

## **Occurrence Of Helminthosis in West African Dwarf (WAD) goats: Observations In The Veterinary Clinic, Ogbomoso, Oyo state, Nigeria.**

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### **Abstract**

*The influence of some environmental factors on the occurrence of helminthosis in West African Dwarf goats reared under the traditional extensive system of management was studied. Data were extracted from a nine-year (1994 - 2002) record obtained from the Veterinary Clinic of the Ministry of Agriculture, Natural Resources and Rural Development, Ogbomoso, Oyo State, Nigeria. It was observed that from a total of 752 goats presented to the clinic during the study period, the population of does, 624 (82.98%) was higher than that of bucks, 128 (17.02%). Of this proportion, 27.56% of does and 23.44% of bucks had helminthosis. Also cases of helminthosis were generally higher during the late wet and early dry seasons (27.75 and 28.88% respectively) than in the late dry and early wet seasons (24.75 and 26.14% respectively). Occurrence in females was highest (86.96%) in the early wet season while that of males was highest (16.98%) in the late wet season. Highest incidence was observed in 1995 (41.18%) with a decline in trend, as the years advanced to 12.00% in 2002. For the effect of months, occurrence was highest in June (13.37%) followed by October (12.87%). The least occurrence was observed in April (0.99%). It was concluded that adequate attention needs to be paid to the management of goats through preventive measures. The appropriate use of antihelmintic drugs both in the middle and at the end of rainy season, along with supplementary feeding in the dry season are recommended in the study area, for profitable goat production.*

**Key words:** *Helminthosis, goat, veterinary clinic.*

### **Introduction**

The importance of small ruminants as a source of meat has been established (Tembely *et al.*, 1992; Ebozoje and Ngere, 1995; Dipeolu, 1996;) as they supply 30% of the total lean meat in Nigeria, with goats exploiting their hardiness to enjoy a wide geographical distribution in the country (Adu *et al.*, 1979). However, poor health management and inadequate nutrition have drastically reduced their productivity (Wilson, 1982).

Helminthosis, a clinical condition produced by helminth infection, has been reported as the most widespread in the tropics (Ukoli, 1984; Ogunrinade, 1990), posing a significant problem to grazing livestock. It continues to gain attention in recent times due to considerable mortalities and financial losses to farmers (Guobadia, 1979). This disease has become a major constraint to the exploitation of the production potentials of small ruminants in Africa and particularly in Nigeria (Mboera and Kitahyi, 1992; Sewell, 1996; Abiola and Onwuka, 1998). It results in metabolic disturbances, inefficient food conversion, poor growth and reduced

fertility (Mboera and Kitilyi, 1992; Folorunso and Ogunsusi, 2000). The cost of drugs, drenches and labour on its account increases the total cost of production (Raji *et al.*, 1988; Dipeolu *et al.*, 1998).

Asoku (1981) and Guobadia (1997) implicated poor feeding, poor sanitation, lack of medical care, overpopulation and bad climatic conditions as predisposing factors to helminth infestation. This study was aimed at investigating the occurrence of helminthosis in different sexes of WAD goats under natural, traditional conditions in different seasons, as revealed from observations in the Veterinary Clinic, Ogbomoso, with a view to suggesting ways and means of reducing its economic impact.

## Materials and Methods

Data for this study were obtained from the Veterinary Clinic of the Livestock Division of the Oyo State Ministry of Agriculture, Natural Resources and Rural Development, Ogbomoso, Nigeria. Records of West African Dwarf goats presented to the clinic for treatment between 1994 and 2002 were examined for cases of helminthosis.

A description of Ogbomoso had earlier been presented by Adediran (1977). It is located on latitude 8°07'N and longitude 4° 15'E with a mean annual rainfall of 1,247 mm and a relative humidity of between 75 and 95%. The region has a mean annual temperature of about 26.2°C. It is about 600 m above sea level.

The subjects were 752 West Africa Dwarf goats brought to the Veterinary Clinic for treatment against various diseases in Ogbomoso and its environs, an area which constitutes the Ogbomoso zone of the State. The animals were maintained under traditional system of management, where there was no serious concern for provision of shelter. Animals scavenge for food while feed supplementation was in the form of household wastes like cassava and yam peelings, milling by-products of maize, guinea corn and soybean. Health care practices were given only when necessary.

Data were collected on sex, season, year and diagnosis. Information on ages of the animals was not available. Season was classified as follows:

- |              |      |   |                |
|--------------|------|---|----------------|
| 1. Late dry  | (LD) | – | (Jan – March)  |
| 2. Early wet | (EW) | – | (April – June) |
| 3. Late wet  | (LW) | – | (July – Sept)  |
| 4. Early dry | (ED) | – | (Oct – Dec)    |

Data obtained were subjected to Analysis of variance (ANOVA) and simple descriptive analysis using frequency distribution of the SPSS computer package (Field, 2000).

