



## Differences In The Incidence Of Worm In Farmed Cattle And Home Cattle In Sidoarjo City

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### ABSTRACT

Worm infestation (helminthiasis) is a disease caused by worm infestation in the animal's body. Worm infection can occur when livestock are in a place with high humidity and are protected from direct sunlight. The purpose of this study was to determine the difference in the incidence of worms in farmed cattle and domestic cattle by using cow feces with the sedimentation method to detect the presence of Soil Transmitted Helminth (STH) worm eggs. This type of research is observational analytic, with a cross-sectional research design. The results showed that 26.7% of farmed cattle were infected with *Ascaris lumbricoides* worms, while only 10% of domestic cattle were infected. The results of the Mann-Whitney statistical test were  $p > 0.05$  indicating that there was no significant difference between the type of cattle maintenance and worm infection status ( $p$ -value = 0.092).

**Keywords:** Worms, Cows, Livestock, Home, Sedimentation

## INTRODUCTION

*Helminths* are a type of multicellular invertebrate animal that moves through peristalsis through muscle contractions. Worms are one of the most common internal parasites affecting cattle. Diseases caused by worm parasites are highly detrimental, as infected livestock experience stunted growth, reduced reproductive rates, and even death (Julina, 2022).

Cattle are the definitive hosts for various types of parasitic worms, either directly infected or through an intermediary. Worms from the phylum Nematoda typically infect cattle directly during grazing or due to poor barn sanitation. According to (Almuhardi, 2022), if cattle eat grass or drink water containing metacercariae, they will most likely be infected with worms of the Phylum Platyhelminthes. Metacercariae of *Fasciola* sp. worms can be found in water because their intermediate host is a freshwater snail (*Mollusca gastropoda*)



Parasitic infections, particularly worm infections, in livestock in Indonesia can have a significant negative impact on society. This is caused by parasitic worms that contaminate food, water, and soil. These parasites attack by sucking blood or bodily fluids, or consuming animal tissue. Worm infections in cattle can lead to decreased milk production, meat quality in adult cattle, and growth retardation in young cattle. Parasitic worm infections can also lead to poor health in livestock, which hinders vaccination and allows other diseases, such as bacterial, viral, and parasitic, to emerge (Zalizar, 2017).

In the study (Paramitha, 2017), the most commonly found 27 samples of *Oesphagostomum* sp. worm eggs with 66% positive from 41 cow feces samples. In *Trichostrongylus* sp. worm eggs, 4 positive samples were found, 10% from 41 feces samples. *Bunostomum* sp. worm eggs were found in 3 positive samples, 7% from 41 cow feces samples. *M. digitatus* worm eggs were found in 1 positive sample, 2% from 41 samples. *Trichuris* sp. worm eggs were found in 1 positive sample, 2% from 41 cow feces samples. *T. vitulorum* worm eggs were found in 1 positive sample, 2% from 41 feces samples.

The prevalence of helminthiasis in cattle in each location is influenced by several factors, including topography, physical conditions such as temperature and humidity, and the presence of snails, which serve as intermediate hosts for various types of parasitic worms (Almuhardi, 2022). Various factors, including age, sex, type of livestock, use of antihelminthics, education and status of farmers, and livestock management methods, can contribute to the occurrence of helminthiasis in livestock. The livestock management system used by farmers can also contribute to the occurrence of helminthiasis in livestock, and the presence of worm infections in livestock is associated with housing, feed, feeding systems, and grazing rotation. Helminthiasis is also influenced by housing. Dirty and rarely cleaned housing increases the likelihood of cattle being infected with parasitic worms. The main source of helminthiasis can come from feces containing worm eggs or larvae. This occurs because cattle sometimes pick grass from the floor of the housing and eat it. Dirty floors can be contaminated by worm larvae or eggs from feces. The spread of helminthiasis is influenced by housing management in addition to housing conditions. If cattle are kept together in a single pen, they are susceptible to fecal cross-contamination, as uninfected cattle can become infected from infected cattle. Cattle feed can also influence helminthiasis (Candra, 2023).

## **MATERIAL AND METHODS**

This study was an observational analytic study with a cross-sectional design aimed at determining the difference in the incidence of helminthiasis between farmed and domestic cattle. The study population consisted of fecal samples from both types of cattle maintenance in the Sidoarjo area. Samples were selected based on inclusion and exclusion criteria. The sample size was calculated using Slovin's formula, resulting in 60 samples, consisting of 30 fecal samples from farmed cattle and 30 fecal samples from domestic cattle. Sampling was carried out using the purposive sampling method based on the predetermined criteria.

