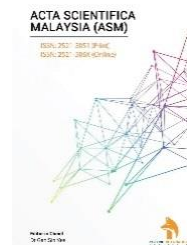




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RESEARCH ARTICLE

PREVALENCE OF GASTROINTESTINAL PARASITE IN CATTLE OF BANKE DISTRICT OF NEPAL IN DIFFERENT SEASONS AND BREEDSSaroj Regmi^a, Sujata Aryal^b, Mandeep Pokhrel^c, Utsav Lamichhane^d^aM.Sc., Agriculture and Forestry University, Rampur, Chitwan, Nepal^bM.Sc., Institute of Agriculture and Animal Science, Tribhuvan University^{c,d}B.V. Sc & A.H., Agriculture and Forestry University, Rampur, Chitwan, Nepal*Corresponding Author Email: regmisaroj645@gmail.com

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ABSTRACT

Paramphistomum and Fasciola are the most common parasite found in the gastrointestinal of the cattle in the terai region of Nepal. The parasite resides in the gut and feed there, resulting in the nutrition deficit for the cattle. A study was conducted in Kohalpur, Banke of Nepal to study the seasonal and breed-wise prevalence of the gastrointestinal parasite in cattle. A total of 156 fecal samples were analyzed, out of which 79 samples were collected in summer and 77 samples were collected in winter. Out of total samples 108 were brought to the clinic and 48 samples were collected directly from the rumen of the cattle. Sedimentation technique for recovering the larva and egg of parasite was performed. Five slides were prepared from each sample and was observed under the microscope for eggs and larva. The result showed that the prevalence was 36.71% in the summer and it was 16.88% in the winter. The statistical relationship showed that the prevalence gastrointestinal parasite in cattle was significantly ($P < 0.05$) higher in the summer season. Likewise, the prevalence was 11.86% in the Jersey breed and 36.08% in the Jersey cross breed. And the statistical relationship also showed that the gastrointestinal prevalence in Jersey cross breed was significantly ($P < 0.05$) higher than Jersey breed.

KEYWORDS

Gastrointestinal, Paramphistomum, Fasciola, Banke, Parasitic infestation.

1. INTRODUCTION

Parasitic infestation is one of the common problems in the livestock sector of Nepal. Most common gastrointestinal parasite found in Nepal are Paramphistomum and Fasciola. These gastrointestinal parasites are responsible for the decreased productivity from cattle (Lamichhane et al., 2019). Rana et al., 1997 carried a study in Paramphistomum, out of 12 sub-species of Paramphistomum 11 were reported from Nepal. The climate of Banke district is tropical. The hot and humid climate of Banke district favors the growth of the gastrointestinal parasite. The lifecycle of the parasite starts from the ingestion of the contaminated fodder, feed, and grass. And different stages are completed in various organs of the animal. Then eggs or other form of parasite are excreted from the body which causes new infestation or re-infestation. The parasite while being inside the animal's body invades different cells and tissues which eventually results in the decreased productivity from the cattle.

2. METHOD AND METHODOLOGY

2.1 Study area

The fecal samples were collected from Kohalpur municipality with the exact geolocation of 28°12' N, 81°41' E. Kohalpur municipality lies in the mid-western region of Nepal with the tropical climate. The samples were collected at a veterinary clinic of Kohalpur municipality. Samples were

collected in January and July of 2019.

2.2 Sample collection

A total of 156 samples were collected out of which 108 samples were brought to the clinic and 48 samples were taken directly from the rectum of animal. Out of the total samples collected, 79 samples were collected in summer and 77 samples were collected in winter.

2.3 Analysis of sample

Sedimentation technique for recovering the larva and egg of parasite was performed as described by Bhatia et al., 2016. Five slides were prepared from each sample and was observed under the microscope for eggs and larva.

3. DATA COLLECTION

After every sample was observed under the microscope, the presence of the larva or egg was recorded.

