SEASONAL DISTRIBUTION OF MAJOR DISEASES AMONG SHEEP AND GOATS IN SELECTED SUB HUMID AREAS IN NIGERIA

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Abstract
This study into the diseases responsible for the uneven distribution of goat and sheep in the sub humid areas in Nigeria as one of the major hinderances in sheep and goat production despite the potentiality of this region to sustain small ruminants. A survey of the types and causes of major diseases of small ruminants was carried out in Edo State of Nigeria which presents variants of climatic conditions that cut across the humid areas of Nigeria and Africa. The study covered a period of five years (1997-2002) in three local government areas of the state. A total of 316 small ruminants' cases of major diseases made up of 25 cases in sheep and 291 cases in goats were recorded. Pneumonia contacted by the ruminants was 17%, helminthosis was 10% and was 6% as the most predominated diseases that occurred during the wet seasons than the period of dry season. Mange was high during the dry seasons and seemed to be confined almost exclusively to goats. Statistical analysis using a three-factor analysis of variance revealed that seasonal distribution of diseases was a significant factor ($p<0.05$), diseases and the type of the small ruminant that contacted the diseases were significant factor ($p<0.05$). Most of the major diseases were frequently contracted during the wet seasons. In the Humid areas, there is need to sensitize farmers about ruminants' health care management programmes especially intensive feeding method during wet season and de-worming during onset or immediately after the wet season against gastro intestinal parasites as well as the improvement of indigenous breed through semi intensive management system by the farmers.

Key words: Diarrhoea related diseases, symptoms, seasons, sheep and goats, sub humid, veterinary records, Nigeria

1.0 Introduction

Small ruminants are reared in almost every part of the world and indeed every nook and cranny of Nigeria. Goat breeding plays an important role in the agricultural production of developing countries (Stemmer *et al.,* 1998) where 95% of the world's goats are kept (FAO 1992). Goats are widely distributed in the humid tropics, and they account for 58% of the world population (Devendra 1981 cited by Stemmer *et al.,* 1998). The distribution of sheep and goats in Africa is not even and numbers of flock size tend to be higher in the drier areas than the humid areas (Otchere, 1986). Nigeria has a livestock production herd of 24 million goats, 13.5 million sheep and 15.7 million cattle (World Almanac Education Group, 2003). FAO (1978) reported that the world's distribution of ruminants (sheep: goat) by ecological zones is as follows: arid, 170: 245; semi arid, 238: 780; sub humid, 2459:7820; humid 3476: 5621 and highland, 15:34. Encarta (2009) reported that in 2006 the world sheep population was estimated at 1.10 billion herd, goat was estimated to be more than 740 million whereas, cattle was more than 1.4 billion, all these ruminants are widely distributed. FAOSTAT (2008) stated that the world total numbers of goats and sheep were 861.9 and 1078.2million, respectively, while the largest number of goats is observed in Asia, followed by Africa, summing up to 93.5%, out of the world total. These figures further show the importance of goats and sheep in the developing countries. Nigeria was fifth amongst the ten top countries in the world and first in Africa (FAOSTAT, op. cit.)

Presently, there is either little or no attention given to these animals in the rural areas which houses most of the sheep and goats in Nigeria. According to Okoli (2003) a high incidence of infectious diseases constitutes a major impediment to livestock production in most developing countries. Nigeria loses about 15 to 20% of its annual income from the livestock sector to diseases (Akerejola, 1980)

The knowledge of the seasonal distribution of these diseases, causes, modes of transmission and the animals mostly affected, assist in planning effective control measures to minimize the incidence of disease in Nigerian stock. Clinical records have often been used in monitoring trends in diseases of economic and public health importance in Africa and different agro-climatic zones of Nigeria (Abdu *et al.,* 1985; Mboera & Kitalyi, 1994; Halle *et al.,* 1998; Nwanta *et al.,* 2000). Thus, the use of clinical records from veterinary clinics was relied upon as sources of information for the study of seasonal disease prevalence in the sub humid zone of Nigeria.
This study was designed to determine the effect of season on major small ruminant diseases of sub humid areas in Nigeria