## Results

Sex distribution of helminthosis in West African Dwarf goats raised under the traditional system of animal management is presented in Table 1. Of the 752 goats treated for various diseases within the study period, 624 (82.98%) were females and 128 (17.02%) were males. Cases of helminthosis were recorded in 202 (26.86%) of all the diagnoses out of which 172 (85.15%) were females and 30 (14.85%) were males.

Table 2 shows sex distribution of helminthosis across seasons. Cases of helminthosis tend to increase with changing seasonality from the late dry to early dry season, corresponding to the first, second, third and fourth quarters of the year. Early dry season exhibited the highest proportion in the seasonal occurrence of helminthosis. Helminthosis was least prevalent during the early wet (6.12% of total diagnoses and 22.8% of helminthosis cases) during the study period. More females were treated in every season than males. The highest occurrence in females was, however, in early wet season (86.96%) while that in the males was in late wet season (16.98%). There were no significant differences ( $P > 0.05$ ) between seasons for does and bucks.

Yearly pattern of helminthosis occurrence among sexes is shown in Tables 3. Highest incidence as a proportion of number of goats treated (41.18%) and as a percent of total helminthosis cases (31.79%) were observed in 1995. The second highest was in 1996.

The occurrence of helminthosis was more prevalent every year in the females than the males ( $P > 0.05$ ) from the absolute yearly figures. Highest annual occurrence in females was observed in 1999 (86.67%) followed by 1995 and 1998 (85.71%). However, the highest yearly proportion as a percentage of helminthosis occurrences in females was recorded in 1995 (31.40%) followed by 1996 (22.67%). The highest annual percentage of cases in males was observed in 2001 (20.00%) while the highest percentage as a proportion of helminthosis occurrence in males was noticed in 1995 (30.00%) followed by 1996 and 1997 (16.67%). There seems to be a general decrease as the years increase with year 2002 featuring the least percentage of incidences.

Table 4 shows the monthly occurrence of helminthosis in the WAD goats. The highest occurrence as a proportion of monthly diagnoses was observed in the month of May (38.64%); as a percentage of total diagnosis and as a percentage of total helminthosis cases, the highest incidences were in June (3.59 and 13.27% respectively). The next peak of incidence was observed in the month of October.

## Discussion

The conspicuously higher number of females presented for treatment at the Veterinary Clinic in Ogbomoso is a pointer to the superiority of the male over the female in resisting disease attack and in line with the report of Bemji *et al.* (1996), Dipeolu (1996) and Abiola and Onwuka (1998). This higher number is also supported by the fact that males in the free-range herd are usually, regularly disposed of in the market for cash as soon as they reach market size, leaving only the females, which are relevant to flock increase. They are thus preferentially retained on the farm to account for an increased herd population. Sex has also been implicated as a significant factor influencing the resistance of small ruminants to helminth infections (Assoku, 1981)

The higher occurrence of helminthosis in females during the early wet season and the males during the late wet season is an indication of the fact that the disease is more prevalent during the wet season. Higher occurrence of disease attack, with resultant mortalities during the rainy season, have been well documented (Tembely *et al.*, 1992; Mtenga *et al.*, 1992; Mukasa – Mugerwa, 1994; Osho *et al.*, 1998; Bemji *et al.*, 1996; Folorunso and Ogunsusi, 2000). Variations in seasonal occurrence of helminthosis have been reported (Tembely *et al.*, 1994). However, the non-significant differences between seasons observed in this study supports the

report of Sewell (1996); Ofukwu and Okwori (2000) and Butswat *et al.*, (2002). According to Osho *et al.* (1998), climatic variables such as heat, cold, wind, humidity and rainfall independently or in combination play major roles as determinants of diseases, while seasonal fluctuations affect diseases and parasites population.

The annual and monthly variations recorded in the present study are in agreement with the reports of Osiyemi and Brisibe (1995), Dipeolu (1996) and Ofukwu and Okwori (2000). The months of June and October, with the highest occurrences of helminthosis observed in this study (13.37 and 12.87% respectively) coincide with the mid period in early rains and the beginning of the early dry season, just as the late rainy season is coming to an end. This is in line with the report of Temebely *et al.* (1992) where mortality rate due to helminthiasis in sheep peaked in June/July and October/November. It is therefore relevant to recommend that an anthelmintic drug should be administered both in the middle and at the end of rainy season as well as the provision of feed supplementation in the following dry season.

Availability of feed increases in the rainy season. However, according to Carles (1985), the relieving of nutritional stress with the onset of rains often increases the stress from temperature and the incidence of diseases. That helminth infection affects feed intake, digestibility and utilization of absorbed nutrients has been established (Sykes and Coop, 1976; 1977; Sykes *et al.*, 1980; Akinbamijo *et al.*, 1994). It is therefore imperative that adequate attention is paid to the management of goats through preventive measures.

The decrease in helminthosis cases noted from the Veterinary record of diagnoses with increasing years is an indication of progressive improvement in the general management of goats in the the Ogbomoso zone, which comprised the study area. It is however important to note that since most of the small scale farmers are not well educated, the use of anti-helminth drugs should not be completely entrusted to them. This is to prevent helminth resistance to the drugs as a consequence of inappropriate drug administration which can lead to an increase in the cost of production. This may discourage goat farmers. There is thus the need to adequately train farmers in the correct drug application procedure.

