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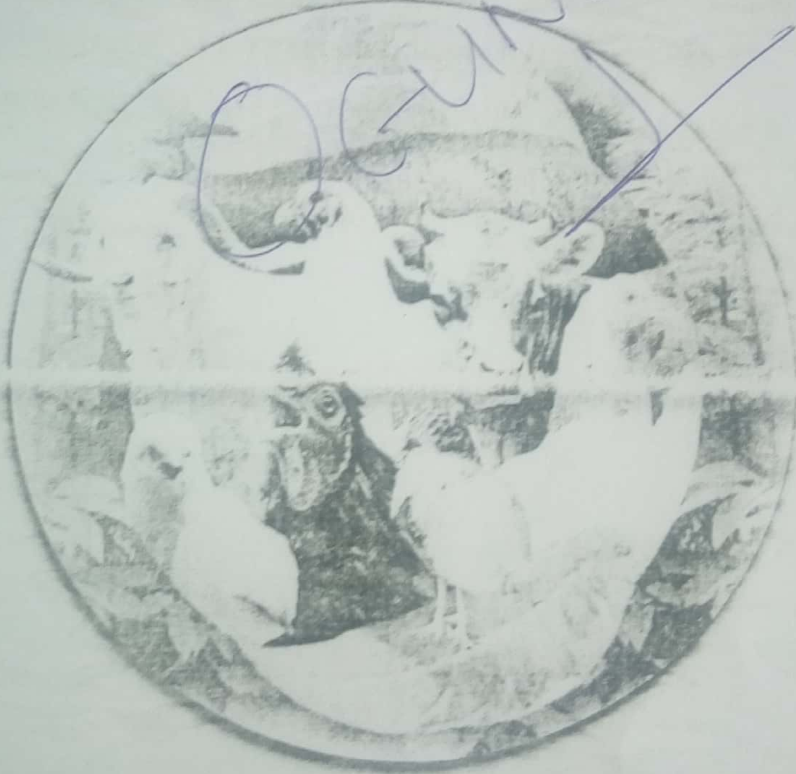

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PARASITIC DISEASES OF RUMINANTS BROUGHT TO TWO ZONAL VETERINARY CLINICS IN NIGER STATE, CENTRAL NIGERIA

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ABSTRACT

A five years study (2003-2007) of parasitic diseases of ruminants brought to two Zonal Veterinary clinics located in the Southern part of Niger State, Central Nigeria was carried out to establish disease patterns in cattle, sheep and goats. The study was based on the data extracted from the monthly records of parasitic disease cases within Bida and Suleja geographical zones. The results generated at Bida showed that helminthosis (strongylosis, ascariosis, and other gastrointestinal helminths) had the highest incidence rate throughout the years of study followed by ectoparasites, fasciolosis and trypanosomiasis, which represents 42.8, 24.6, 17.7 and 9.6% respectively. There were significant ($p<0.05$) differences among the different parasitic diseases for which the animals were treated. The result from the zonal veterinary clinic in Suleja showed helminthosis, also had the highest incidence rate closely followed by fasciolosis, trypanosomiasis and ectoparasites (38.8, 27.7, 20.79 and 5.7% respectively). Again, there were significant ($p<0.05$) differences among the different parasitic diseases for which the animals were treated. It is recommended that adequate preventive measures be taken to protect ruminant livestock population in the study areas against prevalent parasitic diseases.

Keywords: Parasitic diseases, ruminants, veterinary clinic, disease records, Nigeria

INTRODUCTION

It has been estimated that livestock forms a component of the livelihood of 70% of the world poor (LID, 1999). Livestock is important in supporting the livelihood not only for farmers, but also for consumers, traders and laborers throughout the developing world. However, ruminant animals are the most important in terms of meat and milk production, animal power and by-products, which serves as food and sources of income for most rural communities in Nigeria.