Fresh fecal samples were collected using sterile spatulas, placed into sterile sample containers, labeled, and stored in a cool box before being analyzed at the Microbiology Laboratory, Universitas Nahdlatul Ulama Surabaya (UNUSA). Laboratory examination was performed using the sedimentation method, which involved placing a small portion of feces into a test tube, adding physiological NaCl solution up to three-quarters of the tube volume, sealing it with cotton, and

centrifuging at 1500 rpm for 10 minutes. The supernatant was discarded, and the sediment was placed onto a glass slide, mixed with 2% eosin solution, covered with a cover slip, and examined under a microscope at 40× magnification.

All examination results were recorded and subsequently analyzed statistically using SPSS software. Data processing included editing, coding, data entry, tabulation, and verification. Statistical analysis was conducted using the Mann–Whitney test with a significance level of  $p < 0.05$ .

This study was conducted after obtaining ethical approval. All procedures were performed with adherence to the principles of honesty, accuracy, and objectivity.

## RESULTS AND DISCUSSION

This study involved 60 fecal samples, consisting of 30 samples from farmed cattle and 30 samples from domestic cattle in Sidoarjo. Examination using the sedimentation method revealed the presence of *Ascaris lumbricoides* eggs in both groups.

**Table 1. Data on the Results of Identification of Worm Types from the Genus Nematoda**

| Species                     | Number of Samples | Positive for Nematodes | Incidence Rate (%) |
|-----------------------------|-------------------|------------------------|--------------------|
| <i>Ascaris lumbricoides</i> | 30 farms          | 8                      | 26,7%              |
| <i>Ascaris lumbricoides</i> | 30 houses         | 3                      | 10,0%              |

**Tabel 2. Mann-Whitney Test Results**

| Type of Test        | <i>p</i> -value | Explanation                        |
|---------------------|-----------------|------------------------------------|
| <i>Mann-Whitney</i> | 0,092           | No signifikan difference was found |

Table 1 shows that in farmed cattle, 8 out of 30 samples (26.7%) tested positive for *Ascaris lumbricoides*, while in domestic cattle, only 3 out of 30 samples (10%) tested positive. This finding indicates a higher prevalence of helminthiasis in cattle compared to domestic cattle.

Statistical analysis can be seen in Table 2. The Mann-Whitney test yielded a *p*-value of 0.092 ( $p > 0.05$ ), indicating no statistically significant difference in helminthiasis prevalence between the two livestock systems. Although infection rates were numerically higher in cattle, the difference was not sufficient to reach statistical significance.

The higher proportion of positive samples in cattle may be related to management factors, including feed and housing conditions. Cattle are often kept in larger groups, which can increase the risk of cross-contamination from infected feces. Furthermore, feeding practices involving fresh forage may facilitate the consumption of contaminated grass, as *Ascaris* eggs can adhere to moist vegetation. In contrast, domestic cattle are typically kept in smaller groups and may be less exposed to such environmental contamination.

The eggs identified in this study exhibited the typical morphological characteristics of *Ascaris lumbricoides*, including a thick mammillary shell that allows them to survive in damp, shaded conditions. This is consistent with previous research showing that *Ascaris*

*lumbricoides* is one of the most common earthworms (STH) in tropical regions due to favorable environmental factors such as temperature, soil composition, and humidity.

Although infection prevalence was higher in domestic cattle, the lack of statistical significance suggests that other variables—such as hygiene practices, frequency of deworming, and pasture management—may play a more influential role in determining helminthiasis incidence than simply categorizing cattle as "livestock" or "domestic." Furthermore, the limited sample size and use of only one diagnostic method (sedimentation) may have limited the ability to detect other species or infections of lower intensity.

## CONCLUSION AND SUGGESTION

This study demonstrated that helminth infections were present in both farmed and domestic cattle in Sidoarjo, with *Ascaris lumbricoides* identified as the only detected species. The prevalence rate was higher in farmed cattle (26.7%) compared to domestic cattle (10.0%), although the statistical analysis (Mann-Whitney test,  $p = 0.092$ ) indicated that the difference was not significant. These findings highlight that the risk of Soil Transmitted Helminth (STH) infection exists regardless of the cattle management system, emphasizing the need for consistent preventive measures, including routine parasitological screening, deworming programs, and improved sanitation practices in all types of cattle-rearing environments. Moreover, the detection of *A. lumbricoides* suggests potential zoonotic concerns for individuals in close contact with livestock, underlining the importance of health education and protective measures. Future studies should include larger sample sizes, wider geographic coverage, and the use of additional diagnostic methods such as flotation or Kato-Katz techniques to enhance detection accuracy and to explore the prevalence of other helminth species.

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## CONFLICT OF INTEREST

The authors declare that the research was conducted in the absence of any commercial or financial relationship that could be construed as a potential conflict of interest.

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