

IDENTIFICATION AND PREVALENCE OF *THELAZIA RHODESI* INFECTION IN BALI CATTLE IN PUJUT, CENTRAL LOMBOK, WEST NUSA TENGGARA

Identifikasi dan Prevalensi Infeksi *Thelazia rhodesi* pada Sapi Bali di Pujut, Lombok Tengah, Nusa Tenggara Barat

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Abstract

Thelaziasis is an ocular nematodiasis caused by nematodes of the genus *Thelazia*, which are transmitted by flies of the genus *Musca* spp. as intermediate vectors. This disease causes tear secretion disorders and conjunctivitis, as well as keratitis, epiphora, eyelid edema, corneal ulcers, and blindness, all of which lead to reduced productivity in livestock. This study aimed to identify, determine the prevalence of, and analyze the risk factors for *Thelazia rhodesi* infection in Bali cattle (*Bos javanicus domesticus*). The factors analyzed included age, sex, clinical signs, and husbandry practices among Bali cattle in the Pujut Subdistrict, Central Lombok, West Nusa Tenggara. This study employed an observational approach with a cross-sectional design involving 120 cattle as study subjects. Data were obtained through direct examination of the cattle's eyes and were analyzed descriptively and inferentially using Fisher's exact test. The results showed that the prevalence of *Thelazia rhodesi* infection was 1.7% (2/120). Fisher's exact test indicated that there was no significant association ($p > 0.05$) between sex, age, clinical signs, rearing systems, and the occurrence of thelaziasis. All cases of infection were identified in subclinical cattle. Thus, it can be concluded that the prevalence of thelaziasis in Bali cattle at the study site was relatively low and was not significantly influenced by the observed factors. Routine monitoring and improved fly management should be implemented and maintained to keep the prevalence of thelaziasis at a low level.

Keywords: *Bos javanicus domesticus*, Lombok, risk factors, thelaziasis, *Thelazia* spp.

Abstrak

Thelaziasis merupakan nematodiasis pada mata yang disebabkan oleh cacing genus *Thelazia* yang ditularkan melalui lalat *Musca* spp. sebagai vektor perantara. Penyakit ini menimbulkan

gangguan lakrimasi dan konjungtivitis hingga keratitis, epifora, edema kelopak mata, ulser kornea, dan kebutaan yang berdampak pada penurunan produktivitas ternak. Penelitian ini bertujuan untuk mengidentifikasi, menentukan prevalensi, dan menganalisis faktor risiko infeksi *Thelazia rhodesi* pada sapi bali (*Bos javanicus domesticus*). Faktor yang dianalisis yaitu umur, jenis kelamin, tanda klinis, dan sistem pemeliharaan pada sapi bali di Kecamatan Pujut, Lombok Tengah, Nusa Tenggara Barat. Penelitian ini menggunakan pendekatan observasional dengan desain potong lintang pada 120 ekor sapi sebagai objek penelitian. Data diperoleh melalui pemeriksaan langsung terhadap mata sapi, kemudian dianalisis secara deskriptif serta inferensial menggunakan uji *Fisher's Exact*. Hasil penelitian menunjukkan bahwa prevalensi infeksi *Thelazia rhodesi* sebesar 1,7% (2/120). Uji *Fisher's Exact* menunjukkan bahwa tidak terdapat hubungan yang signifikan ($p > 0,05$) antara jenis kelamin, umur, tanda klinis, dan sistem pemeliharaan dengan kejadian thelaziasis. Seluruh kasus infeksi teridentifikasi pada sapi subklinis. Dengan demikian, dapat disimpulkan bahwa prevalensi thelaziasis pada sapi bali di lokasi penelitian tergolong rendah dan tidak dipengaruhi secara signifikan oleh faktor yang diamati. Monitoring rutin dan peningkatan manajemen terhadap lalat perlu dilakukan dan dipertahankan untuk tetap menekan thelaziasis agar tetap rendah.

Kata kunci: *Bos javanicus domesticus*, faktor risiko, Lombok, thelaziasis, *Thelazia* spp.