In Africa and Nigeria in particular, animal diseases significantly reduce livestock productivity, contributing to food insecurity and poor nutrition (Nonga *et al.*, 2009). Some of these diseases are of great economic importance to man and his livestock as they cause a lot of discomfort and economic losses (Surberg and Mark, 1995). Diseases of livestock have many additional direct and indirectly impacts on human nutrition, community development and socio economic values. The disease impact also brings about losses in the production of hides, beef, milk as well as high mortality, sterility, abortion and condemnation of large number of infected carcasses.

In Nigeria, there have been inadequate follow-up studies on disease occurrence in ruminants; hence there is difficulty in supplying farmers with up to date information on priority diseases. Such up-to-date animal health information however exist in most of the developed countries, particularly for intensive livestock production system in which the livestock serve as valuable aid to enhancing production efficiency (Perry *et al.*, 2001). This constraint has been attributed to lack of sophistication and availability of epidemiological techniques arising from inadequacies of funding (Okoli, 2001 and 2003).

In this study, we report a five years study (2003-2007) of parasitic diseases of ruminants brought to two Zonal Veterinary clinics located in the Southern part of Niger State, central Nigeria

MATERIALS AND METHODS

The study was conducted at two Zonal Veterinary Clinics in the Southern part of Niger State comprising Bida (Southwest) and Suleja (Southeast) geographical zones of the state. Niger State has natural vegetation of Southern Guinea Savannah, with average annual rainfall of 984.5 mm, while average annual temperature is 21°C – 32°C (Adefolalu, 1989).

Five years data (2003 to 2007) from the monthly records provided by the veterinary clinics at Bida and Suleja were obtained. The data were made up of the monthly records of the day to day cases

Five years data (2003 to 2007) from the monthly records provided by the veterinary clinics at Bida and Suleja were obtained. The data were made up of the monthly records of the day to day cases of parasitic diseases of ruminants brought to the clinics by the livestock owners. Such parasitic diseases were categorized as trypanosomiasis, helminthosis (strongylosis, ascariosis, and other gastrointestinal helminthes), ectoparasites (tick infestation, tick dermatitis and paralysis, sarcoptic mange infestation etc) and fasciolosis (*Fasciola gigantic* infection).

The information collated were used to evaluate the incidence of parasitic diseases in cattle, sheep and goatsireared by livestock farmers within the study areas. The diseases were ranked in order of their incidence.

The data obtained were grouped on yearly basis and were analyzed using one way analysis of variance (Wahua 1999). Bar charts were also used to illustrate the total number of animals brought to the clinic for treatment against the various parasitic diseases.

RESULTS AND DISCUSSION

Table 1 showed that at Bida, helminthosis and fasciolosis had the highest incident rates as indicated by their mean values of 2724.00 ± 117.07 and 2113.73 ±186.61.

Table 1: disease conditions treated at zonal veterinary clinic, Bida in zone A geographical area of niger state between 2003 and 2007

Years	Trypanomiasis	Fasciolosis	Ectoparasites	Helrninthosis	LS
2003	757.00±282.52[c]	4033.33±1-53-.2-09[a]	341.00±111.63[ab]	3380.67± 79.28[b]	
2004	1334.67±934.06[c]	2971.67±87.96[b]	2902.33±224.64[b]	3059.67±453.48[a]	*
2005	694.67±392.17[b]	3858.00±147.82[a]	382600±98.65[a]	389133±25.26[a]	*
2006	55.33±55.33[b]	2751.33±190.67[a]	2974.33±101.67[a]	2910.33±94.32[a]	*
2007	106.33±1 06.33[b]	567±5.678[c]	16.33±2.33[c]	368.67±260.72[a]	*
Mean	589.50±359.08	2724.00±117.07	201200±107.78	2113.73±182.61	*

Mean in the same row bearing similar letter are not significantly (P>0.05) different

* Level of significant at 5% (P<0.05)

± Standard error of mean; Ls = Level of significant

Similarly, figure I showed animal counts with disease conditions treated at the zonal veterinary clinics, Bida. Cattle was clearly the dominant livestock brought to the clinic for treatment against trypanosomiasis, and in year 2003 alone, about 4,500 heads of cattle were treated against trypanosomiasis with least treatment figure of about 2,500 heads in 2006.

