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ANALYSIS OF THE RELATIONSHIP BETWEEN CAGE SANITATION AS A RISK FACTOR TOWARDS SCABIES INCIDENTS IN CATTLE IN MRANGGEN VILLAGE, POLOKARTO DISTRICT, SUKOHARJO REGENCY

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Abstract

Scabiesis one of the most common ectoparasitic diseases affecting cattle and may cause significant economic losses due to reduced productivity, skin quality, and body weight. Housing sanitation has been identified as one of the environmental factors influencing the occurrence of scabies. This study aimed to analyze the association between housing sanitation and scabies incidence in cattle raised in Mranggen Village, Polokarto District, Sukoharjo Regency. An analytical observational study with a cross-sectional design was conducted. Data were collected through direct observation of cattle housing conditions and structured interviews using questionnaires. Housing sanitation was evaluated based on cleanliness, humidity, ventilation, lighting, and waste management. The data were analyzed using the Chi-square test with a significance level of 5%. The results showed that 43.1% of cattle houses were classified as having good sanitation, while scabies was identified in 18.5% of observed cattle. Statistical analysis revealed a significant association between housing sanitation and scabies incidence (p=0.004). Cattle raised in well-maintained housing had a lower incidence of scabies than those kept in moderately or poorly maintained housing. Improving housing sanitation should therefore be considered an effective preventive strategy to reduce scabies occurrence and improve cattle health and productivity in smallholder farming systems.

Keywords: cattle, housing sanitation, scabies, livestock health, risk factors

INTRODUCTION

Cattle farming is a crucial subsector in agricultural development in Indonesia, contributing to the provision of animal protein, increasing community incomes, and ensuring national food security. As the livestock population increases, the challenges of disease control also increase, particularly in smallholder farms that still employ traditional husbandry systems. Poorly maintained housing conditions can increase the risk of various infectious and parasitic diseases, impacting livestock productivity. One disease of

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concern is scabies, a skin disease caused by Sarcoptes scabiei infestation. This disease causes pruritus, hair loss, skin thickening, crusting, and weight loss. In severe cases, scabies can reduce the economic value of livestock by reducing production performance and increasing medical costs. Transmission occurs through direct contact and contaminated housing environments, making sanitation a crucial factor in disease control efforts.

Pen sanitation includes pen cleanliness, ventilation, humidity, lighting, drainage, and waste management. A damp and dirty pen environment creates conditions that support the survival of various disease agents, including ectoparasites. Conversely, implementing good sanitation can reduce the risk of disease spread and improve livestock welfare. Several previous studies have shown that pen management is closely related to the incidence of parasitic diseases in livestock. However, most of these studies were conducted in areas with different livestock characteristics, so the results may not necessarily reflect the conditions of smallholder livestock in Sukoharjo Regency. Furthermore, information regarding the relationship between pen sanitation and scabies incidence in cattle in Mranggen Village is still very limited.

Mranggen Village is a cattle farming center in Polokarto District, dominated by small-scale farms using traditional husbandry systems. The varying sanitation conditions found in this area provide an opportunity to examine the relationship between sanitation quality and scabies incidence in cattle. The research results are expected to inform the development of disease prevention strategies based on improved cattle management, thereby improving livestock health and productivity.

MATERIALS AND METHODS

Location and Time of Research

The research was conducted in Mranggen Village, Polokarto District, Sukoharjo Regency, Central Java, in June 2026. The area was chosen because it is one of the centers of smallholder cattle farming with a variety of barn sanitation conditions that are quite diverse, making it suitable for studying the risk factors for scabies occurrence.

Population and Sample

The study population consisted of all 203 cattle breeders in Mranggen Village. The sample size was determined using the Slovin formula with a 10% error rate, resulting in a sample size of 65 respondents. Purposive sampling was used to select breeders who met the criteria of actively raising cattle and were willing to participate in the study.

Research Variables

The independent variable in this study is pen sanitation, while the dependent variable is the incidence of scabies in cattle.

Cage sanitation is evaluated based on five main indicators, namely:

- cleanliness of the cage,
- humidity,
- ventilation,
- lighting,
- waste management.

The incidence of scabies is determined by observing clinical symptoms in the form of pruritus, alopecia, skin thickening, wounds, and crust formation on the surface of the livestock's skin.

Data collection technique

Data was collected through direct observation of the condition of the pens and livestock, interviews using questionnaires, and documentation as supporting data.

Data analysis

Data were analyzed descriptively and analytically. Descriptive analysis was used to describe cage sanitation conditions, incidence, and questionnaire results. Analytical analysis used the Chi-square test to determine the relationship between cage sanitation and scabies incidence at a significance level of 0.05.

RESULTS AND DISCUSSION

Overview of Cage Sanitation

Cage sanitation assessments were conducted through direct observation using a checklist covering cage cleanliness, humidity, ventilation, and waste management. Each indicator was scored as good (3), adequate (2), and inadequate (1). The total score was then categorized as good (17-21), adequate (12-16), and inadequate (≤11).