INTRODUCTION

Bali cattle (*Bos javanicus domesticus*) are an important indigenous genetic resource in Indonesia, particularly in the livestock agribusiness sector, and are used as beef cattle and as draft animals (Astuti, 2018). In the West Nusa Tenggara region of Indonesia, particularly in Central Lombok Regency, Bali cattle are a leading commodity with a fairly large and widespread population (Mashur, 2014). Cattle-rearing practices on the island of Lombok are generally semi-extensive, with cattle grazing during the day and kept in pens at night (Yuliana, 2010). This semi-extensive rearing system increases the risk of infection by various parasites, one of which is the eye worm (thelaziasis), caused by nematodes of the genus *Thelazia*, with three main species: *Thelazia gulosa*, *Thelazia skrjabini*, and *Thelazia rhodesi* (Cotuțiu *et al.*, 2023a).

Thelaziasis is transmitted by flies of the genus *Musca* spp. as intermediate vectors (Otranto & Traversa, 2005). The larvae and adult worms of *Thelazia* spp. live in the conjunctival sac and lacrimal ducts, which can cause increased lacrimation, conjunctivitis, keratitis, and even blindness in severe cases (Sabneno *et al.*, 2024). Infection with *Thelazia* spp. also reduces livestock productivity due to health issues, resulting in decreased body weight and market values (Hassan *et al.*, 2017; Sabneno *et al.*, 2024). Livestock management factors, such as group housing systems, are believed to play a role in transmission rates because of the increased contact among animals in certain systems (Otranto & Traversa, 2005).

Several previous studies have shown that the prevalence of *Thelazia* spp. infection in cattle varies considerably across different regions of West Nusa Tenggara and East Nusa Tenggara. A study in East Lombok found a prevalence of *Thelazia* spp. infection of 2.22% (Hayat *et al.*, 2025) whereas in Sumbawa, the prevalence was very high, reaching 83.33% (Supriadi, 2015). *Thelazia* species identification has been conducted in Kupang, East Nusa Tenggara, where *T. rhodesi* was identified with a prevalence of 5.96% (Djungu *et al.*, 2014).

Pujut Subdistrict is one of the areas with a high population of Bali cattle (34,014 heads in 2023) in the Central Lombok Regency. West Nusa Tenggara (Central Lombok Regency Central Statistics Agency, 2023); however, to date, there have been no scientific reports on the prevalence of *Thelazia* spp. infections. The most recent report, from 2025, was from East Lombok (Hayat *et al.*, 2025). This data gap highlights the need for further research, particularly

regarding the risk factors that may increase the likelihood of developing an infection. Therefore, epidemiological studies are essential, especially in areas where thelaziasis is endemic. This study aimed to determine the prevalence of *Thelazia* spp. infection, identify the species infecting Bali cattle, and analyze differences in thelaziasis incidence based on age, sex, clinical signs, and management systems of Bali cattle in Pujut Subdistrict, Central Lombok Regency.

RESEARCH METHODS

Ethical considerations for laboratory animals

This study is observational in nature; all field observations and examinations were conducted under the supervision of paramedics and veterinarians during the eye examinations and the collection of eye worms. As this study was purely observational and involved no experimental intervention, ethical clearance was not required.

Research subjects

The research subjects in this study were 120 Bali cattle raised under group- and individual-housing systems. Cattle used as research subjects were examined regardless of their clinical conditions. Sampling was conducted in the villages of Teruwai, Pengengat, Mertak, and Bangkat Parak in the Pujut Subdistrict of Central Lombok Regency (Figure 1). Sample identification was performed at the Veterinary Parasitology Laboratory of the Faculty of Veterinary Medicine, Udayana University. The study was conducted from January to February 2026.

Research design

This was an observational study with a cross-sectional design. The Pujut subdistrict has a cattle population of 34,014. At the study sites, the Bali cattle population was recorded as 7,635 in Mertak Village, 1,777 in Teruwai Village, 1,915 in Pengengat Village, and 1,453 in Bangkat Parak Village, bringing the total population across these four villages to 12,780 (Central Lombok Regency Statistics Agency, 2023). This study involved 120 Bali cattle from Mertak, Teruwai, Pengengat, and Bangkat Parak Villages. Based on information from the veterinary staff at the local Livestock Service, group housing systems were found only in Teruwai and Pengengat Villages. Therefore, each of these villages was designated as a sampling site for 25 cattle because their livestock populations were concentrated and easily accessible. In contrast, cattle kept in individual pens were found in all study villages; therefore, the number of samples collected in each village was adjusted to between 15 and 20 heads. The villages were selected using purposive sampling, considering the presence of group-pen and/or individual-pen systems for raising Bali cattle, the high population of Bali cattle, ease of access to the locations, and the willingness of farmers to participate in the study. The selection of sample animals also used purposive sampling based on the criterion that the cattle could be safely restrained and allowed for a clinical examination of the eyes to detect infestation with *Thelazia* spp.