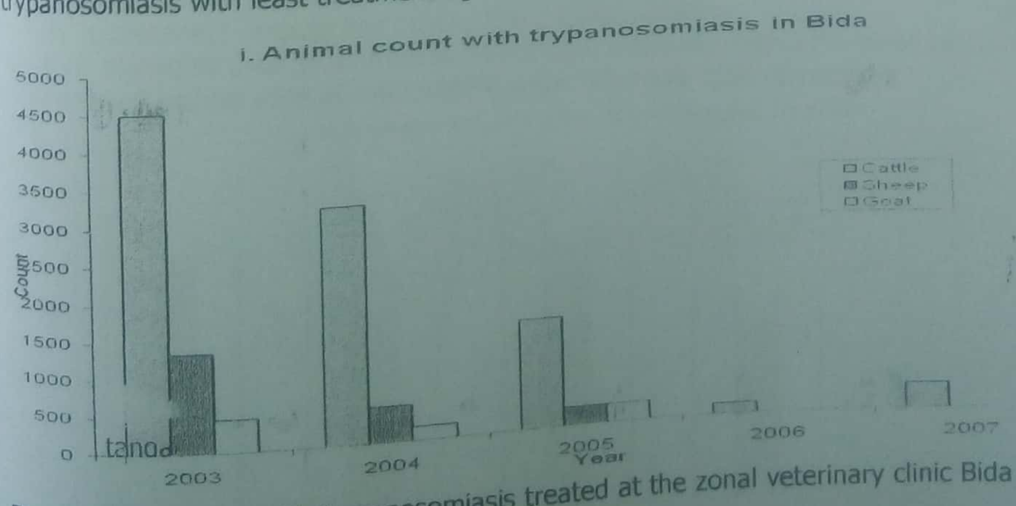


Fig. I: Animal counts with trypanosomiasis treated at the zonal veterinary clinic Bida between 2003 and 2007

The reduction in the number of animals treated against trypanosomiasis in 2006 could be as a result of the fact that the drugs administered in the previous years (2003 - 2005), were effective against trypanosomiasis and continued to exhibit some residual influence on the disease incidence in the subsequent year (Sokomba, 1984). This probably translated to reduction in infection rate, which is similar to the findings in the treatment of ectoparasites (Figure II).

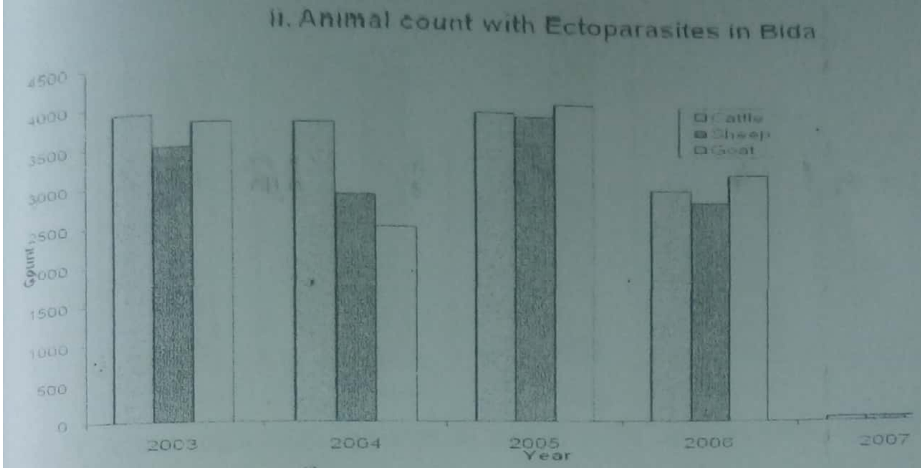


Fig. II: Animal counts with ectoparasite conditions treated at the zonal veterinary clinic Bida between 2003 and 2007

