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Endoparasite Infections in Dairy Cattle Along a Rural-urban Gradient in the Megacity of Bangalore

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Abstract

With the urban share of the world population projected to increase to more than 65 %, the need to pursue a healthy and sustainable urban livestock system becomes fundamental. Endoparasite infections can lead to lower performance, impair health and welfare status of the animals. Environmental and host-related factors such as the close human-animal cohabitation and changes in animal housing conditions contribute to endoparasite infection intensity and probability. The aim of the present study was to investigate social-ecological effects on gastrointestinal nematode (GIN) and Eimeria spp. infections in dairy cattle along a rural-urban gradient in the emerging Indian megacity Bangalore. In this regard, 726 fecal samples from 441 dairy cattle of different ages and physiological stages were collected from 101 farms and examined at three visits between June 2017 and April 2018. Based on a survey stratification index (SSI) comprising built-up density and distance to the city centre, we assigned the farms to urban, mixed and rural areas. GIN eggs were identified in the faeces of 243 cattle (33.5 %), and Eimeria spp. oocysts in the faeces of 151 cattle (20.8 %). Co infection rates of GIN and Eimeria spp. were 8.5 to 12.2 % higher in rural compared to urban and mixed areas. The SSI effect significantly influenced Eimeria spp. infection probability and oocyst per gram of faeces (OpG; $p < 0.001$) with an infection probability and OpG higher than 26 % and 40 % for cattle kept in rural areas compared to cattle from urban areas. However, the SSI effect was not significant for the infection probability of GIN and for GIN eggs per gram of faeces (EpG). The variations in endoparasite infection intensity and probability observed along the rural-urban gradient of Bangalore reflect the variability in dairy husbandry systems governed by the social-ecological context.

Keywords: Dairy cattle, Eimeria spp., gastrointestinal nematodes, Husbandry system, India, Social-ecological effect, Urbanisation

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