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Fascioliasis in Cattle

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Fasciolosis in Cattle: A Growing Concern for Farmers:

Fasciolosis, commonly known as liver fluke disease, is a parasitic infection that has plagued cattle herds for decades. It caused primarily by *Fasciola hepatica* and *Fasciola gigantica* and remains a major health concern for livestock farmers worldwide. This liver fluke infection leads to significant economic losses due to reduced milk production, poor weight gain, liver condemnation at slaughter, and increased susceptibility to secondary infections. Clinical signs in infected cattle include chronic diarrhoea, anaemia, bottle jaw (submandibular edema), and general weakness.

The disease thrives in areas with wet, marshy pastures and poor drainage, where the intermediate host freshwater snails proliferate. Besides cattle, fasciolosis can also affect sheep, goats, and in rare cases, humans. Effective control relies on timely diagnosis through faecal examinations and liver function tests, combined with strategic deworming and improved pasture management. With rising incidence in endemic regions, fasciolosis continues to threaten livestock health and farm profitability, making farmer awareness and intervention more crucial than ever.

What is Fasciolosis?

Fasciolosis is a parasitic disease caused by the liver fluke *Fasciola hepatica*, a trematode that primarily infects the liver and bile ducts of cattle. The parasite thrives in wet, marshy environments, particularly in areas with high rainfall or poor drainage, where it's intermediate host freshwater snails can flourish. Infection occurs when animals ingest metacercariae (infective larvae) attached to vegetation or present in contaminated water. Once inside the host, the immature flukes migrate through the liver tissue, causing inflammation, necrosis, and fibrosis. Over time, this leads to extensive liver damage and disruption of bile flow.

If left unchecked, fasciolosis can result in significant health issues such as chronic weight loss, anaemia, reduced milk production, bottle jaw (edema), and even death in severe cases. The

disease not only compromises animal welfare but also imposes serious economic losses on farmers due to decreased productivity and liver condemnation at slaughter. Fasciolosis is also a zoonotic disease, occasionally affecting humans, which makes it a concern for both veterinary and public health sectors. Early diagnosis and effective control strategies, including targeted deworming and pasture management, are essential to prevent its spread and impact.

Why Should Farmers Care?

Fasciolosis directly affects cattle health, leading to poor growth, reduced milk yield, and increased treatment costs. Liver damage caused by the parasite results in economic losses due to condemned organs at slaughter and lower market value of affected animals. If not detected early, the disease can silently spread across herds. For farmers, timely prevention, and control of fasciolosis are essential to protect animal welfare, sustain farm productivity, and ensure long-term profitability (Fig.1).

