

INCIDENCE OF ECTOPARASITES OF DOMESTIC FOWL IN AN ARID ZONE OF NIGERIA

L.T. ZARIA, P.K. SINHA; L.S. NATITI AND D.R. NAWATHE.

Department of Microbiology and Parasitology, Faculty of Veterinary Medicine, University of Maiduguri, P.M.B. 1069, Maiduguri - Borno State, Nigeria.

Received 13 January 1992; Accepted 20 November, 1995.

ABSTRACT

A total of 763 domestic fowls in Maiduguri a town in Arid Zone of Nigeria were examined for the presence in them of ectoparasites. The study revealed that 92.20% of the birds were infested with ectoparasites. Major types ectoparasites found were lice, tick and mites and their incidence was high in this area. Management system however influenced the incidence of the parasites and they were more prominent in July and least in January.

Key words: Domestic Fowl, lice, mite, tick, ectoparasites.

INTRODUCTION

In the last few years, poultry started to constitute an important industry in many parts of Nigeria although its success depends on ability to overcome some problems such as diseases and parasitism, especially ectoparasitism. Losses from diseases and parasites can be very serious consequently leading to a great economic loss on the farmer. It is therefore important for a poultry farmer to be familiar with the most effective means of prevention and control in order to keep such losses at minimal level. Ectoparasitism causes local dermatitis, intense irritation resulting in discomfort (Kaschulla, 1961), inability to eat leading to poor growth and production, anaemia, emaciation and even death (Lucas, 1954). Some of the parasites can also acts as vectors and transmit various diseases to their host (Fabiya, 1972, 1980a).

However, several workers have reported incidence of various species of ectoparasites in poultry in Nigeria which include ticks, lice and fleas (Shoyinka and Libby, 1967; Fabiya, 1972, 1979, 1980a, 1980b; Adene and Dipeolu, 1975). Most of these studies were carried out in

Southern wet part of Nigeria. This paper therefore further reports on the incidence of ectoparasites in domestic fowl (*Gallus domesticus*) under various types of management systems in arid zone (Maiduguri) of Nigeria.

MATERIALS AND METHODS

A total of seven hundred and sixty three domestic fowls from twenty five different flocks were examined for the presence of ectoparasites. The examinations were done randomly on the birds. The flocks consisted of four major breeds namely the local, white leghorn, Rhode Island red and Harco black breeds. The types of management systems practised were free range in the backyard farms and battery cage in commercial and institutional farms.

The birds were examined for the presence of parasites by raising the feathers of head, neck, under the wings, the body, and the cloacal region. Where necessary, hand lens were used. The recovered parasites were put into McCartney bottles containing 10% formalin. The parasites were stored according to species and samples from different birds were pooled together. The recovered parasites were identified using their morphological characteristics as described by Hofstad *et al.* (1972); Slose and Kemp (1978) and Soulsby (1982).

RESULTS AND DISCUSSION

Out of the total number of the birds (663) examined 92.20% were found to be infested with ectoparasites. Three major types of ectoparasites were found, they included lice, ticks and mites. Of the total number of positive samples, lice were found to constitute the major problem, 46.2% birds were positive while 36.5% were found to be infested with

ticks. Only 6.5% of birds examined in this study were found to be infested with mites as shown in Table 1.

Table 2, shows the different species of the recovered parasites and their prevalence. Two species of lice namely *Menacanthus stramineus* and *Goniocotes gigas* were found while *Argas persicus* was the only type of ticks recovered during this investigation. Identification of the mites showed that the birds in this area were infested with two main types namely *Dermanyssus gallinae* and *Cnemidocoptes mutans*. The relatively high incidence of lice infestation found in this study as compared to the other two ectoparasites (mites and ticks) also agreed with the findings of other workers both here in Nigeria (Adene and Dipeolu; 1975, Fabiyi; (1980a). However, this is contrary to the report of Lucas (1954) who found tick infestation to be the most common problem in USA while Gaud (1961) in a similar study in India observed higher incidence of mite infestation. Apart from the difference in the climatic conditions of these area, no immediate reason can be attributed to these differences. In contrast to our finding of two species of lice. Fabiyi (1980a & b) reported up to 7 species of lice in Jos and Vom areas but *Menacanthus species* was the common louse. However, Adene and Depeolu

(1975) reported *Menopon gallinae* as the most common louse of poultry in Ibadan. This could be due to the different environmental conditions of the two areas. The slightly lower infestation rate observed in birds kept on free range management system as compared with those intensively raised is similar to the findings of Hofstad *et al.* (1972) and Fabiyi (1980b). This could be attributed to the unlimited opportunity to Sandbath coupled with the lower rate of contact between the birds as compared to those under battery cage system as practised in commercial and institutional farms.

Table 3 shows the incidence rate of different types of ectoparasite. Of the 215 birds examined from Maiduguri Central Market, 74% were positive for ticks, 28.4% were infested with lice while 10.7% were having mites. Chickens from backyard poultry holdings examined for ectoparasite infestation also followed similar patterns of infestation with three types of parasites. However, lice was the major ectoparasite found in chickens from commercial farms in this study. Of the birds examined from the commercial farms 70% were positive for lice, 8% of the birds had ticks infestation while 3% were infested with mites.

