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***Research Article***

# Survey on Gastrointestinal Parasites of Cattle in Two Local Government Areas in Nasarawa State, Nigeria

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**ABSTRACT**
Livestock production is faced with several problems, which, in the long run result in low productivity. There is a need to investigate the prevalence of gastrointestinal parasites of cattle in Keffi and Lafia, Nasarawa State. Faecal samples were collected from the rectum of cattle in markets and abattoirs into sterile labelled polythene bags and conveyed in ice packs to the Parasitology Laboratory for examination using the flotation technique. A total of 200 cattle from Keffi and Lafia were examined for intestinal helminths. A total of 105 (52.5%) cattle were infected. Cattle from Lafia LGA were slightly more infected (55.0%) than those from Keffi LGA ($p>0.05$). The rearing system was found to be a significant determinant of infection since animals reared under a closed system had less infection than those in the open system. Parasites encountered ranged from trematodes, nematodes, to protozoans with single parasitism mainly from *Fasciola* spp. It is recommended that pastures should be rotated even if closed ranging system is practised, avoid overgrazing, feed the cattle with good feed and clean water.

**Keywords:** Closed grazing; Gastrointestinal parasites; Livestock; Open grazing; Overgrazing

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## INTRODUCTION

Animal husbandry is an indispensable pre-requisite towards the sustainability of human development because of food provision, employment generation (Pam *et al.,* 2013). Apart from serving as source of food for humans, animal husbandry is also important in providing non-food materials such as hides, skin, wool and feathers which are in turn used as raw materials for manufacturing other valuable products (Pam, *et al.,* 2013). Livestock production is faced with a number of problems, which on the long run results in low productivity.

Cattle are domesticated cloven-hooves herbivores. They are a prominent member of the subfamily Bovinae and the most widespread species of the genus *Bos*. Adult females are referred to as cows while adult males are referred to as bulls. However, cow sometimes used as a common name for the species as a whole. According to the Food and Agriculture Organization (FAO) there are approximately 1.5 billion cattle in the world as of 2018 (FAO, 2020).

When cattle have a diet with enough protein, vitamins and minerals, fewer worms are normally established, and the cattle are able to withstand their effects. Management practices that maintain good nutrition also prevent severe reinfection with worms. Additional control measures include proper drainage and sanitation, separating age groups and strategic deworming (Kanyari *et al.*, 2009).

## MATERIALS AND METHODS

### Study Area

This study was carried out in abattoirs and cattle market located at Keffi LGA and Lafia LGA Nasarawa State, Nigeria.

### Collection of Samples

In total, two hundred (200) cattle were selected for the study. One hundred (100) cattle from each LGA. Market and abattoirs were randomly chosen within Keffi and Lafia LGAs. Parameters such as sex, breed, and body conditions of the cattle were recorded. Breed identification was based on physical morphology, while the appearance of external genitals was the basis for sex differentiation. Faecal samples were collected from the of each of the sampled cattle into a sterile well-labelled polythene bag and conveyed in ice packs to Nasarawa state University keffi, department of zoology laboratory where they were examined using floatation technique.

### Floatation Technique

About 5ml of zinc sulphate (specific gravity was 1.15) was added to 3g of faecal sample and mixed thoroughly. The faecal suspension was sieved through a tea strainer into sterile test tube then filtrate was transferred into sterile test tube supported in a rack. The test tube was gently topped up with the floatation solution leaving a convex meniscus at the top of the tube and a cover-slip carefully placed on top of the test tube. After 15 minutes, the cover-slip was carefully lifted with the drop of fluid adhering to it which was gently placed on a clean grease-free glass slide viewed under 10x and 40x magnification of light microscope (Pam *et al.*, 2020).

### Data Analysis

The data obtained from this study was subjected to statistical analysis on SPSS version 20.0. Chi square test was used to ascertain if there was a significant difference in gastrointestinal infection in relation to location, breed, age, sex and grazing condition as well as if there was a significant difference between the respective parasites encountered. Variables with $p>0.05$ were considered significant.

## RESULTS

A total of two hundred (200) cattle were examined, with an even split of 100 animals from each location (Keffi and Lafia LGAs). Overall, more than half (52.5%) of the cattle were infected with intestinal parasite. Lafia LGA had slightly higher infection compared to cattle from Keffi LGA (50%), though the difference was not statistically significant ($p>0.626$) as presented in Table 1.

