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# IDENTIFICATION OF WORM PARASITES IN BEEF CATTLE FECES IN TELUK NANGKA VILLAGE, KUBU RAYA DISTRICT, WEST KALIMANTAN

**Dela Heraini[1, a], Yeti Rohayeti [1], Imam Mahdi Maulana Subhi [1]**
[1] *Animal Husbandry Study Program, Faculty of Agriculture, Tanjungpura University, Pontianak, West Kalimantan*
[a]*email*: dela.heraini@faperta.untan.ac.id

**Abstract**
Beef cattle are meat-producing cattle used for fulfilling and improving people's nutrition. The increase in the beef cattle population in Indonesia has not fully met the national need of meat due to the low productivity of local livestock. Low livestock productivity can be caused by the livestock's health factors, one of them being worm parasites infection. This disease causes economic loss, resulting in lower growth and weight gain, and can lead to death. A qualitative examination stool test is needed for a qualitative examination to identify gastrointestinal parasites in livestock, especially the type and degree of infection. This study aims to identify the types of worms found in the beef cattle faeces in Teluk Nangka Village, Kubu District. This study used a quantitative descriptive method. The parameters used in this study were the identification of worm parasites in the feces of beef cattle in Teluk Nangka Village, Kubu District. Examination of samples using the sedimentation method and the floating method. The research results show that the types of worm parasites found in beef cattle faeces in Teluk Nangka Village, Kubu District, Kubu Raya Regency are *Strongyloides sp, Trichostrongylus sp, Moniezia sp* and *Taenia sp*.
**Keywords:** worm parasites, stool examination, beef cattle, Teluk Nangka Village

# *IDENTIFIKASI PARASIT CACING PADA FESES SAPI POTONG DI DESA TELUK NANGKA KABUPATEN KUBU RAYA, KALIMANTAN BARAT*

***Abstrak***
*Sapi potong adalah sapi penghasil daging yang bermanfaat bagi pemenuhan serta peningkatan gizi masyarakat. Peningkatan populasi sapi potong di Indonesia belum mampu sepenuhnya memenuhi kebutuhan daging nasional karena tingkat produktivitas ternak lok al yang rendah. Produktivitas ternak yang rendah dapat terjadi karena faktor kesehatan ternak. Beberapa penyebab penyakit yang biasanya terjadi salah satunya yang disebabkan oleh infeksi parasit cacing. Penyakit ini menyebabkan kerugian secara ekonomis yang berakibat pada pertumbuhan dan pertambahan bobot badan yang lebih rendah serta bisa menyebabkan kematian. Pemeriksaan feses sangat diperlukan untuk bisa mengidentifikasi keberadaan parasit gastrointestinal pada ternak terutama jenis dan derajat infeksinya, menggunakan pemeriksaan kualitatif. Penelitian ini bertujuan untuk mengidentifikasi jenis cacing yang terdapat pada feses sapi potong yang ada di Desa Teluk Nangka Kecamatan Kubu. Penelitian ini menggunakan metode deskriptif kuantitatif. Parameter yang digunakan pada penelitian ini yaitu identifikasi parasit cacing pada feses sapi potong di Desa Teluk Nangka Kecamatan Kubu. Pemeriksaan sampel menggunakan metode sedimentasi dan metode apung. Hasil penelitian yang telah dilakukan diperoleh bahwa jenis parasit cacing yang terdapat pada feses sapi potong di Desa Teluk Nangka Kecamatan Kubu Kabupaten Kubu Raya adalah Strongyloides sp, Trichostrongylus sp, Moniezia sp dan Taenia sp.*
***Kata Kunci: cacing, feses, sapi***

## INTRODUCTION

Indonesia is an agricultural country, with the majority of its population engaged in the agricultural and livestock sectors, including the breeding and fattening of beef cattle. Beef cattle represent a valuable resource for meat production, contributing to food and nutritional security. The beef demand in Indonesia is increasing every year. According to the Directorate General of Livestock and Animal Health, Ministry of Agriculture, data from the Central Statistics Agency (2021) reveals an increase in production from 2018-2020 shows an increase every year, in 2018 national beef

production was 497,971.70 tons, while in 2019 as much as 504,802.29 tons and in 2020 it will reach 515,627.74 tons. According to Rusdiana and Praharani (2018), the increase in the need for beef cattle is due to the community's demand for beef as a source of animal protein.