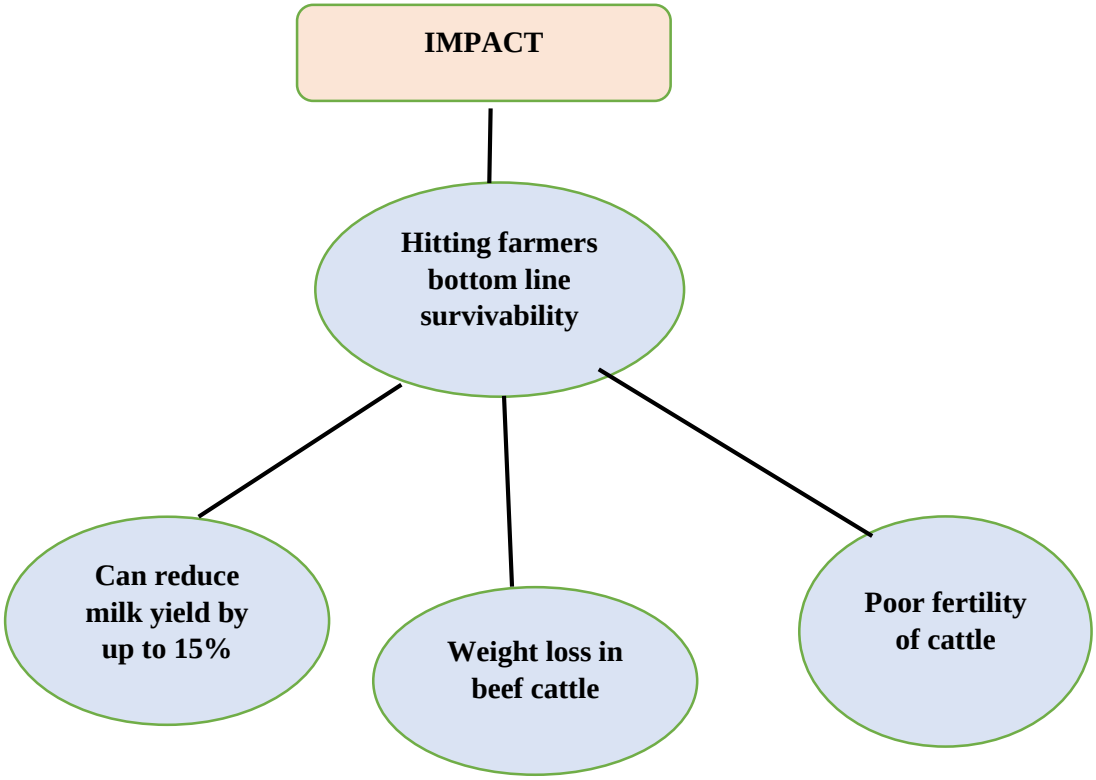

Fig.1: Effects on animals

LIFE CYCLE

The life cycle of *Fasciola hepatica* involves two hosts: freshwater snails (intermediate host) and cattle (definitive host). Eggs from infected cattle are passed in feces, hatch into larvae in water, and infect snails. Inside the snail, they develop into cercariae, which are released and encyst on vegetation as metacercariae. Cattle ingest these while grazing and the flukes migrate to the liver to mature and complete the life cycle (Fig.2).

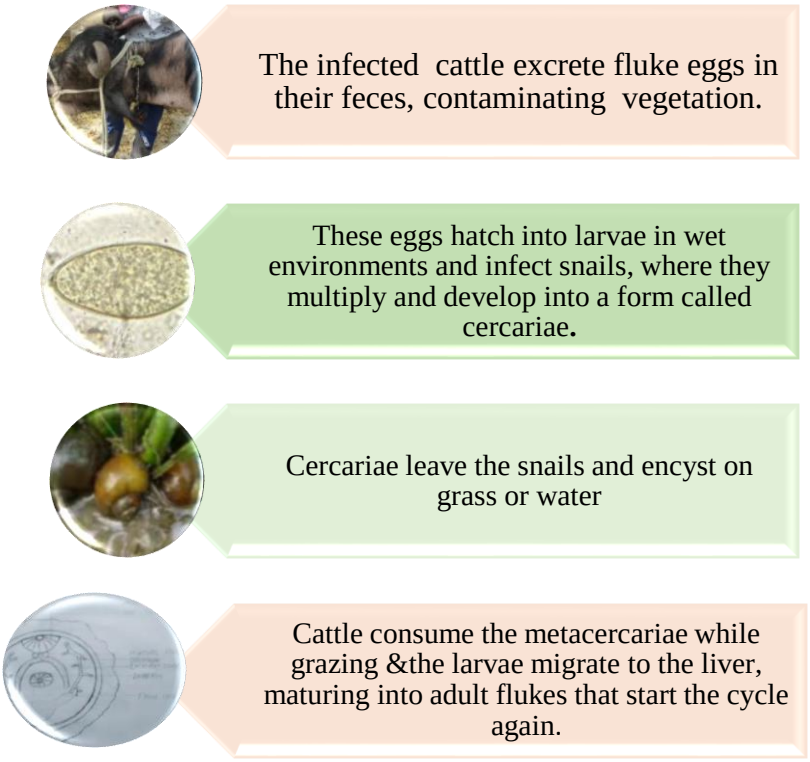

Fig.2: General Life cycle

CLINICAL SIGNS

Fasciolosis often develops gradually, making early detection challenging. However, recognizing the signs is crucial to prevent severe outcomes. Common clinical signs include (Fig.3):

