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ASSESSMENT OF GASTROINTESTINAL HELMINTHS FROM FAECAL SAMPLES OF CATTLE AT FEDERAL UNIVERSITY OF TECHNOLOGY FARM, MINNA.

J. Y. Adama, I. C. Alemede, S. Ogunbanjo and S. Isah
Department of Animal Production, Federal University of Technology, P. M. B. 65, Minna, Niger State.

ABSTRACT
The study was carried out to assess the prevalence of Gastrointestinal helminths from faecal samples of cattle at the Federal University of Technology Farm Minna, Niger State, Nigeria during the period of April to June 2008 (12 weeks). Fifteen animals were selected from the head of 33 heads of cattle and randomly assigned into three (3) groups designated as groups 1 (calves 1 -12 months of age), group 2 (yearlings 1 -2 years of age) and group 3 (Adults 2 years and above). Five faecal samples were collected weekly from each group for laboratory analysis using direct smear method of faecal sample analysis. Results showed that the overall prevalence of Gastrointestinal helminths in calves, yearlings and Adult cattle were 45, 33.3 and 23.3 % respectively. Heamonchus and Ascarids have the highest level of prevalence in calves with 25 % each. In yearlings, Ascarids and fasciola were high with 30 % and 20 % respectively while in adults Heamonchus was found to have the highest percentage prevalence rate of 35.7 %. Based on these findings it is clearly evident that the level of prevalence of gastrointestinal helminths in adult cattle is less than that found in young ones (both yearlings and calves). The need to introduce improved preventive measures of controlling helminths in order to protect the entire cattle population against the parasites is strongly recommended.

KEYWORDS: Prevalence, gastrointestinal helminths, calves, yearlings, adults.

INTRODUCTION

The economic importance of cattle can not be over emphasized, because in terms of meat and milk production, animal power, animal by – products, cattle is the first most important (Adu and Ngere, 1979). Cattle represents a valuable assets in both traditional and modern agriculture, they provide meat, milk, skin and draught power, additionally they may, in a traditional society be an essential part of the social system, representing a family wealth or they can be regarded as a survival kit by nomadic people (Fabiyi, 1984). As such, factors such as disease conditions that may tend to limit their production potentials needed to be prevented by all means.

Gastrointestinal helminths are known to be widespread parasitic disease of livestock especially ruminants and are known to limit cattle production in many areas and countries (Keyyu et al., 2005). The direct losses caused by these parasites are attributed to acute illness and death, rejection of some parts of meat inspection and low milk production; indirect losses includes the diminution of production potentials such as decreased growth rate, weight loss in young growing calves and late maturity of the animals (Swai et al., 2006).

According to (Radostits et al., 1994), the predisposing factors to these parasitic diseases include amongst others high concentration of livestock population and that the principal problem of parasitic diseases is cattle is common in areas of highly productive lands where larger number of animals has been concentrated. Adama (2008) reported that there is usually a seasonal migration of livestock in search of available pastures and water from the far North in to Niger state which serves as a predisposing factor to disease conditions. Therefore, this study is set up to determine the level of prevalence of gastrointestinal helminths in cattle of different ages in the university farm and also to come up with a baseline epidemiological data that will serve the immediate community which will be useful in the management of cattle for improved production.

MATERIALS AND METHODS

This study was carried out at the Federal University of Technology Farm, Minna in Bosso Local Government Area of Niger State, Nigeria which is located in the Southern Guinea Savanna Zone.

Minna has a land mass of 28.5km square and lies between longitude 6^0 29^0E and latitude 9^0 31^0N. The average temperature ranges over the period was 18 – 39^0C with an average monthly rainfall of 1200mm.

The herd used consists of thirty three (33) heads of cattle in which each animal was properly identified with a number tag. Fifteen (15) animals were randomly assigned into three (3) groups designated as group 1 (calves of 0 – 12 months of age), group 2 (yearlings of 1 – 2 years of age) and group 3 (Adults of 2 years and above). They were managed semi – intensively and water was given ad-libitum.

Fresh faecal samples were collected weekly for a period of 12 weeks between 7.00 am to 8.00 am before they were allowed to go out for grazing. Five faecal samples were collected per group per week which translates to 15 samples being collected from 3 groups per week. In the overall, 180 samples were collected from the 3 groups for 12 weeks. The faecal samples were collected through proper restraining of the animals and care was taken to avoid contamination and injury to the rectum of the animals. This was achieved by thoroughly washing the hands after which a transparent polythene bag was worn in form of hand glove. The hand was therefore, inserted into the rectum in order to collect at least 2 grams of faecal samples from the animals.

At least 2 grams of each samples collected were taken freshly for laboratory analysis at the state veterinary centre, Bosso, Minna, Niger State.

The faecal samples were analyzed microscopically through the use of direct smear method in which the egg and larval forms of the parasites were observed under the microscope.

The data collected were subjected to descriptive statistical analysis using percentages in determining the prevalence rates in the three age groups. The graph was plotted using microsoft excel.