Based on the results of observations of 65 cattle pens in Mranggen Village, the distribution of pen sanitation was as follows:

Table 1. Distribution of Cage Sanitation

Sanitation Category	Frequency	Percentage (%)
Good	28	43.1
Enough	23	35.4
Not enough	14	21.5
Total	**65**	**100**

Table 1 shows that the majority of pens are in the good category (28 respondents (43.1%), followed by 23 respondents (35.4%) in the adequate category, and 14 respondents (21.5%) in the poor category. These results indicate that most farmers have implemented adequate pen sanitation in their livestock raising activities. This is evident from routine pen cleaning, adequate waste management, and adequate pen ventilation.

Pen sanitation is a crucial factor in maintaining livestock health because it is directly related to the environmental conditions of the livestock. A clean environment can reduce humidity and reduce the development of disease agents. The results of this study align with Siregar (2009), who stated that pen sanitation includes routine cleaning, waste management, ventilation, and disinfection measures to maintain livestock health. Furthermore, Radostits et al. (2007) explained that sanitation is a crucial part of livestock biosecurity to prevent the spread of disease. This study found that pens were still categorized as adequate and inadequate, indicating that not all farmers are implementing optimal sanitation. Factors influencing this include husbandry habits, limited facilities, and farmer knowledge.

Overview of Scabies Incidence in Cattle

Scabies cases are determined based on observations of clinical symptoms such as itching, hair loss, thickened skin, and the

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presence of sores or crusts. Livestock are considered to have scabies if at least one symptom is found. Observations show the following distribution:

Table 2. Distribution of Scabies Incidence

Scabies Incident	Frequency	Percentage (%)
No	53	81.5
Yes	12	18.5
Total	**65**	**100**

Based on Table 2, it is known that the majority of livestock, 53 (81.5%), were not affected by scabies, while 12 (18.5%) were affected. These results indicate that scabies is still found in the study area, although the number of cases is lower than in healthy livestock. Scabies is a skin disease caused by an infestation of the Sarcoptes scabiei mite. This disease can cause itching, hair loss, skin thickening, and crust formation, which ultimately affects livestock productivity.

The results of this study are consistent with Taylor et al. (2016), who stated that the main symptoms of scabies in livestock include pruritus, alopecia, changes in skin structure, and irritation due to mite infestation. According to Radostits et al. (2007), the incidence of scabies is influenced by various factors such as pen sanitation, livestock density, direct contact between animals, environmental humidity, and the husbandry system.

The Relationship Between Cage Sanitation and Scabies Incidence

The relationship analysis was carried out using the Chi-Square test at a significance level of $\alpha = 0.05$.

Table 3. The Relationship between Cage Sanitation and IncidentsScabies

Cage Sanitation	*No Scabies*	*Scabies*	Total
Good	28	0	28
Enough	16	7	23
Not enough	9	5	14
Total	**53**	**12**	**65**

From the cross tabulation, it is known that in the group with good sanitation, no cases of scabies were found (0%), while in the group with adequate sanitation, 7 cases (30.4%) were found and in the group with poor sanitation, 5 cases (35.7%) were found.

Table 4. Chi-Square Test Results

Variables	p-value	α	Information
Cage sanitation–Scabies occurrence	0.004	0.05	There is a significant relationship

The results of the analysis using the Chi-Square test showed a p value = 0.004 ($p < 0.05$) so that H0 was rejected and Ha was accepted, which means there is a significant relationship between pen sanitation and the incidence of scabies in cattle in Mranggen Village, Polokarto District, Sukoharjo Regency. The results of the study showed a tendency that the better the pen sanitation, the lower the incidence of scabies in cattle.

Biologically, a clean and well-ventilated pen can reduce environmental humidity, thus preventing the development of ectoparasites that cause skin diseases. These results are consistent with Taylor et al.'s (2016) findings, which indicate that pen sanitation is related to the incidence of skin diseases in livestock. Pens with poor hygiene have a higher risk of experiencing health problems. Radostits et al. (2007) explain that parasitic disease control requires a combination of medication, environmental sanitation, and biosecurity. The incidence of scabies is not solely influenced by pen sanitation. Other factors such as livestock density, age, health status, and contact with infested livestock can also influence disease incidence.

CONCLUSION

Based on the results of research on the relationship between pen sanitation and the incidence of scabies in cattle in Mranggen Village, Polokarto District, Sukoharjo Regency, it can be concluded that cattle kept in pens with better sanitation conditions tend to have a lower incidence of scabies compared to cattle kept in pens with adequate or inadequate sanitation.

SUGGESTION

Farmers are expected to improve the implementation of cage sanitation through routine cage cleaning, good waste management, maintaining ventilation and humidity in cages, and carrying out regular disinfection to reduce the risk of scabies in livestock.

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