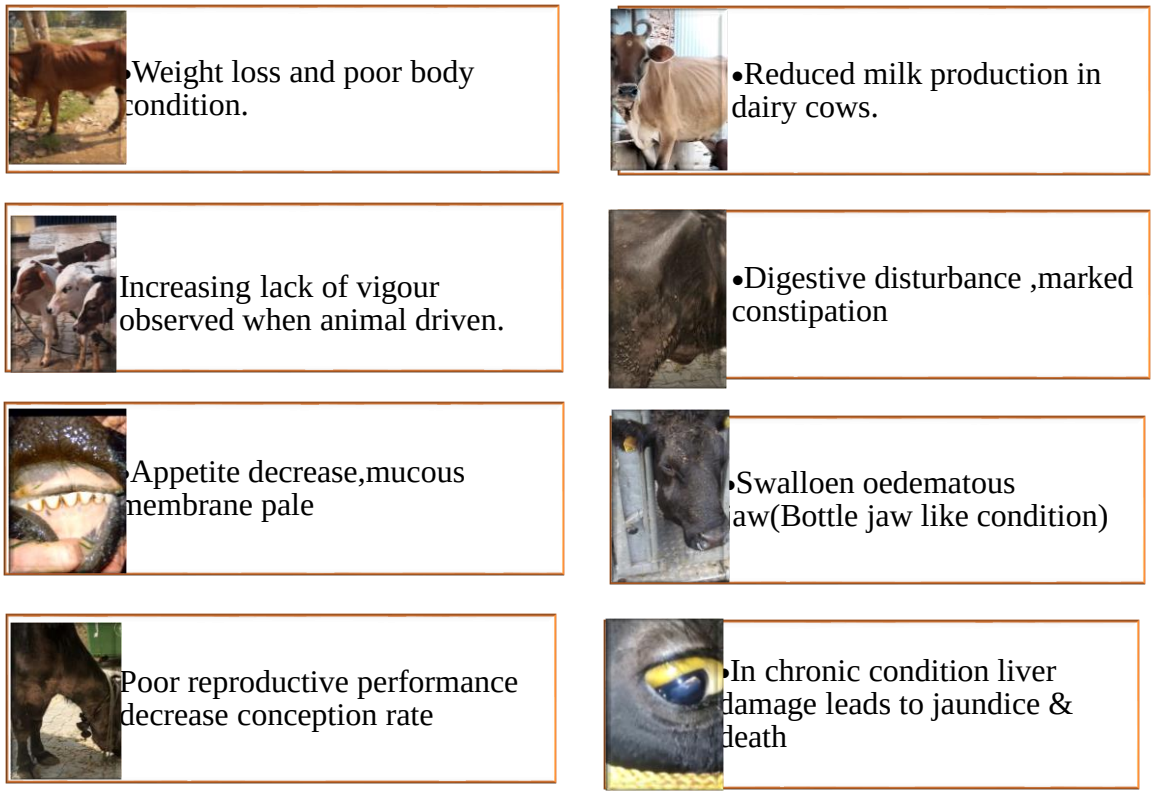

Fig.3: Common clinical signs

Diagnosis

1. Clinical Signs:

- Observe for progressive weight loss, decreased milk production, lethargy, anemia, jaundice, and submandibular edema (bottle jaw).

2. History and Epidemiology:

- Assess grazing history, especially in wet or marshy pastures where **snail intermediate hosts** (*e.g., Lymnaea spp.*) are present.
- Consider seasonal patterns, particularly in high-rainfall periods.

3. Faecal Examination:

- Detect *Fasciola* eggs using sedimentation or flotation techniques.
- Eggs are typically large, yellow-brown, and operculated.

4. Serological Tests:

- ELISA can be used to detect antibodies against *Fasciola hepatica*, indicating exposure or active infection.

5. Haematology and Biochemistry:

- Common findings include:
  - Eosinophilia
  - Anemia
  - Hypoalbuminemia
  - Elevated liver enzymes (GGT, AST)
  - Hyperbilirubinemia

6. Post-Mortem Examination:

- Identification of adult flukes in bile ducts
- Liver fibrosis or calcification of bile ducts

7. Imaging:

- Ultrasonography may reveal liver lesions or bile duct abnormalities in advanced infections.

8. Herd Monitoring:

- Screening of bulk tank milk or serum for *Fasciola* antibodies helps assess herd-level prevalence.

9. Environmental Assessment:

- Confirm the presence of snail habitats in grazing areas to support a diagnosis.

Treatment

- **Triclabendazole** is the drug of choice due to its efficacy against both **immature and mature flukes**.
- Other effective anthelmintics include:
  - **Closantel**
  - **Rafoxanide**
  - **Nitroxinil**
  - **Albendazole**
  - **Oxyclozanide**

Note: Proper dosing, strategic deworming, and monitoring drug resistance are essential for effective treatment and long-term control.

Prevention and Control of Fasciolosis

1. Strategic Deworming

- Administer flukicides such as **triclabendazole** and **albendazole** based on regional epidemiological data.
- Target both **immature and mature flukes**, and **rotate anthelmintics** periodically to delay the development of drug resistance.

2. Farmer Awareness

- Conduct training programs through **Krishi Vigyan Kendras (KVKs)** and **veterinary extension services**.
- Educate farmers about the **life cycle of fasciolosis**, the role of **snails as intermediate hosts**, and the importance of **timely treatment** and **pasture hygiene**.

3. Nutritional Support

- Provide **protein-rich supplements** such as **oilseed cakes** during monsoon months to support immunity.
- Good nutrition helps animals better resist infection and recover faster, especially in **resource-limited smallholder systems**.

4. Quarantine and Testing of New Animals

- Quarantine new or purchased cattle, especially from **endemic regions** like Assam, Bihar, and Uttar Pradesh.
- Perform **fecal examinations** and treat positive animals before introducing them into the main herd.

5. Satellite Surveillance and GIS Monitoring

- Use **Geographic Information Systems (GIS)** and **satellite surveillance** to monitor environmental conditions favourable for snail populations.
- Predict fasciolosis outbreaks **up to two months in advance**, enabling timely preventive measures.

6. Fodder Management

- Avoid grazing in snail-infested areas, especially during the rainy season.
- Convert green fodder into **hay or silage**, which **kills the infective metacercariae**, thereby breaking the parasite's life cycle.