

Gastrointestinal nematode and *Eimeria* spp. infections in dairy cattle along a rural-urban gradient

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Introduction

- Endoparasite infections can lead to considerable economic losses in dairy cattle due to decreases in milk yield and quality.
- Environmental and host-related factors contribute to endoparasite infection intensity and probability.
- Advancing urbanization influences



Results

The SSI effect:

- Significantly influenced *Eimeria* spp. infection probability and the oocyst counts (P<0.001), both being higher in rural areas (Fig. 4, 5).
- GIN infection probabilities and EpG were unaffected by SSI (Fig. 4, 5).

parasite infection dynamics in livestock due to close humananimal cohabitation and changes in management and animal housing conditions (Fig. 1).

Aim of the study

To investigate social-ecological effects on infections with gastrointestinal nematodes (GIN) and *Eimeria* spp. in dairy cattle along a survey stratification index (SSI) that signifies the level of urbanization in Bangalore, India.

Methodology

Fig.1 Shed location of an urban farm (top) and a rural farm (bottom)

Highlights

 The close cohabitation of humans and livestock as a result of rapid urbanization encourages a better animal health management, and

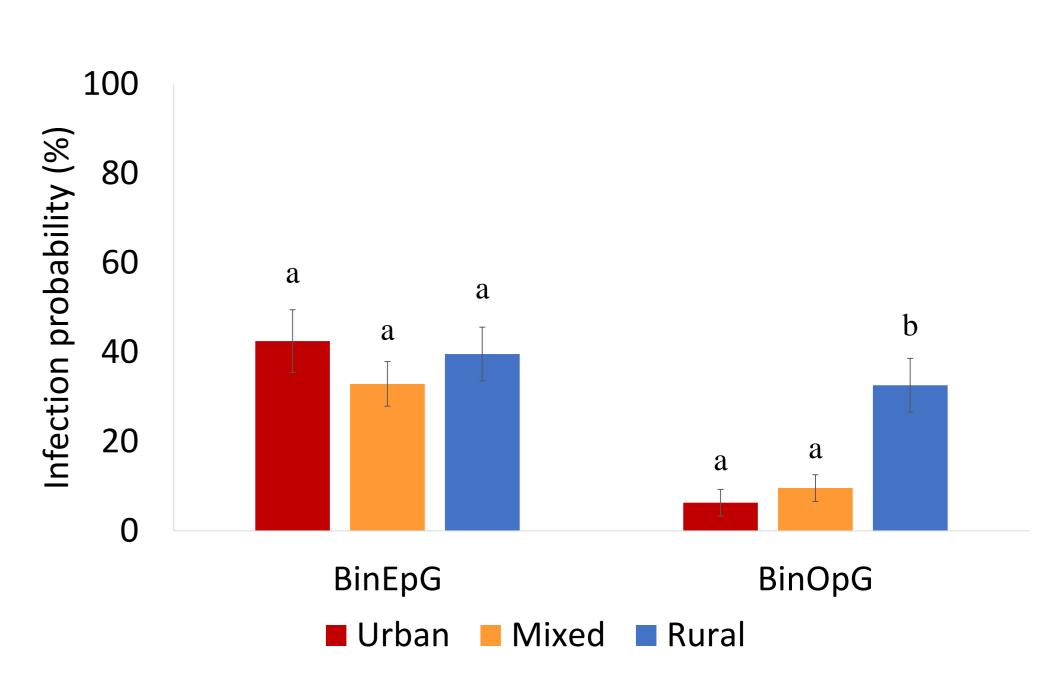
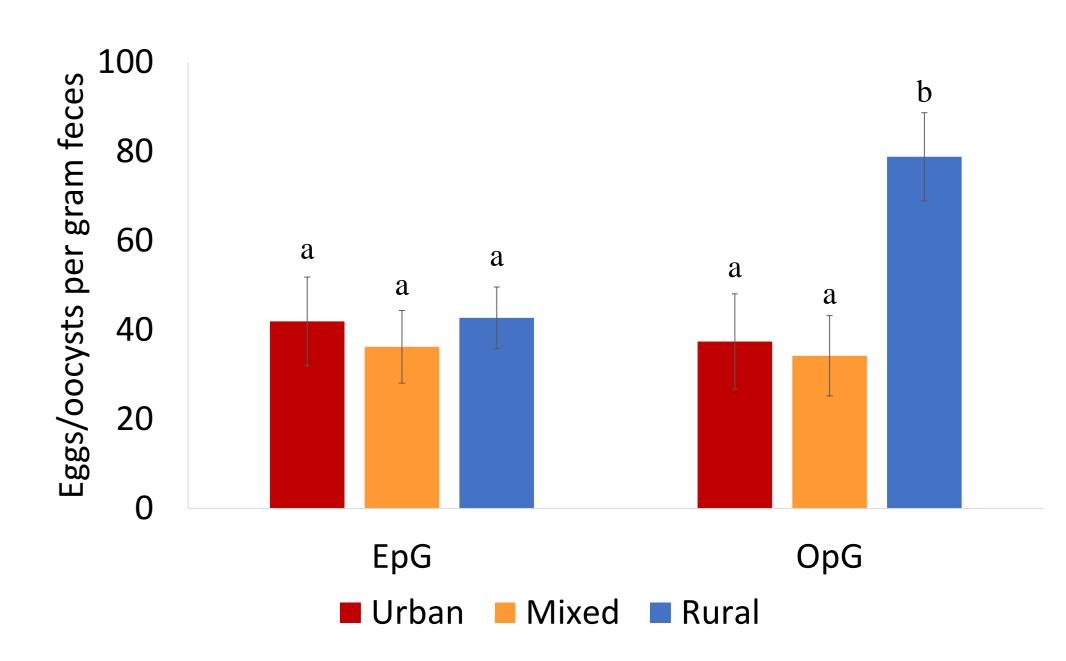
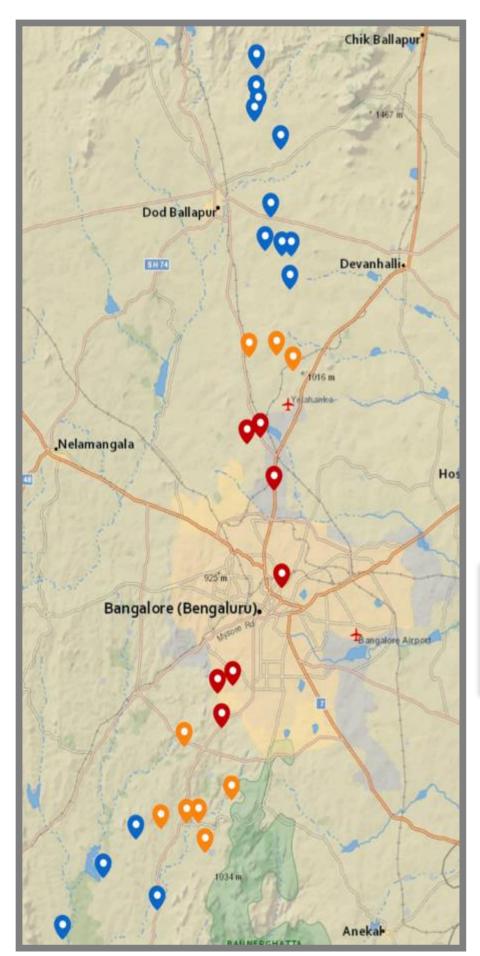
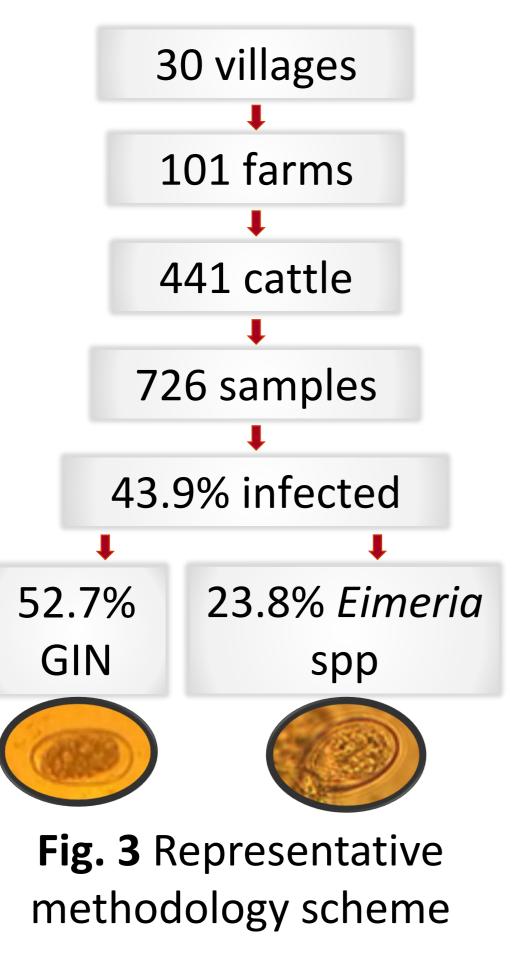