Research variables

This study involved three types of variables namely, independent, dependent, and control variables. The independent variables were the rearing system (group and individual) and host factors, specifically age (< 1 year and ≥ 1 year), sex (male and female), and clinical signs (present and absent). The dependent variable was the prevalence of *Thelazia* spp. in Bali cattle, determined based on the results of direct examination for the presence of worms in the eyes. The control variable was the Bali cattle raised in the Pujut Subdistrict.

The group housing system refers to a system in which cattle are kept together in a single location and equipped with facilities such as bull pens, breeding pens, cattle pens, and composting areas, thereby enabling more effective management of reproduction, feeding, and hygiene. The independent pen-rearing system refers to a self-managed system in pens owned by farmers without collective facilities, so that all activities, such as feeding, weaning, and reproductive management, are carried out independently. The clinical signs observed in this study included eye disorders caused by *Thelazia* spp. infections, such as impaired lacrimation and conjunctivitis, as well as keratitis, epiphora, eyelid edema, corneal ulcers, and blindness (Sabneno *et al.*, 2024).

Data collection methods

Eye examination of Bali cattle

Examinations were conducted directly on each cattle at the research sites. Before the examination, the cows were manually restrained to keep their heads stable so that the eye examination could be performed safely and effectively. Once the animals were under control, their eyes were inspected for worms. The eyelids were gently pulled back using the thumb and index fingers to expose the conjunctival sac, which is the primary site of infestation by *Thelazia* spp. eye worms. Once the conjunctival sac was clearly visible, a 10% levamisole solution was instilled into the area and left for 2–5 min to stimulate the expulsion of worms along with the tear secretions. All examination results were systematically recorded on a data collection form (Hayat *et al.*, 2025).

Collection of *Thelazia* spp. worms from cattle eyes

Worms found during the examination were carefully removed using sterile tweezers to avoid damaging the surrounding tissues. The worms were then placed in vials containing 95% alcohol as a preservative. Each sample was subsequently labeled with the identification of livestock and collection site.

Microscopic examination

Microscopic examination was conducted to identify *Thelazia* spp. based on their morphological characteristics. The worms, which were collected and preserved in 95% alcohol, were first washed with a 0.9% physiological NaCl solution to remove any remaining debris. The samples were then clarified using a lactophenol solution until the cuticle became transparent, making the worms' morphological structures more visible (Hanafiah *et al.*, 2019). After clearing, the samples were placed on microscope slides and observed using a binocular microscope to evaluate their morphological characteristics. The collected worms were identified as *Thelazia rhodesi* based on their morphological characteristics. The worms had a white, cylindrical body with serrated transverse cuticular striations and measured approximately 17 mm in females and 15 mm in males. These findings were consistent with morphological characteristics of *T. rhodesi* described by (Cotuțiu *et al.*, 2023; Demiaszkiewicz *et al.*, 2020; Naem, 2007).

Data Analysis

The data were analyzed descriptively to calculate the prevalence of *Thelazia rhodesi* infection, defined as the number of infected cattle divided by the total number of cattle examined, multiplied by 100. Inferential analysis was performed using the chi-square test to determine the relationship between independent variables and the incidence of infection. Fisher's exact test was used when the assumptions of the chi-square test were not satisfied. All analyses were conducted at a 95% confidence level using IBM SPSS software (version 26).

RESULTS AND DISCUSSION

Results

Based on an examination of 120 Bali cattle in the Pujut Subdistrict, Central Lombok Regency, two cattle were found to be infected with eye worms. The collected worms consisted of both male and female individuals. Morphologically, the worms were white and cylindrical, with a body length of approximately 17 mm in females and 15 mm in males. The body surface exhibited striations that were serrated along the entire length of the body. Microscopic observations revealed characteristic structures, such as the vulva, esophagus, intestine, and spicules, on the posterior end of the male worms. In addition, eggs were found inside the female worms. These morphological characteristics are consistent with those of *Thelazia rhodesi* (Cotuțiu *et al.*, 2023; Demiaszkiewicz *et al.*, 2020; Naem, 2007). The microscopic examination results are presented in (Figure 2).

