

Multi-infection parasitic nematodes in deer at Waru Farm Land, Ciampea, Bogor Regency

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ABSTRACT: Deer is a protected wild animal in Indonesia, and currently, deer are often kept and used as part of amusement rides in recreational areas. This study aimed to identify the incidence of worm infections in deer kept in the Waru Farm Land recreation area in Tegalwaru, Ciampea Bogor. Nine deer were kept by Waru Farm Land, consisting of spotted deer and Timor deer. Samples were collected immediately after the deer had defaecated. Stool sample examinations included the flotation test, McMaster's test, and multilevel filtration. The examination results showed that one deer had multiple parasitic nematode infections. Examination revealed strong and trichurid-type eggs. The degree of infection showed a very mild value, namely less than 50 EPG, so it can be concluded that worm infection in deer at Waru Farm Land is very low. Treatment by administering anthelmintics to deer that were positively infected with worms should be given, as well as preventing infection in other deer.

Keywords:

deer, multi-infection, parasitic nematodes, Waru Farm Land, Bogor

■ INTRODUCTION

Indonesia has various types of deer, including spotted, Timor, Bawean, and Sambar deer, each with its own characteristics (Yudha *et al.* 2019). Deer-keeping is usually carried out by official government farms or other places that have obtained permits, such as zoos or natural tourist attractions. The types of deer that are often kept include spotted deer and Timor deer, which are also kept at the Waru Farm Land natural tourist attraction located in Tegalwaru Village, Bogor Regency, West Java.

As wild animals, both spotted deer and Timor deer kept at Waru Farm Land will move away when approached by visitors, even though they have been kept in cages for a long time and are used to seeing humans. This is a form of self-protection that deer have in nature. The spotted deer (*Axis axis*) has the characteristic of a white spotted pattern on the body up to the neck. The average weight of this deer is 30-75 kg its height of 70-90 cm (Adji & Astuti 2020). Timor deer (*Cervus timorensis*) has a slightly smaller body size, longer body hair, and a longer tail. His hair colour did not exhibit a particular pattern and was predominantly brown (Maha *et al.* 2021).

Nine deer were kept at Waru Farm Land, and it is known that they had never received anthelmintics since they arrived at this location. Several studies have reported that deer can be infected with parasitic worms, including *Moniezia* sp. (Libriani *et al.* 2021) from the cestode class, *Haemonchus* sp. and *Strongyloides* sp. from the nematode class (Haryadi *et al.* 2022), as well as the worm *Paramphistomum* sp. from the

trematode class (Tanjung *et al.* 2018). Worm infections in deer at Waru Farm Land are thought to have occurred because of feeding practices. This study aimed to assess the type and degree of worm infection in deer kept on Waru Farm Land in Tegalwaru Village, Bogor Regency.

■ MATERIALS AND METHODS

Deer faecal samples were collected directly after the deer defaecated. The sampling time was the morning when feeding. The food is placed on open plastic (terpal) so that the deer can come to the food pile. Faecal samples that fall to the ground are taken immediately, and the surface is cleaned of adhering soil or can be collected immediately when the deer defaecates. The samples were stored in plastic clips, labelled, and placed in a cooling box, then transported in to the Helminthology Laboratory, School of Veterinary Medicine and Biomedical Sciences, IPB University, for further examination.

These inspections included flotation, McMaster, and multilevel filtration tests. For the flotation and McMaster tests, 4 g of faeces was used in 60 mL of a saturated sugar float solution. The multilevel filtration test used mesh sizes of 400, 100, and 45 µm. Light microscope examination was carried out at 400 × magnification lens.

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RESULTS AND DISCUSSION

The results of the flotation test showed that one deer was positive for worms among the nine samples examined. The degree of infection is very low, that was <50 EPG, where clinically, the deer showed no symptoms of illness, was active in movement, and the BCS was normal. However, a type of infection with multiple species was found, namely infection with two types of nematodes, because groups of strongyle eggs and trichurid eggs were found, as shown in Figure 1.

Strongyle eggs are oval shaped with thin walls and are approximately 62-95 µm long and 36-95 µm wide (Thienpont *et al.* 2003). This type of egg is produced by a group of worms from the order Strongylida. Parasitic worms infect the host at infective larval stage (Madani *et al.* 2021). Infections in deer were thought to occur through the contamination of infective larvae found in grass. Next, strongyle eggs were cultured in vermiculite medium to obtain larvae for later identification. The results of the examination and identification are shown in Figure 2. Based on the identification key, the observed larval morphology belongs to the genus *Haemonchus* sp. which shows a narrow, rounded anterior part, intestinal cells, and tapered sheath (Van Wyk & Mayhew 2013).

Trichurid eggs have easily recognisable characteristics; namely, they have polar plugs on both sides and are longitudinally symmetrical. The egg walls appeared thick and darker in colour (Murray *et al.* 2012). Worm infections in deer at Waru Farm Land can occur directly from food contaminated with infective eggs. These eggs are usually found in soil and become infective after two to three weeks (Jones 2021).

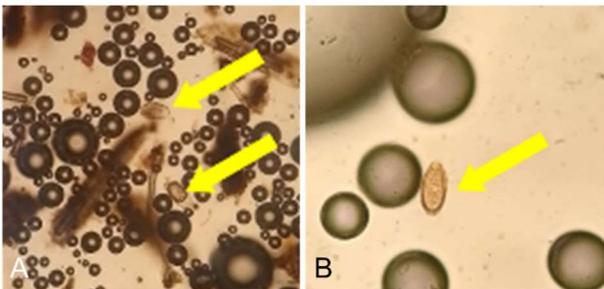


Figure 1. Faecal sample inspection of deer at Waru Farm Land in Tegalwaru Village, Bogor Regency. Yellow arrow pointing (A) group of strongyle eggs and (B) trichurid eggs.

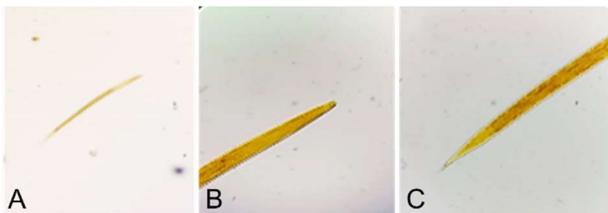


Figure 2. Larval examination that obtained from faecal of deer at Waru Farm Land in Tegalwaru Village, Bogor Regency. (A) Complete view, (B) anterior part, and (C) posterior part.

CONCLUSION

Of the nine deer at Waru Farm Land, one had a worm infection. The infections that occurred were multispecies from the strongyle and trichurid groups, with EPG values <50. Infection is thought to occur due to the contamination of infective larvae and eggs in the feed. Anthelmintics should be administered to deer that were positively infected.

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