In this study, different gastrointestinal parasites were encountered with varying degrees of infection ranging from single to multiple parasitism (Table 2). Single parasitism was commonly associated with *Fasciola* spp. 30(37.04%), Ascaris spp. 5(18.52%) and *Strongyle* spp. 16(18.52%) *Trichuris* spp. 1(1.23%) as the least case occurring. Double infection recorded with *Eimeria+Fasciola* 4(22.22%), *Eimeria+strongyle* 1(5.56%) *Fasciola+Trichuris* 2(11.11%) *Monezia+Fasciola* 2(11.11%). Only one case of triple infection was recorded: *Fasciola+Trichuris +Strongyle* spp 6 (100%).

Three cattle breeds were examined: White Fulani (144 animals), Sokoto Gudali (47 animals), and Red Bororo (9 animals). White Fulani had the highest number of infected animals (54.8%). Red Bororo had an infection rate (55.6%), Sokoto Gudali had the lowest infection (44.7%). The study had a p-value of 0.491($p>0.05$). Distribution of intestinal parasitic infections based on cattle breed was not statistically significant ($p=0.491$) as presented in Table 3.

The youngest cattle (<4 years old) had the highest occurrence of parasitic infection seemed to decrease with age of the cattle: there were fewer infections (50.6%) in the middle age group (of 4-6 years old); while the older cattle (of 7-9 years old) had the least infection (of 42.9%), but difference was not statistically significant ($p= 0.207$) as shown in Table 4.

Based on gender of the cattle (Table 5), the females were more infected with parasites (55.8%) than the males (48.3%), but the difference was not statistically significant ($p=0.433$). Cattle in open ranch system were significantly more infected with parasites (56.6%, $p= 0.004$) than those in the close ranch system (30%) as shown in Table 6.

**Table 1: Prevalence of Gastrointestinal Parasites based on Location**

| Location | Number examined | Number positive | Prevalence (%) | χ2 | P-value |
|---|---|---|---|---|---|
| Keffi | 100 | 50 | 50 | 0.238 | 0.626 |
| Lafia | 100 | 55 | 55 | | |
| Total | 200 | 105 | 52.5 | | |

**Table 2: Distribution** of G**astrointestinal Parasites encountered in cattle**

| Nature of infection | Parasite encountered | Frequency (n=200) | χ2 | P value |
|---|---|---|---|---|
| **Single** | *Ascaris* spp. | 15 | | |
| | *Eimeria* spp. | 4 | | |
| | *Fasciola* spp. | 30 | 80.89 | 0.000 |
| | *Monezia* spp. | 2 | | |
| | *Strongyle* spp. | 15 | | |
| | *Taeniasaginata* | 6 | | |
| | *Trichostrongylus* spp. | 7 | | |
| | *Trichuris* spp. | 1 | | |
| | | 4 | | |
| **Double** | *Eimeria+Fasciola.* | | | |
| | *Eimeria+Strongyle* | 1 | | |
| | *Fasciola+Trichuris* | 2 | 6.89 | 0.4405 |
| | *Monezia+Fasciola* | 2 | | |
| | *Strongyle+Fasciola* | 5 | | |
| | *Strongyle+Trichuris* | 2 | | |
| | **Total** | | | |
| **Triple** | *Fasciola+Trichuris+Strongyle.* | 6 | | |

**Table 3: Distribution of Gastrointestinal Parasites Based on Breed of the cattle**

| Breed | Number observed | Number positive | Prevalence (%) | χ2 | p-value |
|---|---|---|---|---|---|
| Red Bororo | 9 | 5 | 55.6 | 1.423 | 0.491 |
| Sokoto gudali | 47 | 21 | 44.7 | | |
| White Fulani | 144 | 79 | 54.8 | | |
| Total | 200 | 105 | 52.5 | | |

**Table 4: Distribution of Gastrointestinal Parasites by Age Group**

| Age group | Number Observed | Number positive | Prevalence (%) | χ2 | p-value |
|---|---|---|---|---|---|
| < 4 years | 66 | 38 | 61.3 | 3.148 | 0.207 |
| 4-6 years | 103 | 52 | 50.5 | | |
| 7-9 years | 35 | 15 | 42.9 | | |
| Total | 200 | 105 | 52.5 | | |

**Table 5: Distribution of Gastrointestinal Parasites by Gender**

| Sex | Number observed | Number positive | Prevalence (%) | χ2 | p-value |
|---|---|---|---|---|---|
| Female | 113 | 63 | 55.8 | 0.615 | 0.433 |
| Male | 87 | 42 | 48.3 | | |
| Total | 200 | 105 | 52.5 | | |

**Table 6: Distribution of Gastrointestinal Parasites by Method of Rearing**

| Type of Ranch | Number observed | Number positive | Prevalence (%) | χ2. | P-value |
|---|---|---|---|---|---|
| Closed | 30 | 9 | 30 | 8.279 | 0.004 |
| Open | 170 | 96 | 56.5 | | |
| Total | 200 | 105 | 52.5 | | |

## DISCUSSION

A total of 200 faecal samples collected from the animals were analyzed using the flotation method. Occurrence of 52.5% gastrointestinal parasitic infection in cattle was recorded in this study. From other previous studies, Obi *et al*. (2020) recorded a prevalence of 57.6 % in Anambra State. In Bauchi, Yuguda (2018) reported a higher prevalence of 73.3%; while Pam *et al.* (2020) reported a higher prevalence of 57.1% in Lafia. The variation in occurrence of gastrointestinal parasites recorded in this study as compared to that of other authors could be due to differences in geographical area, climatic conditions, study locations, management system employed, and the season in which the study was conducted.