2.0 Materials and Methods

2.1 Study Area

The study was carried out in Esan West Local Government, Ekpoma, Etsako West Local Government, Auchi and Esan South East Local Government, Ubiaja, in Edo State, Nigeria. The areas lie within latitudes 7^0 02"N and $5^0$08"S longitudes $6^0$14" E

and 7 ^{0}14" W, and are characterized by a vegetation of dense savanna woodland comprising tall grasses and high forest trees with an average annual rainfall of 850mm, with a population of 89,628;126, 112 and 130,984 for Esan West Local Government, Ekpoma, Etsako West Local Government, Auchi and Esan South East Local Government, Ubiaja, respectively (Federal Gazette, 1991). Wet season is from April to September while dry season is from October to March in the areas under study.

2.2 Data Collection and Analysis

Clinical records of small ruminant brought for treatment were collected from the Ministry of Agriculture and Natural Resources veterinary clinics from 1997 to 2002. Oral interviews of veterinary personnel, and twenty farmers from the three Local Government area, were conducted to get on hand information. Data collected were statistically analyzed using the three-factor analysis of variance and pair wise comparison by using least significant difference method (LSD) (Montgomery, 1984).

3.0 Results

Most of the diseases which occurred during the wet seasons included pneumonia, pneumoenteritis and mastitis. Helminthosis also affected the highest number of goats during the wet seasons. However, sarcoptic mange was more prevalent during the dry season, among goats in Esan (Es) West Local Government, Etsako (Ets) West Local Government, and Esan South East (Es.S) Local Government areas (Fig 1). The occurrence of helminthosis predisposes these animals to other infections. The most common of sheep were pneumoenteritis, pneumonia, helminthosis and mastitis. No cases of occurrence of mange were reported unlike in goats at Esan (Es) West Local Government, Etsako (Ets) West Local Government, and Esan South East (Es.S) Local Government areas as shown in Fig 2.

Out of the total number of 316 cases recorded, 25 cases were of Sheep and 291 cases of goats. The most prominent diseases that were recorded among sheep during this period were helminthosis occurring in three out of every 25 sheep during the wet season. Four out of every five sheep observed suffered from helminthosis in the wet season. Related diseases were found to affects five out of every 25 sheep diagnosed during wet season. The occurrence of mastitis and pneumoenteritis among the sheep only occurred during the wet season in two out of the three areas examined. Pneumonia occurred throughout the areas studied with ratio 3:1 in the wet and dry seasons respectively. Mastitis besides minor breast wound appears to be the only serious mammary disease in these areas.

Generally, other common diseases and or ailments that affected goats were sore foot, conjunctivitis and anorexia (symptom of ailment). The prevalent diseases are more distributed in the wet season than the dry season (fig 3)