4. DATA ANALYSIS

The data collected was primarily entered in MS Excel 2019 and statistical analysis was performed in IBM SPSS version 25.

Quick Response Code



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5. RESULTS

Table 1: Variation of parasitic infestation in cattle in different seasons

| Season | Number of samples taken | Number of samples with parasite | % of infestation within season | % of infestation within result | Probability value |
|--------|-------------------------|---------------------------------|--------------------------------|--------------------------------|-------------------|
| Summer | 79 | 29 | 36.71 | 69.05 | 0.004 |
| Winter | 77 | 13 | 16.88 | 30.95 | |

Table 2: Variation of parasitic infestation in cattle in different breeds

| Breed | Number of samples taken | Number of samples with parasite | % of infestation within breed | % of infestation within result | Probability value |
|--------------|-------------------------|---------------------------------|-------------------------------|--------------------------------|-------------------|
| Jersey | 59 | 7 | 11.86 | 16.67 | 0.01 |
| Jersey cross | 97 | 35 | 36.08 | 83.33 | |

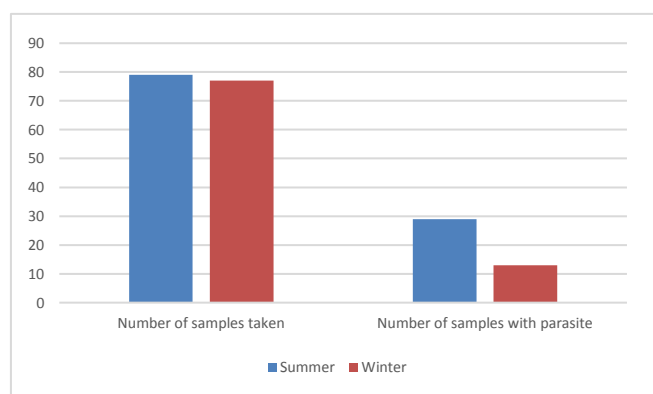


Figure 1: Variation of parasitic infestation in cattle in different seasons

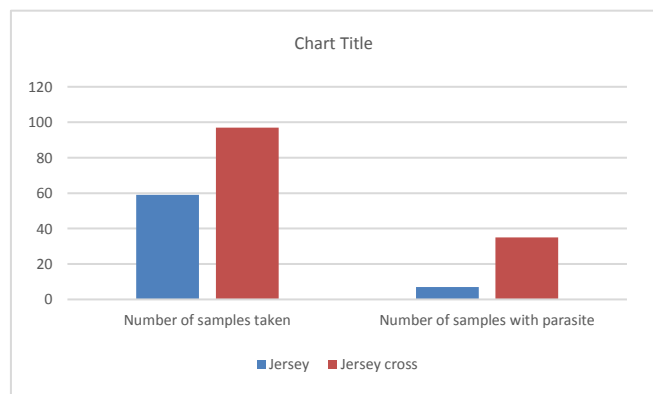


Figure 2: Variation of parasitic infestation in cattle in different breeds

6. DISCUSSION

Overall infestation of gastrointestinal parasite was 26.92% in Kohalpur of Banke district in 2019. The infestation of parasite in cattle was reported to be higher in summer (36.71%) than in winter (16.88%). The statistical analysis showed significant ($P < 0.05$) relation of parasitic infestation with the season. Lamichhane et al., 2019, Bista et al., 2018 also reported higher parasitic infestation in the summer in Rupandehi and Chitwan districts of Nepal, respectively. The infestation in the Jersey cross cattle was significantly ($P < 0.05$) higher (36.08%) than in the Jersey cattle. Similar study was done by Sardar et al., 2016 which reported higher infestation of gastrointestinal parasite in Jersey cross. The reason for higher infestation in summer is the hot and humid condition which favors the parasite.