RESULTS AND DISCUSSION

The overall assessment of gastrointestinal helminths of cattle within twelve (12) weeks of study as indicated in table 1.0 shows the level of prevalence in calves, yearlings and adult cattle to be 27, 20 and 14 positive samples respectively out of 60 samples analyzed from each group. This agrees with earlier findings (Swai et al., 2006) that the prevalence of gastrointestinal helminths infection in cattle in Ngorongo district, Tanzania shows low prevalence rate in adults than yearlings and calves. In similar reports (Motahar – Hussain et al., 2000 and Mohammad et al., 2007), they clearly showed that calves are more susceptible than adult cattle as far as gastrointestinal helminths infections are concerned.

Table 2.0 shows the summary of gastrointestinal helminths observed from the various samples with a corresponding percentage levels of prevalence showed in Table 3.0 and in Fig 1. The result for the calves showed 27 positive samples with a corresponding 45% prevalence rate. Yearlings showed 20 positive samples with a corresponding 33.3% prevalence rate while adults showed 14 positive samples with a corresponding 23.3% prevalence rate respectively. The result also reflects the presence of the following species of helminths with the corresponding percentage levels of prevalence obtained. The result for the calves reflects Ascarids 7 (25%), Bunostomum 6 (22.2%), Fasciola 5 (18.5%), Haemonchus 7 (25%), Moniezia 1 (3.7%), oesophagostomum 1 (3.7%) and strongyle 0 (0%) respectively. For yearlings it has Ascarids 6 (30%), Bunostomum 3 (15%), Fasciola 4 (20%), Haemonchus 3 (15%), Moniezia 0 (0%), oesophagostomum 0 (0%) and strongyle 4 (20%) respectively. Similarly in adults it has Ascarids 3 (21.4%), Bunostomum 0 (0%), Fasciola 1 (1.1%), Haemonchus 15 (35.7%) and Moniezia 1 (7.1%) respectively.

The result showed clearly that Ascarids, Fasciola and Haemonchus species were well established in

Table 1.0: Level of gastrointestinal helminths from faecal samples of cattle of different ages at Federal University of Technology Farm, Minna, Niger State, Nigeria.

Group 1 (0 – 12 months of age)				Group 2 (1 – 2 years of age)			Group 3 (2 years and above)		
Weeks	Total Samples	Positive samples Helminths	Negative Samples	Total Samples	Positive Samples Helminths	Negative Samples	Total Samples	Positive Samples Helminths	Negative Samples
1	5	1	4	5	2	3	5	1	4
2	5	2	3	5	-	5	5	1	4
3	5	2	3	5	1	4	5	-	5
4	5	2	3	5	2	3	5	-	5
5	5	2	3	5	2	3	5	1	4
6	5	3	2	5	2	3	5	2	3
7	5	2	3	5	1	4	5	3	2
8	5	4	1	5	3	2	5	2	3
9	5	3	2	5	1	4	5	1	4
10	5	3	2	5	1	4	5	1	4
11	5	2	3	5	2	3	5	1	4
12	5	1	4	5	3	2	5	1	4
Total	60	27	33	60	20	40	60	14	46

Table 2.0: Summary of gastrointestinal helminths observed from faecal samples of cattle at Federal University of Technology Farm, Minna, Niger State, Nigeria.

Groups	No. of faecal samples collected	No. of positive samples	No. of negative samples	As	Bn	Fa	Ha	Mo	Oe	St
One (0 – 12 months)	60	27	33	7	6	5	7	1	1	-
Two (1 – 2 years)	60	20	40	6	3	4	3	-	-	4
Three 2 years and above	60	14	46	3	-	1	5	1	2	2
Total	180	61	119	16	9	10	15	2	3	6

As – Ascaries species, Bn – Bunostomum species, Fa – Fasciola species,
Ha – Haemonchus species, Mo – Moniezia species, Oe – Oesophagostomum species and
St – Strongyle species.

Table 3.0: Percentage level of gastrointestinal helminths from faecal samples of cattle at Federal University of Technology Farm Minna, Niger State, Nigeria.

Groups	No. of positive samples	No. of negative samples	As	Bn	Fa	Ha	Mo	Oe	St
One (0 – 12 months)	45	55	25	22.2	18.5	25	3.7	3.7	0
Two (1 – 2 years)	33.3	66.6	30	15	20	15	0	0	20
Three 2 years and above	23.3	76.6	21.4	0	1.1	35.7	7.1	14.3	14.3

As – Ascaries species, Bn – Bunostomum species, Fa – Fasciola species,
Ha – Haemonchus species, Mo – Moniezia species, Oe – Oesophagostomum species and
St – Strongyle species.

both calves and yearlings. This might be due to seasonal effects of migration in search of feedstuff and water as well as existence of small streams of water around the university farm which may be the likely points where these animals contact the infection when they go out for grazing particularly during the dry seasons of the year. These water points could also provide favourable environmental conditions for

The prevalence rate of Haemonchus species in calves, yearlings and adults were 25, 15 and 35.7% respectively. It clearly shows that Haemonchus parasites were the most predominant species identified in this study. The highest level of 35.5% seen in adult cattle may be due to a well developed gut system especially abomasum which are the predilection site for these parasites. Seasonal effects and availability of small streams of water around the farm could have contributed to the outcome of this result.