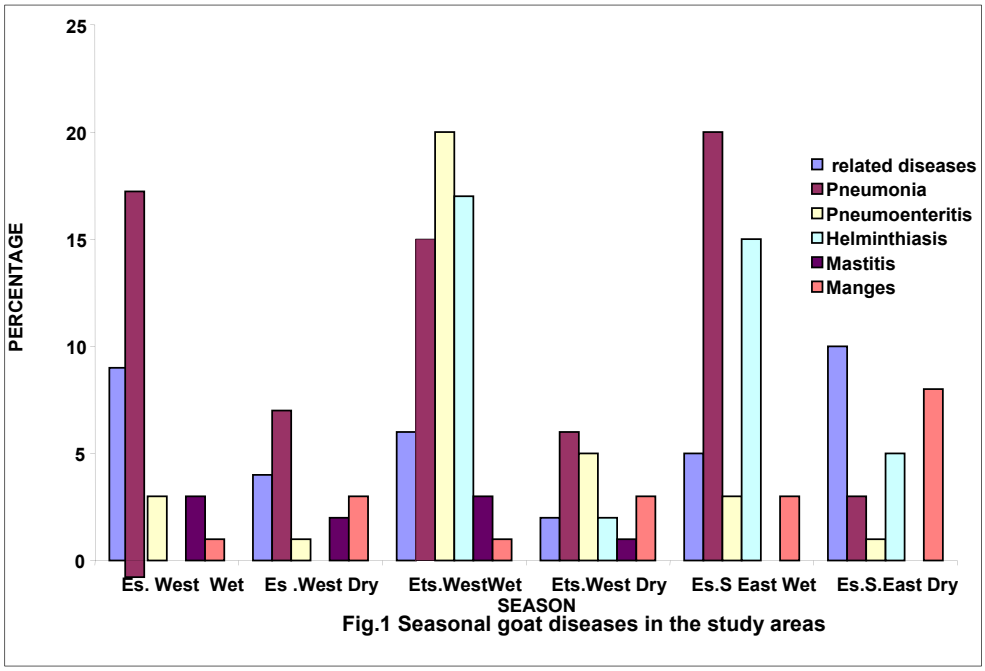

Fig.1 Seasonal goat diseases in the study areas

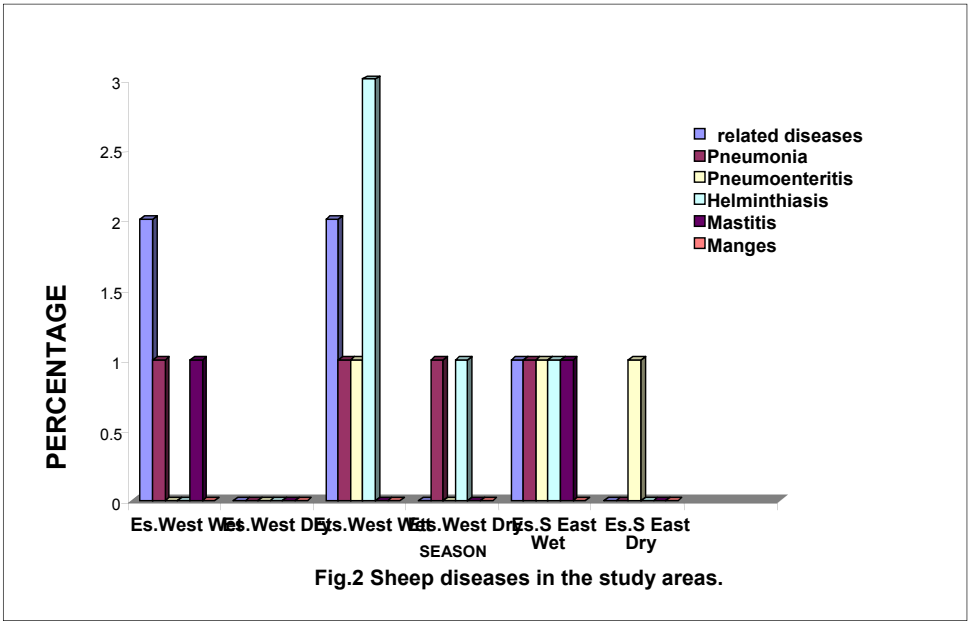

Fig.2 Sheep diseases in the study areas.