7. CONCLUSIONS

There was significant relation of infestation of gastrointestinal parasite

with season and breed of cattle. This result represents the condition of all the tropical climatic regions of Nepal. Lack of scientific use of the anthelmintic drug and direct exposure of contaminated grass and fodder are the reasons for this significant level of infestation in cattle.

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REFERENCES

- Bilal, M. Q., Hameed, A., & Ahmad, T. 2009. Prevalence of gastrointestinal parasites in buffalo and cow calves in rural areas of Toba Tek Singh, Pakistan. *J. Anim. Plant Sci*, 19(2), 67-70.
- Bista, S., Lamichhane, U., Singh, D. K., & Regmi, S. 2018. Overview of Seasonal Prevalence of Liver Fluke & Rumen Fluke Infestation in Cattle and Buffalo of Western Chitwan, Nepal. *Journal of the Institute of Agriculture and Animal Science*, 35(1), 235-241.
- Copeman, D. B., & Copland, R. S. 2008. Importance and potential impact of liver fluke in cattle and buffalo. *ACIAR Monograph Series*, 133, 21.
- Huang, C., Wang, L., Pan, C., Yang, C., & Lai, C. 2014. Investigation of gastrointestinal parasites of dairy cattle around Taiwan. *Journal of Microbiology, Immunology and Infection*, 47(1), 70-74.
- Jeyathilakan, N., Latha, B.R., & Basith, A. 2008. Seasonal prevalence of *Schistosoma spindale* in ruminants at Chennai. *Tamil Nadu J Vet and Anim Sci. and Japanese Journal of Veterinary Research* 63(2), 63-71, 2015.
- Khan, S. A. 2015. Study on the Prevalence and Gross Pathology of Liver Fluke Infestation in Sheep in and Around Quetta District, Pakistan. *Advances in Animal and Veterinary Sciences*, 3(3), 151-155.
- Lalrinkima H., Siamthara Freedy H., Borthakur S.K., Ramhermawia Joshep, Patra Gautam, Lalawmpuia C. and Khiagte Lal Thansanga 2016. Prevalence of gastrointestinal parasite infections of cattle in northeast India bordering to Myanmar and Bangladesh. *International Journal of Parasitology Research Volume 8, Issue 4, 2016*.
- Lamichhane, U., Ghimire, N., & Basnet, H.B. 2020. Prevalence of Gastrointestinal Parasite in Cattle of Rupandehi District of Nepal in Different Seasons, *Ind. J. Pure App. Biosci.* 8(2), 16-20.
- Mahato, M. K., Singh, D. K., Rana, H. B., & Acharya, K. P. 2018. Prevalence and risk factors associated with *Giardia duodenalis* infection in dairy cattle of Chitwan, Nepal. *Journal of parasitic diseases*, 42(1), 122-126.
- Moussouni, L., Benhanifia, M., Saidi, M., & Ayad, A. 2018. Prevalence of gastrointestinal parasitism infections in cattle of Bass Kabylie Area: Case of Bejaia Province, Algeria. *Macedonian Veterinary Review*, 41(1), 73-82.
- S.A. Sardar, M.A. Ehsan, A.K.M.M.Anower, M.M.Rahman and M.A.Islam 2006. Incidence of liver flukes and gastrointestinal parasite in cattle. *Bangladesh Journal of Veterinary Medicine vol 4, No 1 (2016)*.
- Shrestha, U. T., Adhikari, N., Kafle, S., Shrestha, N., Banjara, M. R., Steneroden, K., ... & Ghimire, P. 2020. Effect of deworming on milk production in dairy cattle and buffaloes infected with gastrointestinal parasites in the Kavrepalanchowk district of central Nepal. *Veterinary Record Open*, 7(1).
- Wadhwa, A., Tanwar, R. K., Singla, L. D., Eda, S., Kumar, N., & Kumar, Y. 2011. Prevalence of gastrointestinal helminthes in cattle and buffaloes in Bikaner, Rajasthan, India. *Veterinary World*, 4(9), 417.