Figure 1 gave a graphical demonstration of the number of positive samples and the prevalence rate of gastrointestinal helminths obtained in this study. The high prevalence rate observed in young calves as compared to yearlings and adults confirms earlier reports (Frechette, 1971 and Swai, 2006) that in young animals especially below one (1) year of age, the host parasite relationship is easily established as such their resistance to infection becomes minimal.

In conclusion, based on the result of this study, it is clear that the level of prevalence of gastrointestinal helminths differs in age, with calves, yearlings and adults showing prevalence rates of 45, 33.3 and

23.3% respectively. Therefore, proper hygienic conditions, improved feeding methods and strategically planned deworming and rotational grazing systems to reduce the menace of gastrointestinal helminths infection are highly recommended.

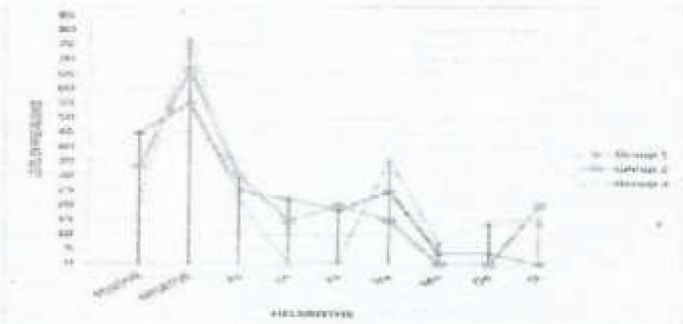

FIGURE 1: PERCENTAGE LEVEL OF GASTROINTESTINAL HELMINTHS FROM FAECAL SAMPLES OF CATTLE AT RESEARCH FARM, FEDERAL UNIVERSITY OF TECHNOLOGY, GIDAN KWANO CAMPUS, MINNA

As – Ascaries species, Bn – Bunostomum species, Fa – Fasciola species, Ha – Haemonchus species, Mo – Moniezia species,

REFERENCES

Adama, T. Z. (2008), Towards adequate Animal protein intake by the year 2020, *Inaugural lecture presentation, Federal University of Technology, Minna* Series 11: 6 – 68.

Adu, I. F. and Ngere, I. O. (1979), 'The Indigenous Cattle of Nigeria' *World Review animal Production 15*:51 – 62.

Fabiyi, J.P. (1984), Coping with parasitic disease problem in Nigeria *Livestock Farmers Series* 4: 13.

Frechette, J.I. and Gibbas HC. (1971). Studies on the incidence of gastrointestinal Helminths of cattle in Quebec. *The Canadian Veterinary Journal*, 12: 207 – 209.

Ibrahim, Y.Y and Mbap, S.T. (2006), Application of appropriate Technology in over coming Environmental Barriers in animal Agriculture in Nigeria. *Proceedings of Nigeria society for Animal production 31st Annual conference Kano* 12 – 15 March 2006, 61 – 63.

Keyyu, J.D., Mourad, J., Kursgarerd, N.C.A.A and Kassuku (2005), Epidemiology of *Fasciola gigantica* and Amphistomes in cattle on Traditional small-scale dairy and large scale dairy farms in the Southern Highland of Tanzania. *Tropical Animal Health and production* 37: 303:314.

Motahar – Hussain, M.M., Khyrul - Islam, M., Jmhur John – Hwa, L. and Byeong – Kid, B. (2000). Examination of Gastrointertinal Helminths in livestock Grazing in Graissland of Bangiladesh. *The Korean Journal of Parasitology* 38(3):187 – 189.

Muhammad, A.R., Zafar, I., Abduljabbar, and Muhammad, Y. (2007). Prevalence of Gastroindtestinal Helminthiasis in ruminants in southern Punjab. *Journal of Helminthology* 81: 323 – 328 *Cambridge University Press Journals.*

Okere, J. U. (1978) Guide to Livestock Production in Nigeria. *Livestock Farmers series 41 – 12.*

Radostits, O.M., Blood, D.C. and Gay, C.C. (1994). Veterinary Medicine. A text book of the disease of cattle, sheep, pigs, and horses, eight edition. 1226 – 1235.

Schillhorn and Bida S. (1974) Draught, Malnutrition and parasites. *Nigerian Journal of Animal Production* 1: 131 – 236.

Swai, E.S. Mtui, P.F., Mbise, AN., Kaaya, E., Sanka, P. and Loomu, P.M (2006). Prevalence of gastro-intestinal parasites infection in Maasai cattle in Ngorongoro district, Tanzania. *Livestock Research for Rural Development. Veterinary Investigation Centre Tanzania.* 18: 1 – 10.

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Corresponding Author:
J. Y. Adama, I. C.
Department of Animal Production, Federal University of Technology, P. M. B. 65, Minna, Niger State.
Email: adama_live@yahoo.com