinary cost

Anaplasmosis**Etiology**

Anaplasma marginale (haemoparasitic disease included in ICAR medicine).

Clinical Signs

- Progressive anemia
- Jaundice
- Weakness
- Reduced feed intake
- Milk yield decline
- Abortion in pregnant animals

Economic Impact

- Long recovery period
- Productivity loss
- Treatment and management cost

Effect on Income of Animal Owners**Direct Economic Losses**

- Reduction in milk production
- Mortality of livestock
- Treatment and drug expenditure
- Loss of body weight and meat value

Indirect Economic Losses

- Infertility and delayed breeding
- Increased labour requirement
- Reduced draft power
- Market value reduction

Prevention and Control Measures (ICAR Recommendations)

- Regular tick and fly control programs
- Strategic use of acaricides
- Early diagnosis through blood smear examination
- Isolation of infected animals
- Balanced nutrition and stress reduction
- Prophylactic treatment in endemic areas

Conclusion

Blood protozoan diseases significantly affect livestock productivity and farmer income, especially in tropical regions. Proper disease surveillance, vector control, and timely veterinary intervention are essential to minimize economic losses and ensure sustainable livestock farming.

References

1. Radostits, O.M. et al. (2010). *Veterinary Medicine: A Textbook of Diseases of Cattle, Sheep, Goats and Horses*. Saunders Elsevier.
2. ICAR (2013). *Handbook of Veterinary Medicine*. Indian Council of Agricultural Research, New Delhi.
3. Soulsby, E.J.L. (1982). *Helminths, Arthropods and Protozoa of Domesticated Animals*. Bailliere Tindall.
4. Taylor, M.A., Coop, R.L., & Wall, R.L. (2016). *Veterinary Parasitology*. Wiley-Blackwell.
5. Kumar, A. & Maharana, B.R. (2012). Epidemiology of bovine theileriosis in India. *Veterinary World*, 5(3): 180-184.
6. Singh, H. et al. (2014). Economic impact of tick-borne diseases in dairy cattle. *Indian Journal of Animal Sciences*, 84(6): 635-640.
7. Sharma, A. et al. (2015). Prevalence of haemoprotozoan diseases in cattle. *Journal of Parasitic Diseases*, 39(3): 456-460.
8. OIE (World Organisation for Animal Health) (2019). *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*.
9. ICAR-IVRI Annual Report (2020). Haemoparasitic disease management strategies in livestock.
10. Dantas-Torres, F. (2010). Biology and control of tick-borne protozoan diseases. *Parasites & Vectors*, 3: 70.