The prevalence of *Thelazia rhodesi* infection in Bali cattle in the Pujut Subdistrict was 1.7% (2/120). Based on the rearing system, the prevalence among cattle raised individually was 2.9% (2/70), while no cases of infection were found in the group-rearing system (0/50 head). Infection was found only in female cattle with a prevalence of 2.4%, while no cases of infection were found in male cattle. Based on age, infection was found only in the age group over one year old with a prevalence of 2.2%, while no cases were found in the age group under one year. Based on clinical signs, all cases of infection were found in cattle without clinical symptoms (subclinical), with a prevalence of 1.8%, whereas no infections were found in cattle with clinical signs. Regarding the housing system variable, infections were found only in cattle in the individual housing system at a rate of 2.9%, whereas no cases were found in the group housing system. The results of the analysis using Fisher's exact test showed that there was no significant association ($p > 0.05$) between sex, age, clinical signs, and housing system and the incidence of *Thelazia rhodesi* infection in Bali cattle in the Pujut Subdistrict (Table 1).

Discussion

The results of the study showed that the prevalence of *Thelazia rhodesi* infection in Bali cattle in the Pujut Subdistrict, Central Lombok Regency, was 1.7%. This figure is lower than that reported by Hayat *et al.* (2025) in Wanasaba Subdistrict, East Lombok (2.22 %) and significantly lower than that reported by Supriadi (2015) in Tarano Subdistrict, Sumbawa Regency (83.33 %). Additionally, Djungu *et al.* (2014) reported a prevalence of 5.96% in the Kupang Subdistrict. These differences in prevalence are believed to be influenced by variations in environmental conditions, husbandry systems, and the population density of *Musca* spp. fly vectors involved in the transmission of *Thelazia* spp. (Otranto & Traversa, 2005). Pujut Subdistrict, which is dominated by dry land with relatively high temperatures, has low humidity, making it less conducive to vector development, in contrast to areas such as Wanasaba, which are more humid and support fly populations (Hayat *et al.*, 2025).

Based on the results of morphological identification, all the worms found were *Thelazia rhodesi*. The worms are cylindrical, white, approximately 15–17 mm long, and have striations that appear serrated along their bodies. Morphological differences between males and females are also clearly visible, particularly in the posterior region, where males possess spicule structures, whereas females have a blunter, posterior end (Naem, 2007). These characteristics align with the literature description stating that *T. rhodesi* has coarse striations, which serve as the primary distinguishing feature from other species, such as *T. gulosa* and *T. skrjabini* (Cotuțiu *et al.*, 2023; Demiaszkiewicz *et al.*, 2020). The combination of macroscopic and

microscopic examinations in this study supports the identification of the species. However, a limitation of this study is that molecular testing and sequencing have not yet been performed on the samples.

Based on the housing system, infections were found only in cattle kept in independent housing systems. In independent housing systems, the management of barn sanitation, waste, and vector control is generally suboptimal, thereby increasing the fly population and the likelihood of infection transmission (Asrat, 2017; Sabneno *et al.*, 2024). In contrast, in group housing systems, management tends to be more organized, including drainage management, barn cleanliness, and more intensive livestock health monitoring, thereby reducing the risk of infection (Alemneh & Dagnachew, 2025a).

The life cycle of *Thelazia* spp., which involves flies as vectors, supports this hypothesis. First-stage larvae (L1) are excreted through eye secretions, ingested by flies when they land on the eye area, develop into infective larvae (L3) inside the fly's body, and are transmitted back to the host when the fly consumes eye secretions (Djungu *et al.*, 2014; Dwinata & Oka, 2022). Novi *et al.* (2023) reported that 78.89% of flies around infected cattle contained *Thelazia* spp. larvae, highlighting the important role of vectors in the spread of this disease in cattle. Therefore, environments with poor sanitation and high fly populations increase the risk of infection, particularly in self-contained livestock husbandry systems.