According to the Central Statistics Agency (2021), the national cattle population in 2018 totaled 16,432,945 heads, and in 2019, amounted to 16,930,025 heads and continued to increase in 2020, totaling 17,440,393 heads. However, despite the increasing national cattle population, localized observations reveal that the beef cattle population in Teluk Nangka Village remains relatively low, with just 84 heads. This disparity between the national and local cattle populations highlights a significant challenge: the slow development of beef cattle populations in some areas, mainly attributed to the low productivity of local livestock. The low productivity of livestock can be attributed to various factors, such as livestock health that determine the success of the livestock industry. The age-old adage "preventing is better than curing" underscores the importance of proactively improving livestock health through measures like sanitation and vaccination.

Livestock can be afflicted by a range of diseases, including those caused by worm infections, as noted by Zulfikar et al. (2017). Helminthiasis is a disease caused by worm infection in livestock, both in the digestive tract, respiratory tract, liver, and other body parts. Gastrointestinal worms in livestock generally do not show clinical symptoms. This disease causes economic losses from slow body weight gain, weight loss, and livestock productivity and can even cause death (Murtidjo, 2006). Gastrointestinal worms that infect cattle include the class Trematode, Cestode and Nematode (Raza et al., 2012).

Based on geographical location, helminthiasis of the digestive tract occurs in tropical climates with conditions of temperature 27 $^0$C and high rainfall of around 250 mm each year (Subekti et al., 2011). According to the Central Statistics Agency for Kubu Raya Regency (2020), geographically, the climate in the Kubu District area of Kubu Raya Regency has a tropical climate with temperatures of 26$^0$C to 27$^0$C and an average rainfall of 180 mm each year. Hence, livestock is more susceptible to infection worm parasites.

Identifying worm eggs in feces to detect the presence of parasitic worm infections, especially parasites in the digestive tract, in an easy, precise, fast, and effective way. The examination of cattle feces is of paramount importance in identifying parasites within the gastrointestinal tract, including their specific types and the extent of infection. This information is crucial for tailoring appropriate antiparasitic treatments, as different types of worms require specific drugs for effective treatment (Berek & Matutina, 2017). This research aim to know and identify the types of worms found in the beef cattle feces in Teluk Nangka Village, Kubu Raya Regency.

## MATERIALS AND METHODS

### Location and Time of Research

Sampling was conducted in Sidamulya and Sukamulya Hamlets, Teluk Nangka Village, Kubu District, Kubu Raya Regency. Samples were examined to identify worm parasites at the Animal Health Service Laboratory Unit, Veterinary Public Health and the Animal Clinic of the Plantation and Livestock Service Office of West Kalimantan Province for one month in July 2022.

### Research Materials

This study used 30 cattle chosen deliberately in Sidamulya Hamlet, Kubu Raya Regency.

### Research Methods

This research was conducted using an observational approach, specifically employing a quantitative descriptive method. The data collection process involved conducting surveys to gather primary and supplementary data through the use of questionnaires. The objective was to identify and categorize the parasites present in the collected samples for the purpose of determining the specific types of worm parasites. The data used in this study encompassed all the observation samples and the outcomes of laboratory tests. The key parameter in this study was the identification of worm parasite eggs and larvae in the feces of beef cattle from Teluk Nangka Village, Kubu Raya Regency.

### Data Analysis

Data were collected from all observation samples and laboratory examination results. The collected data were analyzed using a

quantitative descriptive approach. The identification process relied on the morphological observations to determine the specific type of worm parasites present in the feces of cattle in Teluk Nangka Village, Kubu Raya Regency.

## RESULTS AND DISCUSSION

Out of the 30 samples collected to identify beef worm parasites in Teluk Nangka, Kubu Raya Regency, five samples tested positive for nematode worm eggs in the stool sample coded S10, S18, S21, S23 and S29. Four samples showed positive worm eggs of the cestode type on the stool sample codes S3, S11, S17 and S27. Three were positive for mixed infections, between nematode worm eggs and cestodes in samples S20, S25 and S30. A total of 18 samples of cattle feces did not contain worm eggs and tested negative (Table 1).

The intensity of worm eggs in faecal samples in Sukamulya Hamlet was higher than those in Sidamulya Hamlet. This discrepancy could be attributed to variations in regional and environmental conditions between the two areas. Sukamulya Hamlet features lowland terrain with swampy and wet soil conditions, while Sidamulya Hamlet has sandy and peat soil conditions. During river flooding, the pens in Sukamulya become damp and muddy, which can increase the prevalence of worm parasite infections in cattle. Purwantan et al. (2006) suggest that moist environments are conducive to the growth of various worms.