The high prevalence rate of helminthosis observed in table 1 may be due to the proximity of the zone to water bodies like the Niger River. Since ruminants utilize forages within the environment and also go in search of water around the same rivers, contamination of feed and water can easily spread the disease (Loso, 1986; Sikasunge *et al.*, 2008). This also agrees with earlier reports (Gilles, 1980; Hunter et al., 1993; Ofoezie, 2002) that streams and rivers create conducive environments for fresh water snails, the intermediate host of *Fasciola gigantica* as well as the growth and survival of other parasites.

Furthermore, the migratory movement of pastoralists south-wards as a result of desertification in the far North of Nigeria brings about high livestock concentration along the River Niger belt, within the location of these two study areas. Therefore, this helps to promote the mixing of different animals resulting in the spread of diseases as confirmed by the reports of (Swinton, 1987; Adama, 2008), that pastoralists engage in frequent movement as strategies for coping with draught. Similarly, in the tropics, weather and climatic conditions greatly influence disease occurrence, while rainfall and temperature influence the quality of available grazing land and drinking water, thus, the condition of the animals. The later has a direct bearing on susceptibility and resistance of animals to diseases (Verocoe and Frisch, 1982; Carles, 1983).

Figure III highlights data on animals suffering from fasciolosis within the same period of study. The result showed highest peak of treatment in years 2003 and 2005 respectively.

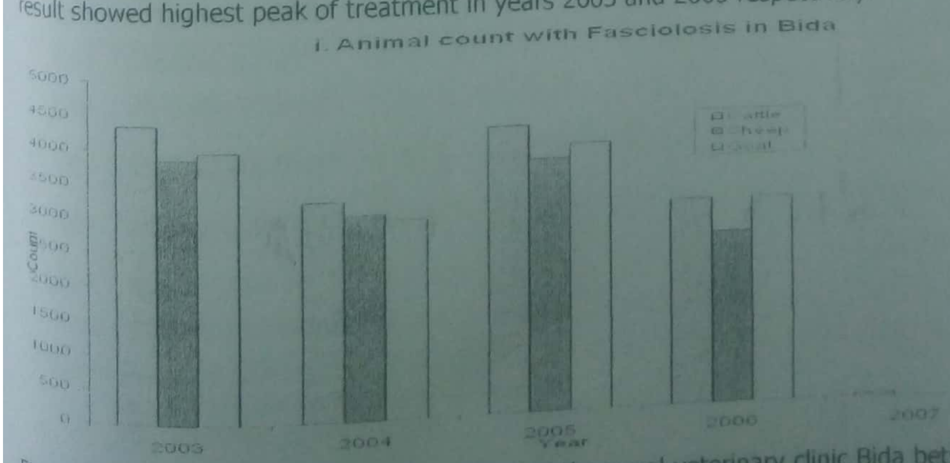


Fig. III: Animal counts with fasciolosis treated at the zonal veterinary clinic Bida between 2003 and 2007

However, there was a progressive decline in the number of animals brought to the clinic between years 2006 and 2007 respectively. Conversely, the outcome of this result shows a recurrence in the infection rate of helminthosis (Figure IV) in animals due largely to contamination of sources of water and pasture by the helminthes in line with the reports of (Trueba *et al.*, 2000; Alhaji, 2005), that where summer temperature and rainfalls are high, several generations of parasites a year are possible.