It is likely that in this study, cattle were exposed to less infection sources which may account for the fewer cases of coinfection relative to the single infection which was recorded. Furthermore, in line with the findings of this study, Oluwole *et al.* (2016) also reported higher prevalence of *Fasciola* species. It has been reported previously that *Fasciola* are by far the most economically important trematodes of ruminants in the tropics (Kingsley *et al.*, 2013) and that might account for the higher prevalence recorded also in this study.

White Fulani and Red Bororo harboured more infections in this study as compared to the Sokoto Gudali. Previous study by Adedipe *et al.* (2014) also reported higher incidence of gastrointestinal parasites in white Fulani cattle. The findings of this study showed that breed was not an important determinant of infection as was also reported by Regassa *et al.* (2006), Yuguda *et al.* (2018) and Obi *et al*.. (2020).

Although in this study, younger animals harboured more infection as compared to the older cattle, the observation as not significant and suggests that age is not an important determinant of the infections. Similar finding was also reported by Nganga *et al.* (2004) Kemal and Terefe (2013) and might be due to the .fact that older animals may have more developed immunity as compared to the younger animals due to past exposures to these parasites. Contrary to this finding however, Addisu and Berihu (2014), Tshering and Dorji (2013) and Solomon *et al.* (2016) reported higher infection in the younger animals than the adult. Solomon *et al*. (2016) further added that age was a significant determinant of infection in cattle.

Similarly, sex was not an important determinant of infection in this study, although more male animals were infected, it was not significant. Probably the males were more exposed than the female cattle due to their aggressive forging behaviour. Several authors have also reported higher prevalence of parasites in male than female cattle (Ameen *et al.,* 2015; Yuguda *et al.,* 2018). Similar to this finding, Obi *et al.* (2020) reported that sex was not a significant determinant of infection. However, contrary to the finding of this study, Squire *et al.* (2013) reported higher prevalence in the female cattle.

However, this study found that the rearing system is a significant determinant of infection since animals reared under a closed system had lesser infection than those in the open system. The reason could be that much care and attention are given to those reared in the closed system than those reared under the open system. In a study by Obi *et al.* (2020), they reported a prevalence of gastrointestinal parasites of cattle of 80% in free range system with diverse parasites encountered ranging from nematodes, trematodes and protozoa which is similar the result of this study. And like our finding, they also reported more single parasitism than multi parasitism. Similarly, Yahaya and Tyav (2014) and Ntonifor *et al.* (2013) also reported high prevalence of gastrointestinal parasites in nomadic cattle.

## CONCLUSION

In this study, a high occurrence of gastrointestinal parasites was recorded in the study cattle. With those sampled from Lafia harbouring higher infection. Parasites encountered ranged from trematodes, nematodes to protozoan with single parasitism mainly from *Fasciola* spp. As the dominant. Among the different predisposing factors assessed, only the grazing system appeared to be a significant determinant of infection in the current study. Therefore, it is encouraged that to reduce infection in the animals, close ranging system should be practice and adequate care should be given to the animals.

Cattle should be treated with anthelmintic drugs at least twice per year, and more often for high-risk animals, such as young calves and cattle grazing on heavily contaminated pastures. Pasture management practices, such as rotating pastures, avoiding overgrazing, and removing manure from pastures regularly, should be implemented to reduce the risk of cross infection. Cattle should be vaccinated against helminth diseases for which vaccines are available. Strategic anthelmintic treatment programs should be developed and implemented to reduce the risk of anthelmintic resistance and improve the effectiveness of anthelmintic drugs.

## REFERENCES

Addisu, B., &Berihu, H. (2014). Study on prevalence of gastrointestinal nematodes and scoccidian parasites affecting cattle in West Arsi zone, Oromiya Regional State, Ethiopia. *Veterinary Science and Technology,* 5(5), 2-6.

Adedipe, O. D., Uwalaka, E. C., Akinseye, V. O., Adediran, O. A., & Cadmus, S. I. (2014). Gastrointestinal Helminths in Slaughtered Cattle in Ibadan, South-Western Nigeria. *Journal of Veterinary Medicine*, *2014*, 923561.