Based on host factors, infections were found only in female cattle older than one year. This is likely related to the longer duration of rearing female cattle as breeding stock, which increases the likelihood of repeated exposure to the vectors (Otranto & Traversa, 2005). In addition, as age increases, cumulative exposure to *Musca* spp. flies also increases, thereby increasing the likelihood of developing an infection. However, statistical analysis revealed no significant association between age, sex, clinical signs, or housing system and the incidence of infection ($p > 0.05$), indicating that these factors may not be the primary determinants in this study.

All cases of *Thelazia rhodesi* detected in this study were subclinical, with no clinical manifestations in the infected animals. This finding is consistent with that of Alemneh & Dagnachew (2025b), who found that some cattle infected with *Thelazia* spp. did not exhibit clinical symptoms. This condition generally occurs in low-intensity infestations when the number of worms in the conjunctiva or lacrimal ducts is insufficient to cause significant tissue damage (Cotuțiu *et al.*, 2023). The severity of symptoms is influenced by the level of infestation, duration of infection, and host immune response to the parasite (Alemneh & Dagnachew, 2025a). Djungu *et al.* (2014) reported that lacrimation, conjunctivitis, and keratoconjunctivitis are more common in cattle with high worm counts, although more severe lesions, such as ulceration, can also occur in relatively low infestations. In addition, local immune response, nutritional status, stress levels, and environmental conditions influence the appearance of clinical signs (Asrat, 2017). The pathological effects of *Thelazia* spp. infection tend to be mild because these parasites are confined to the ocular tissues and do not migrate systemically (Cotuțiu *et al.*, 2023). It should be noted that symptoms such as lacrimation and conjunctivitis are not specific to thelaziasis, as they can also be observed in other eye diseases, including infectious bovine keratoconjunctivitis caused by *Moraxella bovis*, as well as due to environmental factors such as dust and exposure to ultraviolet radiation (Pancar *et al.*, 2024).

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The prevalence of *Thelazia rhodesi* infection in Bali cattle in the Pujut Subdistrict of Central Lombok Regency was low (1.7%), with all identified worms belonging to *T. rhodesi*. Risk

factor analysis showed that age, sex, clinical signs, and husbandry practices were not significantly associated with the occurrence of thelaziasis in cattle. These findings indicate that *T. rhodesi* infections in the study area are sporadic and subclinical. Therefore, parasitological surveillance remains necessary to detect the presence of infection early, especially in areas with potential vector presence, to support the control of thelaziasis in Bali cattle in the future.

Recommendations

Farmers are advised to improve their husbandry practices, particularly in self-contained systems, by enhancing pen sanitation and controlling fly vectors to interrupt the life cycle of *Thelazia rhodesi* in cattle. In addition, the routine administration of antiparasitic drugs, such as ivermectin or levamisole, in endemic areas is recommended to prevent and control the infection. Further research with larger sample sizes and broader geographic coverage is recommended to confirm the prevalence of *T. rhodesi* and evaluate associated risk factors.

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REFERENCES

- Alemneh, T., & Dagnachew, S. (2025a). Bovine Thelaziasis—A Re-emerging Parasitic Disease of Cattle and Buffaloes. *Animal Health Research Reviews*, 1–69. <https://doi.org/https://doi.org/10.1017/S1466252325100029>
- Alemneh, T., & Dagnachew, S. (2025b). *Thelazia* species (eyeworms) infection in cattle: Prevalence, species diversity, seasonal dynamics and its ocular effects in South Gondar zone, Northwest Ethiopia. *Veterinary Parasitology: Regional Studies and Reports*, 61, 101254. <https://doi.org/https://doi.org/10.1016/j.vprsr.2025.101254>
- Asrat, M. (2017). Prevalence and risk factors of the Bovine Thelaziasis at Mersa Town, Ethiopia. *Journal of Animal Science and Veterinary Medicine*, 2(1), 23–26. <https://doi.org/10.31248/JASVM2017.039>
- Astiti, N. M. ayu G. R. (2018). *sapi bali dan pemasarannya* (R. L. Balia, Ed.). Warmadewa University Press.
- Central Lombok Regency Central Statistics Agency. (2023). *Kecamatan Pujut Dalam Angka 2023*. <https://lomboktengahkab.bps.go.id/id/publication/2023/09/26/c276af6c5468019d89d540bf/kcamatan-pujut-dalam-angka-2023.html>
- Cotuțiu, V. D., Ionică, A. M., Dan, T., Cazan, C. D., Borșan, S. D., Culda, C. A., Mihaiu, M., Gherman, C. M., & Mihalca, A. D. (2023a). Diversity of *Thelazia* spp. in domestic cattle from Romania: epidemiology and molecular diagnosis by a novel multiplex PCR. *Parasites and Vectors*, 16(1). <https://doi.org/10.1186/s13071-023-06012-8>
- Cotuțiu, V. D., Ionică, A. M., Dan, T., Cazan, C. D., Borșan, S. D., Culda, C. A., Mihaiu, M., Gherman, C. M., & Mihalca, A. D. (2023b). Diversity of *Thelazia* spp. in domestic cattle from Romania: epidemiology and molecular diagnosis by a novel multiplex PCR. *Parasites and Vectors*, 16(1). <https://doi.org/10.1186/s13071-023-06012-8>