Fig. 4 LSMeans and SE for infection probability with GIN (BinEpG) and *Eimeria* spp. (BinOpG) within the SSI classes



- To count once every 4 months the n° of GIN eggs per gr faeces (EpG) and *Eimeria* spp. oocysts (OpG).
- McMaster technique with 4 gr faeces and saturated NaCl as flotation solution.
- SSI comprised built-up density and distance to the city center.





decreases the risk for *Eimeria* spp. infections.

Variations in protozoal infection intensity and probability observed along the SSI of Bangalore reflect the variability in dairy husbandry systems governed by the socialecological context.



Fig. 5 LSMeans and SE for n° of GIN eggs (EpG) and Eimeria spp. oocysts (OpG) per gram faeces within the SSI classes

Discussion

- GIN might be better adapted to urban environments with less impairment on the parasite's life cycle compared to protozoan parasites.
- The survival conditions are favorable for both paracite species

Fig. 2 Map and SSI classification of the 30 villages sampled (urban, mixed and rural)

Direct marketing

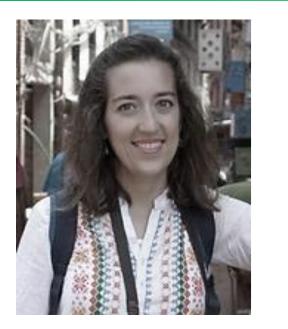
Heat stress

Intensified market-orientation Extensive herd management

Fig. 6 Social-ecological components at the farm location (urban and rural) affect livestock health

favorable for both parasite species in rural environments.

 Differences in in/output access, farm management and habitat resources might result in impaired resistance in animals from urban compared to rural farms (Fig.6).



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