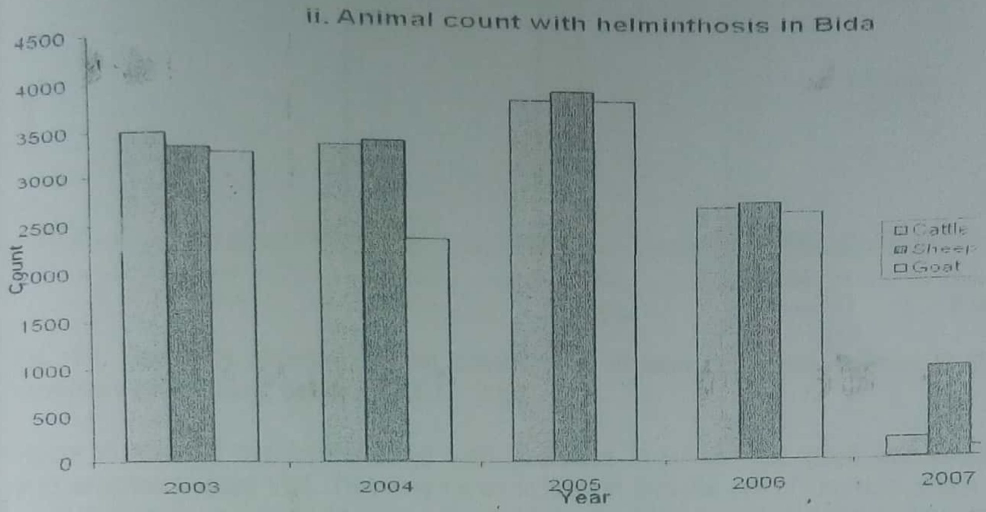


Fig. IV: Animal counts with helminthosis treated at the zonal veterinary clinic Bida between 2003 and 2007

Table 2 showed the results of the study carried out at the zonal veterinary clinic Suleja and indicated again that helminthosis with the mean value of 4142.33 ± 1604.20, had highest incidence rate. High values for helminthosis might again be due to the proximity of the zone to water bodies such as the Rivers Niger and Gurara, which may provide favorable pasture and sources of drinking water to the livestock as well as the survival of the parasites. This is in agreement with earlier findings by Ofoezie (2002). It could also be that since Suleja is close to the Abuja Federal Capital Territory, which has led to increasing development and corresponding increase in human population in the area, there is likely pressure on the little available grazing land thus making some of the infections to be easily transmitted.
Figure V showed animal counts with trypanosomiasis treated at the zonal veterinary clinic Suleja for a period of five years. The result showed that only cattle and sheep were brought to the clinic for treatment against trypanosomiasis. High population counts of about 1,300 heads of cattle were treated against trypanosomiasis in years 2005. In all the years under study, only few goats were brought to the clinic, which is an indication that Suleja is a metropolitan city and it might be difficult to rear goats as it is not easy to confine them.

Table 2: Disease conditions treated at zonal veterinary clinic, Suleja in zone B geographical area of Niger state between 2003 and 2007

Years	trypanosomiasis	Fasciolosis	Ectoparasites	Helminthosis	Ls
2003	556.00±313.24[b]	328.67±328.67[c]	145.00±90.23[d]	1281.33±386.33[a]	*
2004	3930.00±3506.40[c]	536+33+2720.37[b]	2134.00±1271.81[a]	6389.67±1409.49[a]	*
2005	4517.33±4076.10[b]	5133.33+3145.36[ab]	863.67±385.70[d]	5679.67±2132.66[a]	*
2006	4945.67±3630.94[b]	7285.33+5866.91[a]	556.33±301.38[d]	4996.00±2932.62[b]	*
2007	855.00+717.70[c]	1575.67+1110.89[b]	345.00±8732[d]	2365.00±1159.89[a]	*
Mean	2960.80+2428.88	3937.07+2634.44	808.08±427.29	4142.33±1604.20	*

Mean in the same row bearing similar letter are not significantly ($P>0.05$) different
* Level of significant at 5% ($P<0.05$)
± Standard error of mean Ls Level of significant