- Demiaszkiewicz, A. W., Moskwa, B., Gralak, A., Laskowski, Z., Myczka, A. W., Kołodziej-Sobocińska, M., Kaczor, S., Plis-Kuprianowicz, E., Krzysiak, M., & Filip-Hutsch, K. (2020). The Nematodes *Thelazia gulosa* Raillet and Henry, 1910 and *Thelazia skrjabini* Erschov, 1928 as a Cause of Blindness in European Bison (*Bison bonasus*) in Poland. *Acta Parasitologica*, 65, 963–968. <https://doi.org/10.1007/s11686-020-00243-w>
- Djungu, D. F. L., Retnani, E. B., & Ridwan. (2014). *Thelazia rhodesii* infection on cattle in Kupang District. In *Tropical Biomedicine*, 31(4), 844-852.
- Dwinata, I. M., & Oka, I. B. M. (2022). The occurrence and diversity of flies related to the Bali cattle breeding system in Badung regency, Bali province, Indonesia. *International Journal of Veterinary Science*, 10, 275–280. <https://doi.org/https://doi.org/10.47278/journal.ijvs/2021.075>
- Hanafiah, M., Aliza, D., Abrar, M., Karmil, F., & Rachmady, D. (2019). Detection of parasitic helminths in cattle from Banda Aceh, Indonesia. *Veterinary World*, 12(8), 1175. <https://doi.org/https://doi.org/10.14202/vetworld.2019.1175-1179>
- Hassan, E. B., Moshaverinia, A., Sheedfar, F., McCowan, C., Bazargani, T. T., Hosseinzadeh, A., Saghafi, R., Ashrafihelan, J., & Beveridge, I. (2017). A report of the unusual lesions caused by *Thelazia gulosa* in cattle. *Veterinary Parasitology: Regional Studies and Reports*, 7, 62–65. <https://doi.org/10.1016/j.vprsr.2016.12.006>
- Hayat, A. U., Supriadi, & Rahmawati, S. E. (2025). Prevalensi Thelaziasis pada Ternak Sapi Bali (*Bos sondaicus*) Di Desa. *Mandalika Veterinary Journal*, 5, 39–44. <https://doi.org/https://doi.org/10.33394/mvj.v5i1.15403>
- Mashur, M. (2014). Prospek Pengembangan Pusat-Pusat Pembibitan Sapi Bali Di Lahan Marginal Untuk Mendukung Penyediaan Sapi Bakalan Di Nusa Tenggara Barat. *Bioscientist: Jurnal Ilmiah Biologi*, 2(1), 19–29. <https://doi.org/https://doi.org/10.33394/bioscientist.v2i1.1304>
- Naem, S. (2007). Morphological differentiation among three *Thelazia* species (Nematoda: Thelaziidae) by scanning electron microscopy. *Parasitology Research*, 101(1), 145–151. <https://doi.org/10.1007/s00436-006-0432-4>
- Novi, E., Tirtasari, K., & Supriadi. (2023). Deteksi Larva *Thelazia* Sp. Pada Lalat *Musca Domestica* Sebagai Inang Intermediet Di Peternakan Sapi Desa Taman Ayu Lombok Barat. *Mandalika Veterinary Journal*, 3(2), 1–8. <https://doi.org/https://doi.org/10.33394/mvj.v3i2.9307>
- Otranto, D., & Traversa, D. (2005). *Thelazia* eyeworm: an original endo-and ecto-parasitic nematode. *Trends in Parasitology*, 21, 1–4. <https://doi.org/https://doi.org/10.1016/j.pt.2004.10.008>
- Pancar, F. M., Putra, I. P. C., Yaddi, Y., Libriani, R., Prasanjaya, P. N., & Fauzia, S. (2024). Representasi Penyakit pada Sapi Berdasarkan Gangguan Sistem Organ di Kabupaten Muna Barat. *Jurnal Sains Dan Teknologi Peternakan*, 5(2), 44–54. <https://doi.org/https://doi.org/10.31605/jstp.v5i2.3802>
- Sabneno, J., Simarmata, Y. T. R. M. R., & Utami, T. (2024). Studi Literatur Gambaran Klinis Dan Pengobatan Sapi Bali (*Bos sondaicus*) Yang Terinfestasi *Thelazia* spp. *Jurnal Veteriner Nusantara*, vii. <https://doi.org/https://doi.org/10.35508/jvn.v7i2.3604>
- Supriadi. (2015). Prevalensi Infeksi Cacing *Thelazia* Sp. Pada Ternak Sapi Bali Di. *Jurnal Sangkareang Mataram*, 1, 50–53.

