



PREVENTION OF PARASITIC DISEASES THROUGH INTEGRATED STRATEGIES

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Abstract: This paper examines current research trends in sheep farming, with a specific focus on the prevention of parasitic diseases through integrated control strategies in livestock, and particularly in sheep. Parasitic infections remain one of the major constraints on productivity, animal welfare, and farm profitability, making their effective management a priority in modern animal production systems. Using a bibliographic research approach, the authors review a wide range of scientific articles and specialized literature to identify and synthesize the most effective preventive strategies. The study highlights that successful parasite control cannot rely on a single method but requires a coordinated combination of multiple approaches tailored to farm conditions and epidemiological risks. At the livestock level, key management strategies include genetic selection for parasite resistance, improved pasture management to reduce infection pressure, and the use of targeted treatments to minimize unnecessary drug application and delay resistance development. These approaches aim to reduce parasite load while maintaining animal performance and limiting environmental contamination. In sheep-specific systems, the paper further details practical implementation strategies such as systematic decision-making based on monitoring and diagnostic tools, control of external parasites, optimization of flock structure through genetic selection, and strategic pasture and grazing management. Additionally, targeted and selective treatments are emphasized as essential tools for maintaining efficacy and sustainability of antiparasitic interventions. The study concludes that integrated parasite management, combining genetic, environmental, and therapeutic measures, represents the most effective and sustainable approach for controlling parasitic diseases in sheep farming systems, ensuring both productivity and long-term parasite control efficiency.

• Introduction

Integrated prevention of parasitic diseases in livestock works best when genetic selection, pasture management, and targeted treatments are combined into one coordinated system – an approach that improves long-term herd health, reduces parasite pressure, and slows drug resistance. Integrated strategies matter because parasitic infections increase veterinary costs, reduce productivity, and weaken livestock immunity.

The main strategies of integrated prevention of parasitic diseases in livestock are:

- Genetic selection, a slow but cumulative and powerful long-term strategy, relying on the fact that some animals naturally resist or tolerate parasites better than others;
- Pasture management, because pasture ecology is one of the strongest levers for reducing parasite exposure given that most gastrointestinal parasites spend part of their life cycle on grass;
- Targeted treatments, because strategic use of anthelmintics remains important, but must be applied carefully to avoid accelerating resistance.

These strategies create a sustainable system that protects animal health and farm productivity, and reinforce each other in the following ways:

- Better pasture management reduces infection pressure, i.e. fewer animals need treatment;
- Genetic selection lowers the baseline susceptibility, making pasture and treatment strategies more effective;
- Targeted treatments preserve drug efficacy, which ensures that, when treatment is needed, it works.

• Material and method

The authors of this paper have used as material articles and books on the prevention of parasitic diseases through integrated strategies (genetic selection, pasture management, targeted treatments, etc.) in livestock in general, and in sheep, in particular. The research method used is the bibliographic one: it aimed at identifying the main research trends in sheep farming.

• Results and discussion

The main goals of an integrated prevention of parasitic diseases in sheep are:

- Protecting both internal and external parasite control needs;
- Reducing pasture contamination with infective larvae;
- Slowing the development of drug resistance;
- Strengthening the flock's natural resistance;
- Using anthelmintics only when necessary and with maximum effectiveness.

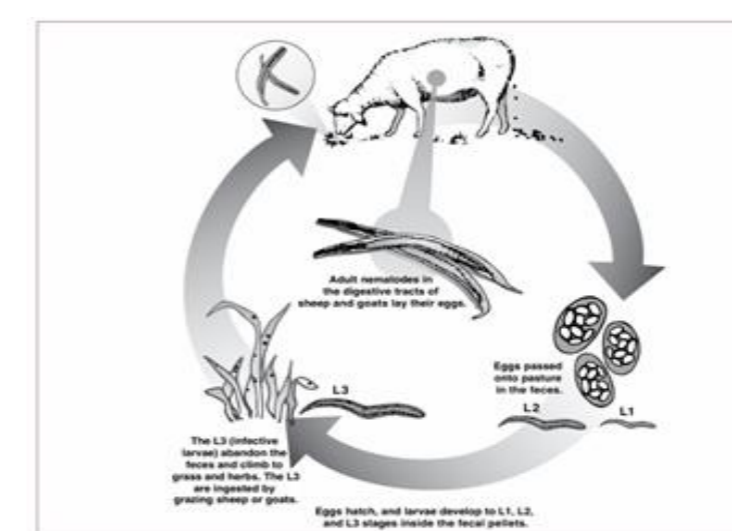


Figure 1. The direct life cycle of gastrointestinal worms that most commonly affect sheep

Decision-Making and Monitoring strategy is meant to tie the entire plan together by making post-treatment checks to confirm drug effectiveness; observing routine faecal egg counts to track parasite pressure and guide targeted selective treatment; record-keeping for animal performance, faecal egg count results, pasture movements, and treatments; seasonal planning based on local climate and parasite cycles; using regional forecasts for nematodirus and other seasonal risks.

• Conclusions

Bringing all these strategies together results in a practical annual cycle necessary for a sheep farm to operate in optimal conditions: in spring, lambs need to be protected with clean pastures; nematodirus need to be monitored; and rotational grazing needs to be started; in summer, because of the high barber-pole worm risk, faecal egg counts monitoring needs being intensified; targeted and strategic treatment need to be applied; and flystrike needs to be managed; in autumn, body condition needs to be assessed; sheep need to be treated selectively before housing; and pasture contamination needs to be evaluated; and in winter, flock genetics needs to be reviewed; breeding selections need to be planned.