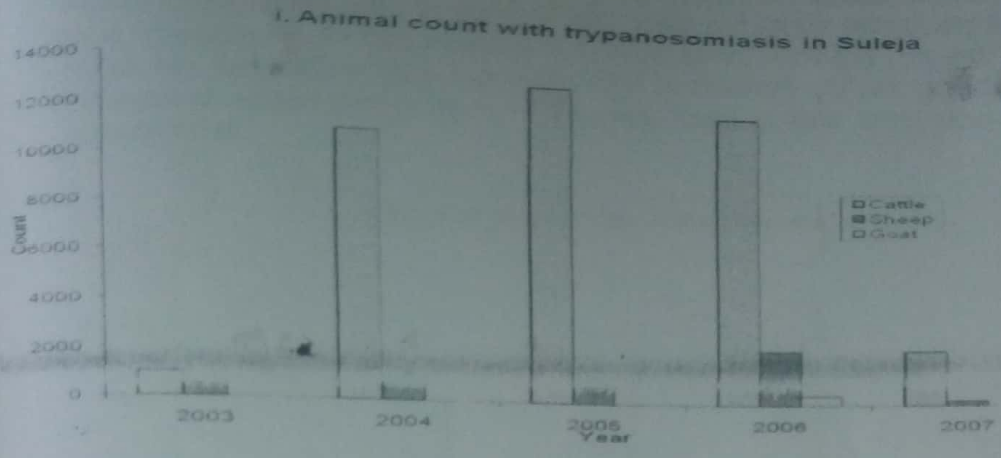


Fig. 4.1 Barcharts showing animal counts with disease conditions treated at the zonal veterinary clinic Suleja between 2003 – 2007

Figure VI showed the animal count with fasciolosis in Suleja. The result was similar to those of ectoparasites (Figure VII). This may be an indication that the use of chemical drugs and improved management practices might have influenced the results obtained, as there is a progressive decline in the number of animals brought to the clinic over the years after initial treatments between years 2004 and 2005.

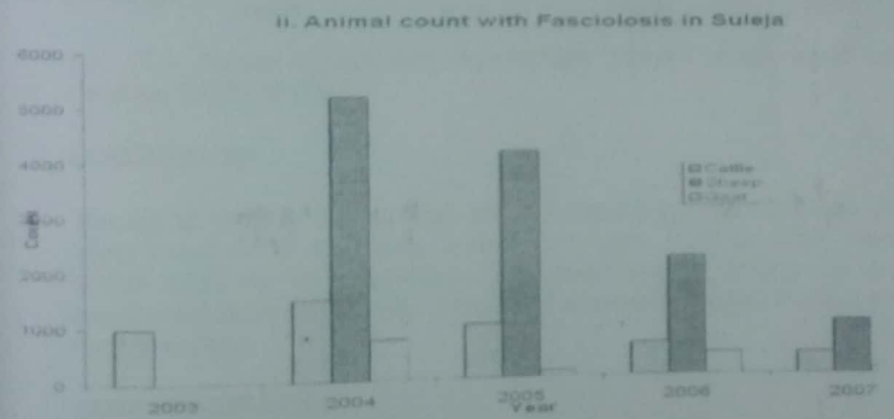


Fig. VI: Animal counts with fasciolosis treated at the zonal veterinary clinic Suleja between 2003 and 2007