Yuliana, B. T. (2010). *Evaluasi Lingkungan Pemeliharaan Peternakan Sapi Bali pada Peternakan Rakyat di Desa Pengadangan Kecamatan Pringgasea Kabupaten Lombok Timur-NTB* [Institut Pertanian Bogor]. <http://repository.ipb.ac.id/handle/123456789/62976>

Table

Table 1. Distribution of *Thelazia rhodesi* infection according to sex, age, clinical signs, and management system

Variable	Category	Positive	Negative	Total	Prevalence (%)	p-value
Sex	Female	2	83	85	2.4	1.000
	Male	0	35	35	0.0	
Age	< 1 year	0	31	31	0.0	1.000
	> 1 year	2	87	89	2.2	
Clinical Signs	Presence of clinical signs	0	9	9	0.0	1.000
	Absence of clinical signs	2	109	111	1.8	
Management System	Group-managed	0	50	50	0.0	0.510
	Individually managed	2	68	70	2.9	
Total		2	118	120	1.7	Total

Figures

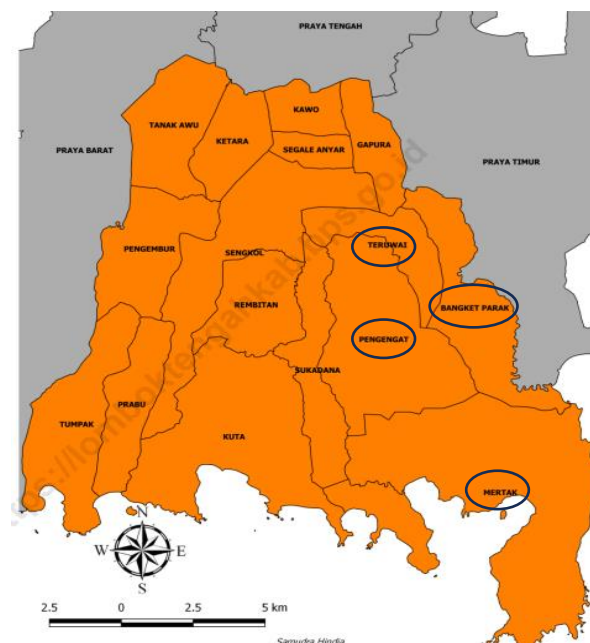


Figure 1. Map of Pujut District, Central Lombok Regency, showing the sampled villages (circled) where sample collection was conducted (Source: Central Lombok Regency Statistics Agency, 2023).