Ameen, S.A., Adedokun, R.A.M., &Akinola, S.O. (2015).Prevalence of gastro-intestinal parasites of cattle in Ogbomoso, Oyo State. *International Journal of Applied Agriculture and Apiculture Research,* 11(1–2):22–26.

Food and Agriculture Organisation of the United Nations (2020).From the original on 31 august 2020.Retrieved 31 August 2020.

Kanyari P W N, Kagira J M and Mhoma R J (2009) Prevalence and intensity of endoparasites in small ruminants kept by farmers in Kisumu Municipality, Kenya, *Livestock Research for Rural Development* 21:202 retrieved April 24, 2013.

Kemal, J., &Terefe, Y. (2013).Prevalence of gastrointestinal parasites of cattle in GedebanoGutazerWolene district, Ethiopia.*Journal of Veterinary Medicine and Animal Health*, 5(12): 365-370

Kingsley, E., Ovutor, O., &Barine, L.G. (2013) Prevalence of species of helminthes parasites in cattle slaughtered in selected abattoirs in Port Harcourt, South-South, Nigeria. *International Journal of Research in Medical Science*, 1(2),10-17.

Nganga, C.J., Maingi, W.K., Wunyua, &Kanyari, P.W. (2004).Epidemiology of gastrointestinal helminths infection in Darper sheep in semi-arid area of Kenya.*Onderspepoort Journal of Veterinary Research*, 71(3), 219-226.

Ntonifor, H.N., Shei, S.J., Ndaleh, N.W., Mbunkur, g.n. (2013). Epidemiological studies of gastrointestinal parasitic infections in ruminants in Jakiri, Bui Division, Northwest region of Cameroun. *Journal of Veterinary Medicine and Animal Health,* 5(12), 344-352.

Obi, C. F., Akata, M. C., &Ezubelu, O. J. (2020). Prevalence of gastrointestinal helminth parasites of trade cattle in Aguata and Orumba South Local Government Areas, Southeastern Nigeria. *Journal of parasitic diseases: official organ of the Indian Society for Parasitology*, *44*(3), 546–552.

Oluwole, A.S., Adeniran, A.A., Mogaji, H.O., Shittu, E.O., Alabi, O.M., Odoemene, S., &Ekpo, U.F. (2016). Survey of gastrointestinal parasites among nomadic cattle herds in Eruwa, Oyo State, Southwestern Nigeria. *Annual Research and Review in Biology*, 10(6), 1-7.

Pam, V.A., Stevensmith, O.E., Adejoh, V.A., Ombugadu, A., Pam, D.D., Yohanna, J.A., &Fadayomi, K.V. (2020). Studies on helminthes in cattle and goats slaughtered at Lafia abattoir, Lafia Local Government Area, Nasarawa State, Nigeria. *Acta Scientific Technology*, 1.4,30-34.

Pam. V.A., Ogbu, K.I., Igeh, C.P., Bot, C.J., & Vincent, G. (2013). The occurrence of gastrointestinal and haemo parasites of cattle in Jos of Plateau State, Nigeria. *Journal of Animal Science Advances,* 3(2):97–102.

Regassa, F., Sori, T., Dhuguma, R., &Kiros, Y. (2006) Epidemiology of gastrointestinal parasites of ruminants in Western Oromia, Ethiopia. *International Journal of Applied Research and Veterinary Medicine,* 4(1):51–57.

Solomon, L., Ibrahim, N., &Temesgen, M. (2016).Prevalence of gastrointestinal helminthes parasites of cattle in Ejere District, West Shao, Oromiya Region, Ethiopia.*World Journal of Agricultural Science*, 12(5), 364-371.

Squire, S.A., Amafu-Dey, H., &Beyuo, J. (2013).Epidemiology of gastrointestinal parasites of cattle from selected locations in Southern Ghana. *Livestock Research and Rural Development,* 25(7):14–18.

Tshering, G., &Dorji, N. (2013).Prevalence of gastrointestinal parasites in free range cattle; a case study in Haa district, Bhutan.*Journal of Animal Health and Production*, 1(4), 36-37.

Yahaya, A. and Tyav, Y.B. (2014).Survey of gastrointestinal parasitic helminths of bovines slaughtered in abattoir, Wudil Local Government Area, Kano State, Nigeria.*Greener Journal of Biological Sciences,* 4, 128-134.

Yuguda, A.U., Samaila, A.B., & Panda, S.M. (2018).Gastrointestinal helminth of slaughtered cattle in Bauchi Central Abattoir, Bauchi State, Nigeria. *GSC Biological and Pharmaceutical Sciences,* 4(02):58.