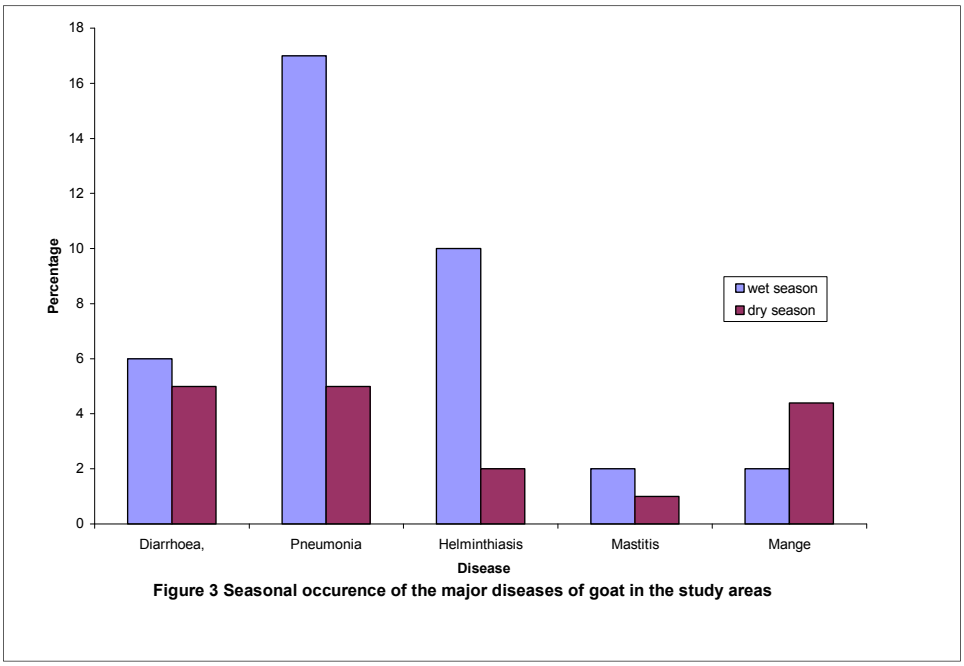

Figure 3 Seasonal occurence of the major diseases of goat in the study areas

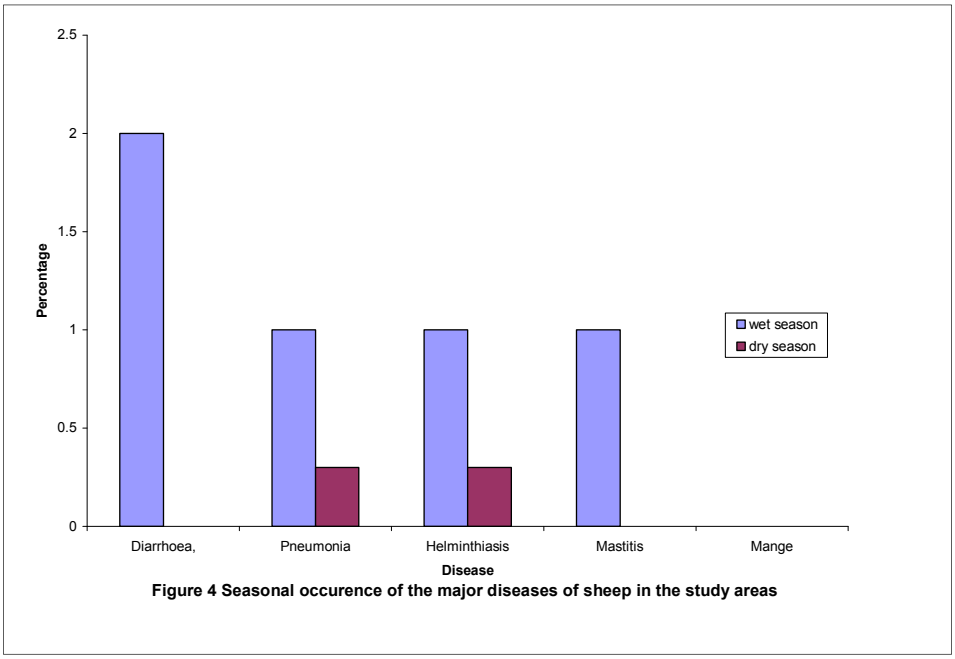

Figure 4 Seasonal occurence of the major diseases of sheep in the study areas

4.0 Discussion

The scanty number of diagnosed small ruminants during this period of study reflects the low level of patronage of veterinary clinics in the rural areas in Nigeria localities. Perhaps, farmers in these areas are unaware of the importance of the veterinary services around them. Generally, goats are more in number and more susceptible

to diseases than sheep in these areas; this agrees with other animal studies elsewhere and that the goats are more important than sheep in the humid areas (Wilson, 1995).

It is noteworthy that helminthes proliferates at higher rate in Etsako West Local Govt. area as a result of the prevailing climatic condition characterized by a vegetation of dense savanna woodland comprising of tall grasses and high forest trees with an average annual rainfall of 850mm suitable for helminthes and other diseases vector proliferation. There is a strong need for adequate feeding, good housing and regular drenching using anti- helminthes drug, as prophylactic treatment especially at the onset of wet or dry seasons. However, care should be taken to avoid the frequent use of prophylactic treatment to guard against anthelminthic resistance. As occurred in the cases of two selected goatherds' farmers in Georgia, Southeastern United State of America, who had anthelmintic resistance due to indiscriminate usage of anthelminthic drugs against gastrointestinal nematode in these animals (Terrill *et al.,* 2001).