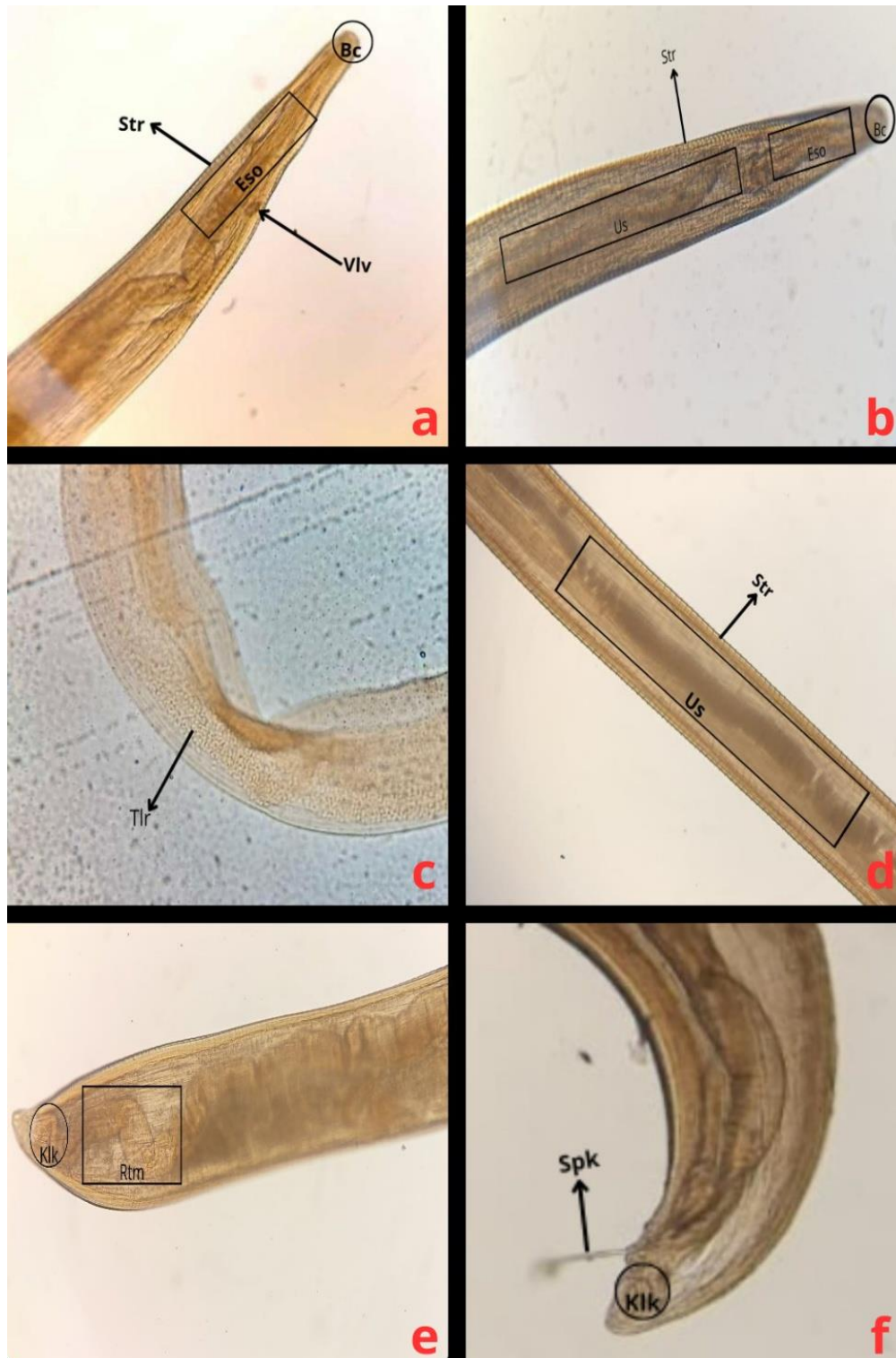


Figure 2. Microscopic examination of female *T. rhodesi* (a, c, e) and male *T. rhodesi* (b, d, f). (a) The anterior region of female *T. rhodesi* showing the vulva (Vlv), esophagus (Eso), serrated striations (Str), and buccal cavity (Bc). (b) The anterior region of male *T. rhodesi* showing the buccal cavity (Bc), esophagus (Eso), intestine (Us), and serrated striations (Str). (c) The body of female *T. rhodesi* showing eggs (Tlr). (d) The body of male *T. rhodesi* showing the intestine (Us) and serrated striations (Str). (e) The posterior region of female *T. rhodesi* showing the cloaca (Klk) and rectum (Rtm). (f) The posterior region of male *T. rhodesi* showing the spicule (Spk) and cloaca (Klk).