The importance of goats as a major source of protein and revenue to rural communities and the fact that helminthosis is implicated with poor growth and reduced fertility make it imperative that the disease should be critically assessed in order to prevent its adverse effect on stock population increase. Poor fertility is one of the major avenues of loss in a livestock industry as the farmer would only be feeding the infertile animals without realizing commensurate output in terms of increased stock from birth or increased revenue from sales. The reduced stock population would worsen the originally low level of protein availability from goats and thus make it more difficult for this species of livestock to fulfill its own share of protein contribution. To prevent the adverse effect of this disease therefore, farmers should be encouraged to take advantage of the Veterinary Clinics around them for information on preventive and curative drugs. Feed supplementation should be encouraged, especially during the dry seasons as a complement to prevention and treatment of the disease.

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**Table 1. Sex distribution of helminthosis in WAD goats presented to the Veterinary Clinic, Ogbomoso Zone Oyo State Nigeria (1994 – 2002)**

Sex	Total no of animals treated*	No of helminthosis cases*	Percent (%) of helminthosis cases in total number of animals treated
Male	128 (17.02)	30 (14.85)	23.44
Female	624 (82.98)	172 (85.15)	27.56
Total	752 (100.00)	202 (100.00)	26.86

\*percentage of total in parenthesis

**Table 2. Distribution of helminthosis across seasons in WAD goats presented to the Veterinary Clinic, Ogbomoso Zone, Oyo State Nigeria (1994 – 2002)**

Season	Total no of animals treated	Cases of helminthosis	Seasonal percentage (%) of helminthosis cases	Percent (%) of total diagnosis	Percent (%) of helminthosis cases	No of goats affected	Percent (%) of males affected	No of females affected	Percent (%) of females affected
Late dry	198	50	24.75	6.52	24.26	7	14.29	42	85.71
Early wet	176	46	26.14	6.12	22.77	6	13.04	40	86.96
Late wet	191	53	27.75	7.05	26.24	9	16.98	44	83.02
Early dry	187	54	28.88	7.18	26.73	8	14.81	46	85.19
<b>Total</b>	<b>752</b>	<b>202</b>	<b>100.00</b>	<b>26.86</b>	<b>100.00</b>	<b>30</b>	<b>14.85</b>	<b>172</b>	<b>85.15</b>

**Table 3. Yearly pattern of helminthosis occurrence among sexes in West African Dwarf goats presented to the Veterinary Clinic, Ogbomoso zone, Oyo State, Nigeria (1994 – 2002)**

Year	Total no of goats treated	No of helminthosis cases	Yearly percent (%) of treated	Percent (%) of total helminthosis cases treated	No of males treated for helminthosis	Yearly percent (%) of males treated for helminthosis	No of females treated for helminthosis	Yearly percent (%) of females treated for helminthosis	Percent (%) of total males treated	Percent (%) of total females treated
1994	60	16	26.67	7.92	3	18.75	13	81.25	10.00	7.56
1995	153	63	41.18	31.19	9	14.29	54	85.7	30.00	31.40
1996	124	44	35.48	21.78	5	11.36	39	85.64	16.67	22.67
1997	126	25	19.84	12.38	5	20.00	20	80.00	16.67	11.63
1998	50	14	28.00	6.93	2	14.29	12	85.71	6.67	6.98
1999	60	15	25.00	7.43	2	13.33	13	86.67	6.67	7.56
2000	74	12	16.22	5.94	2	16.67	10	83.33	6.67	5.81
2001	80	10	12.50	4.95	2	20.00	8	80.00	6.67	4.65
2002	25	3	12.00	1.49	0	0.00	3	100.00	0.00	1.74
<b>Total</b>	<b>752</b>	<b>202</b>	<b>26.86</b>	<b>100.00</b>	<b>30</b>	<b>na</b>	<b>172</b>	<b>na</b>	<b>na</b>	<b>na</b>

na – Not applicable

**Table 4. Monthly occurrence of helminthosis in WAD goats presented to the Veterinary Clinic, Ogbomoso Zone, Oyo State Nigeria (1994 – 2002)**

Month	Total no of animals treated	No of helminthosis cases	Percent (%) of monthly occurrence	Percent (%) of total helminthosis cases	Percent (%) of total diagnosis
January	91	23	25.27	11.39	3.06
February	58	12	20.69	5.94	1.60
March	49	15	30.61	7.43	1.99
April	45	2	4.44	0.99	0.27
May	44	17	38.64	8.42	2.26
June	88	27	30.68	13.37	3.59
July	66	19	28.79	9.40	2.53
August	55	16	29.09	7.92	2.13
September	70	18	25.71	8.90	2.39
October	70	26	37.14	12.87	3.46
November	46	12	26.09	5.94	1.60
December	70	15	21.43	7.43	1.99
<b>Total</b>	<b>752</b>	<b>202</b>	<b>na</b>	<b>100.00</b>	<b>26.86</b>

na – Not applicable