Humidity and warm humid climates is an important condition for the development and survival of infectious larvae. As too cold condition below $10^{O}C$ hatching of helminth eggs is arrested, while if it is too hot above $26^{O}C$ larvae will hatch and moult quickly but are unlikely to develop to subsequent stage (Hunter, 1996)

Mastitis could occur in any form of management especially in an unhygienic environment, caused by a wide variety of organisms. But, most outbreak occur in sheep and goats managed extensively. The use of antibiotics such as tetracycline is effective for treatment (Wilsmore and EL-Masanuat, 1988). This confirms the earlier report that infection of the animals with gastro intestinal parasites was heavier during the rainy season than the dry season (Fakae, 1990 and Kanyan, 1990 cited by Egbe – Nwiyi *et al.,* 1999). The prevalent small ruminants' diseases encountered by farmers in Etsako West area and its neighboring villages were pneumoenteritis, pneumonia and helminthiasis, though other diseases were encountered but too minimal to attract attention (Omoike, 2006).

Helminthosis prevalence as recorded in two local Government areas further confirm earlier report by Magona and Musisi (1999) that much of the production losses and heavy mortality in goats occur under wet tropical condition are caused by nematode parasites, primarily *Haemonchus contortus* and *Trichostrongylus colubriformis*.

As Fabiyi (1970) also observed that 89% of goat examined after slaughter in Zaria were found to be affected with *Haemonchus sp*. and similar infection rates with the same parasite were observed in goats slaughtered in Kano, Kaduna, Maiduguri, Sokoto, Ibadan, Calabar and Port Harcourt (Okon 1975). Egbe-Nwiyi *et al.,* (1999) also identified gastro-intestinal parasitism in small ruminants in the semi arid region

of North- Eastern Nigeria. Waruiru *et al.,* (1995) observed that helminthosis is one of the greatest single impediment to the development of small ruminants production in the tropics. He further observed that the high prevalence of gastro-intestinal strongyle infections in goats especially in the humid high altitude zone and semi humid zone may be explained by climatic conditions that support prolonged survival of nematode infective larvae on pasture as in the case of goats in Uganda. Helminthosis was also cited as the major animal health problem facing sheep and goat industry in Kenya (Charles 1992 cited by Waruira *et al.,* 1998).

Statistically, the seasonal disease occurrence was significant ($p<0.05$) and the type of the small ruminant that could be affected was also significant ($p<0.05$). Goats were more affected by diseases than the sheep, most of the diseases were caused by the predisposing factors. Disease occurrence was significance ($p<0.05$); as the little differences in the vegetation and climatic condition in the catchment's area, had no effect on the disease occurrence. Pneumonia was more predominant in sheep than in the goats. The diarrhea related diseases affected both sheep and goat. However, it was common among sheep during the wet season. This conforms with Wilsmore and EL-Masanuat (1988) observation that the production of small ruminants in the tropics is largely constrained by gastrointestinal parasites. Helminthes infections are caused by the moulted or eggs picked up by these small ruminants that are passed into the environment from an infected animal usually in the faeces as animals in these areas scavenge. Presence of gastrointestinal parasite in domestic animals could lead to diarrhea.

5.0 Conclusion

This study have revealed that pneumonia, helminthosis and diarrhoea related diseases predominate over other common small ruminant diseases in the sub humid areas studied for both in sheep and goats, due to the influence of the locality. Mastitis, helminthosis, pneumoenteritis, and pneumonia occurred significantly during the wet season at a higher frequency; while, sarcoptic mange mainly occurred during the dry season in goats. Hitherto, the production of small ruminants in Edo State especially in the sub humid zones in Nigeria has largely been constrained by diseases and lack of good management by the use of extensive rearing method of herd which renders them less productive.

6.0 Recommendation

The use of long active tetracycline based drugs as curative will suffice at the earlier stage of infection for the small ruminants diseases encountered in this study. The use of vaccine and genetically resistant animals in the control of helminthosis could be researched upon in order to boost small ruminant production in these localities of Nigeria and the tropical humid areas at large. Furthermore, awareness through consolidated sensitization of the importance of the veterinary service in the study areas should be embarked upon in the study areas.

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