The general conditions of the cages are identical: a single group cage type (semi-permanent), cage base made of boards and cement, and roof made of nipa palm leaves and zinc. However, there are discrepancies in their maintenance. For example, in Sukamulya, most breeders rarely clean up the cattle dung, allowing it to accumulate. The drainage in the cattle pens of Sukamulya is also minimal, which can impact cattle health and attract disease-carrying flies. In contrast, Sidamulya breeders tend to clean their cattle's dung more regularly, and the drainage in their beef cattle pen is better compared to those in Sukamulya Hamlet.

The positive samples of nematode worm parasite eggs contained two worm species: *Strongyloides sp*. and *Trichostrongylus sp.* In the Cestoda class, two species of worm eggs were found: *Moniezia sp* and *Taenia sp*. These four types of gastrointestinal endoparasites found in cattle in Teluk Nangka Village were caused by the contamination of worm eggs and larvae in the livestock feed. The results of the worm parasites identification in 30 cattle feces samples in Teluk Nangka Village, Kubu District, Kubu Raya Regency, shows that five samples were positive for nematode worm eggs in the S10, S18, S21, S23 and S29 fecal examination tests (Table 2).

**Table 1.** Pictures of cattle faecal worm parasite eggs in Teluk Nangka Village, Kubu Raya Regency.

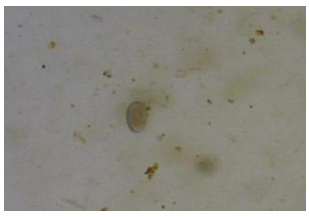
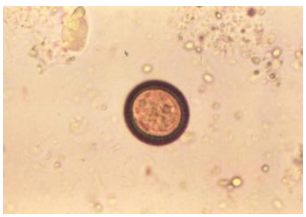
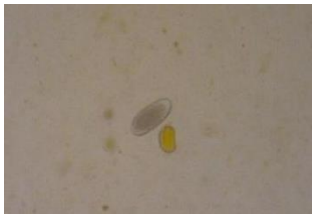
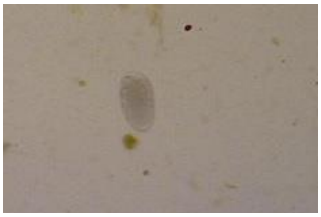
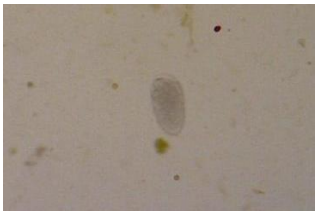
| Nematodes | Cestode |
|---|---|
|  *Strongyloides* |  *Taenia sp* |
|  *Trichostrongylus* |  *Moneyizia sp* |

**Table 2.** Sample data containing nematode worm eggs

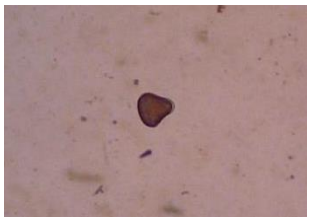
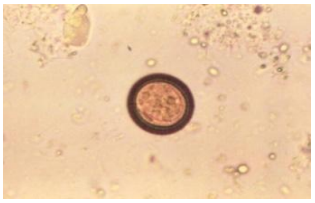
| Sample code | Picture | Type | Class | Hamlet |
|---|---|---|---|---|
| S10 |  | Strongyloides | Nematoda | Sidamulya |
| S18 |  | Strongyloides | Nematoda | Sukamulya |
| S21 |  | Trichostrongylus | Nematoda | Sukamulya |
| S23 |  | Strongyloides | Nematoda | Sukamulya |
| S29 |  | Trichostrongylus | Nematoda | Sukamulya |

*Moniezia sp.* worm parasite eggs were detected in fecal samples from Sukamulya Hamlet, with four positive samples. According to Levine (1994), nematode worms are commonly found in livestock, especially ruminants, goats, sheep, and cattle. These worms are prevalent in the abomasum of cattle living in tropical and humid climates. Their life cycle is direct, meaning that they do not require an intermediate host. Thid results in a high intensity of nematode infection in the animal stomach (Bowman & Georgi, 2009).