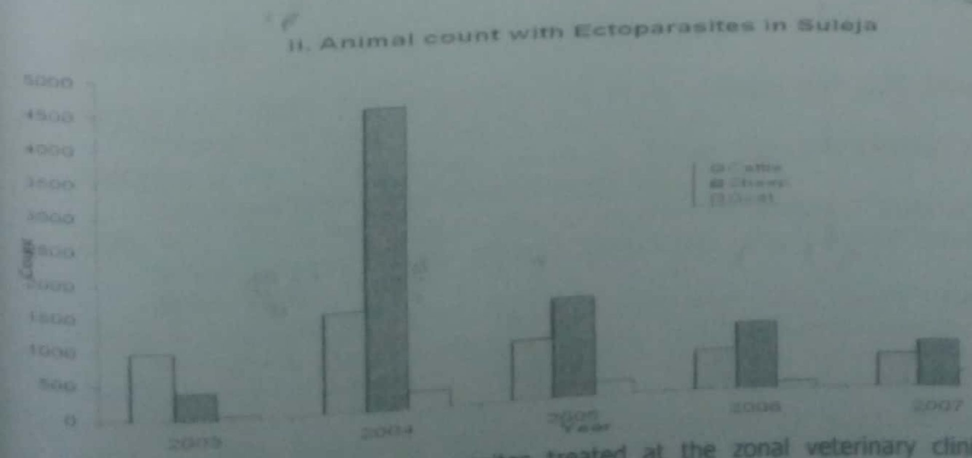
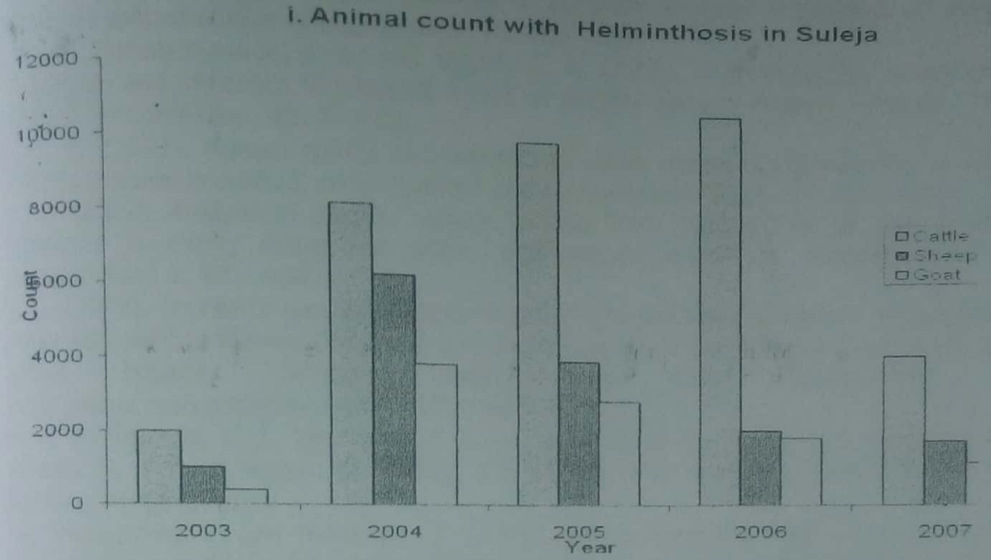


Fig. VII: Animal counts with ectoparasites treated at the zonal veterinary clinic Suleja between 2003 and 2007

Figure VIII showed recurrence of helminthosis throughout the years of study except for a slight decline in year 2007. This clearly shows that helminthosis have treatment and control problems, which may likely to be due to mixing of the animals during search for water and pasture (Tillard *et al.*, 2004). As seen in this study, the traditional system of management in which animals are allowed to roam about freely in search of food, water and shelter without any form of medication could be responsible for high incidence of diseases among ruminants (Pegram, 2001). This is the reason why sedimentary flocks kept under strict confinement and zero grazing within traditional management system (Anene *et al.*, 1984) were found to have lower rates of infection than nomadic flocks.



Fi[illegible]II: Animal counts with helminthosis treated at the zonal veterinary clinic Suleja between 2003 and 2007

CONCLUSION

The results obtained in this study showed that the prevalent parasitic diseases of cattle, sheep and goats observed in the study areas from years 2003 to 2007 were helminthosis, fasciolosis, ectoparasites and trypanosomiasis. The need therefore, to map out strategies for effective control and prevention these parasitic diseases of ruminants in order to have improved production is highly recommended.

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