TABLE 1: INCIDENCE RATE OF ECTOPARASITES IN THE DOMESTIC FOWLS EXAMINED.

Type of Parasite	No. of Birds Examined	No. of Birds Infested (n)	Percentage of Birds Infested
Lice	663	326	49.2
Ticks	663	242	36.5
Mites	663	43	6.5

TABLE 2: INFESTATION OF DOMESTIC FOWLS IN MAIDUGURI AREA WITH DIFFERENT SPECIES OF ARTHROPOD PARASITES.

Species of Parasite	Number of Birds Infested	Percentage Infested
Lice		
<i>Menacanthus stramineus</i>	324	42.46
<i>Goniocotes gigas</i>	2	0.26
Ticks		
<i>Argas persicus</i>	242	31.72
Mites		
<i>Dermanyssus gallinae</i>	3	0.39
<i>Cnemidocoptes mutans</i>	40	5.24

TABLE 3: INCIDENCE OF ECTOPARASITES RECOVERED FROM DOMESTIC FOWLS IN RELATION TO THE MANAGEMENT PRACTICE.

Source of Sample	Total No. of Samples	No. of Positive	Types of Ectoparasites		
			Lice	Ticks	Mites
Maiduguri Central Market	215	107	61(28.4)*	159(74)*	23(19.7)*
Backyard Flocks (Free Range)	125	64	42(33.6)*	51(40.8)*	9(7.2)*
Commercial Flocks (Battery Cage)	308	224	216(70)*	25(8)*	10(3)*
Institutional Farms (Battery Cage)	15	0	0	0	0

Relatively high incidence was observed throughout the whole year. The highest rate was detected during the month of July while the least was in the month of January. Also with exception of these two months, infestation with ticks was much higher than the other two parasites throughout the year. Higher number of birds were also infested with lice than with mites throughout the period of the study.

This study indicates that infestation of domestic fowls with ectoparasites is common in this part of the country and similar high incidence has been reported by Fabiyi (1980a & b) for other parts of the country. Though the environment is extremely hot and dry during the dry season, the microclimate close to the body surface still favours multiplication of the parasites. The body temperature and humidity due to perspiration plays an important role during the dry period. The cold environmental temperature during the harmattan period (Nov. to Feb.) is unfavourable to continuous survival of the parasites and this could be responsible for the low incidence of infestation during this period.

The overall results show that most of the commercial farmers in the area of study do not practise the use of acaricides for the control and prevention of ectoparasites in their poultry. However, the high rate of ticks incidence observed in birds from Maiduguri central market and backyard is not surprising as these birds receive little or no Veterinary care.

It is known that these ectoparasites are vectors of certain diseases and could be responsible for transmission of certain specific

and non-specific disease in poultry. Control of these ectoparasites therefore will surely improve productivity of the birds and consequently yield more profit for the farmers.

ACKNOWLEDGEMENT

The authors are very grateful to Mallam Muhammed Ali and Mr. Jonathan for their technical assistance during the work.

REFERENCES

- ADENE, D. F. and DIPEOLU, O.O. (1975): Survey of blood and Ectoparasites of Domestic Fowls in Ibadan, Western Nigeria. *Bull. Anim. Hlth. Prod. Afr.* 23 (3): 333-335.
- FABIYI, J.P. (1972): Occurrence of *Cuculogaster occidentalis* sp. *Powellii* group (Mallophaga Insecta) on Domestic Fowl in the Vom area of Benue-Plateau State. *Nigeria. Vet. Rec.* 91:198.
- FABIYI, J. P. (1980a): Arthropod parasite of Domestic Fowl in the Jos Plateau N. Nigeria. *Trop. Anim. Hlth. Prod. Afr.* 12: 193-194.
- FABIYI, J.P. (1980b): Survey of Lice Infecting Domestic Fowl on the Jos plateau N. Nigeria. *Bull. Anim. Hlth. Prod. Afr.* 28: 215-219.
- GAUD, J. (1961): Two New Species of Feather Mites (Analgesoidea) from Poultry in India. *Indian Vet. Journal.* 38: 65-70.
- HOFSTAD, C.P. CALMEK, B.W., HELMBOLT, C.F., REID, W.H. and YORDER, H.W. Jr. (1972): *In Disease of Poultry*. Sixth Edition, Iowa State University Press. pp. 393-407.
- KASCHULA, V.R. (1961): A Comparison of the Spectrum of Disease in Village and on Modern Poultry Flocks in Nigeria. *Bull. Epiz. Dis. Afr.* 9: 397-407.
- LUCAS, J.M.S. (1954): Fatal Anaemia in Poultry Caused by a Heavy Tick Infestation. *Vet Rec.* 66: 573-574.
- SLOSS, W. MARGARET AND RUSSEL, L.K. (1978): *Veterinary Clinical Parasitology*. Fifth Edition. pp. 148-219.
- SOULSBY, E.J.L. (1982): *Helminths, Arthropods and Protozoa of Domesticated Animals*. Baillieri, Tindall Press. London. pp. 366-455.