The fewest parasitic eggs found were of *Taenia sp.*, which was only be identified in one sample of faeces in Sukamulya Hamlet. According to Luhulima et al. (2017), the development and survival of Taenia *sp.* (tapeworms) are strongly influenced by temperature and humidity. They thrive in warm environment, and reduced survivability in cold environment. Direct observations at the research location in Sukamulya Hamlet showed wet and humid conditions, which inhibit the growth and prevalence of *Taenia sp.* eggs, as they were only found in sample 27.

Out of the 30 samples observed, four were positively tested for cestode worm eggs in the stool examination tests coded S3, S11, S17 and S27. Further details on samples testing positive for nematode worm eggs are provided in Table 3.

**Table 3.** Sample data containing cestode worm eggs

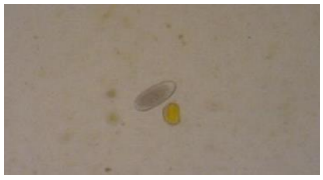
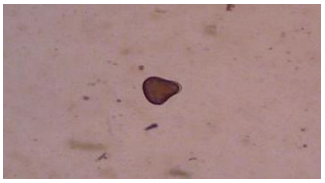
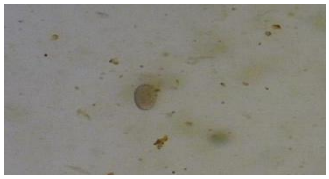
| Sample code | Picture | Type | Class | Hamlet |
|---|---|---|---|---|
| S3 |  | Moniezia | Cestoda | Sidamulya |
| S11 |  | Moniezia | Cestoda | Sidamulya |
| S17 |  | Moniezia | Cestoda | Sidamulya |
| S27 |  | Taenia | Cestoda | Sukamulya |

This research also identified *Srongyloides sp.* Eggs, which are often associated with unclean cage conditions. The larvae of these worms infect livestock in cages, as the worm eggs contain rapidly and readily hatching larvae (Suhardono *et al.*, 2001). These worms can be transmitted through food or drink contaminated by cattle feces (Indradji et al., 2018). According to Koesdarto et al. (2007), *Strongyloides sp* are prevalent in several tropical Asian countries, including Indonesia, with a high prevalence of worm infection during the rainy season.

Infection by another class of Nematoda worms, *Trichostrongylus sp*, was observed in two samples. According to Koesdarto et al. (2007), tropical countries, including Indonesia, are suitable habitats for the life cycle of worm parasite *Trichostrongylus sp*. This infection can be harmful for cattle as the larvae can penetrate the small intestine, leading to inflammatory reaction, bleeding and anemia. According to Soulsby (1986), *Trichostrongylus sp* infections can cause inflammation, necrosis, hemorrhage and edema of the cecum mucosa. Levine (1990) states that *Trichostrongylus sp* eggs are resistant to environmental conditions and predicted to survive for several years.

In the stool examination test, three samples (S20, S25 and S30) were tested positive for mixed infections between nematode and cestode eggs. On the other hand, 18 cattle feces samples tested negative, indicating the absence of worm eggs. Detailed data on samples containing mixed infections between nematode and cestode worm eggs are available in Table 4.

**Table 4**. Data on samples containing mixed infections between cestode and nematode worm eggs

| Sample code | Picture | Type | Class | Hamlet |
|---|---|---|---|---|
| S20 |  | Moniezia | Cestoda | Sukamulya |
| |  | Trichostrongylus | Nematoda | |
| S25 |  | Moniezia | Cestoda | Sukamulya |
| |  | Trichostrongylus | Nematoda | |
| S30 |  | Moniezia | Cestoda | Sukamulya |
| |  | Strongyloides | Nematoda | |

The stool samples observed in this study did not find any eggs of the trematode class worms. According to Susanto et al. (2008), the absence of eggs of trematode class worms could be influenced by several factors, particularly humid environmental conditions. Many trematode species are found in aquatic environments because their transmission requires an intermediate host, such as water snails and aquatic plants. It is noteworthy that the majority of Teluk Nangka Village breeders also engage in gardening. These breeders obtain their cattle's feed from around the garden, which are far from stagnant water source where the aquatic plants and water snails typically grow and develop.

## CONCLUSION

This study concludes that the types of worm parasites identified in the feces of beef cattle in Teluk Nangka Village, Kubu Raya Regency are *Strongyloides sp, Trichostrongylus sp, Moniezia sp* and *Taenia sp*.

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