

INVESTIGATION ON POULTRY HELMINTHIASIS IN DAR ES SALAAM FROM 1970 TO 1985.

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SUMMARY

A total of 12,805 poultry carcasses were examined for helminthiasis. A low worm load infestation in poultry, with a mean prevalence of 0.7% is reported among Dar es Salaam poultry keepers. Single helminths infection was detected in 53.8% of the samples examined. *Raillietina echinobothrida*, *Sabulura brumpti*, *Capillaria* spp. and *Monobotania sphenoides* worms are reported for the first time in Dar es Salaam. The commonest helminths recorded were *Acaridia galli*, *Heterakis gallinarum* and *Raillietina tetragona*. Correlation between helminthiasis cases and climate (macroenvironment) and poultry carcasses received was not significant ($p > 0.10$). The present work suggests that the degree of infection among Dar es Salaam poultry keepers was influenced by the level of management (microenvironment), including the use of antihelminthics.

INTRODUCTION

The shortage of animal protein in human nutrition is very high, particularly in the developing world. Barbara (1978) stated that Kwashiorkor is a chronic nutritional condition among a large segment of the population in developing countries. In Tanzania for example, the average animal protein consumption is estimated to be 6 g a day, a figure far below the FAO's recommended animal protein intake of 21 g a day.

In Tanzania poultry production is considered as one of the important sources of animal protein. It is estimated that about 23 million poultry are raised in Tanzania. According to the Ministry of Livestock Development, Livestock Policy (Anon, 1983), the planned per capita consumption for poultry meat and eggs by the year 1990 is 1.3 kg. and 16.9. respectively; to rise at an annual rate of more than 5%. To attain these levels there has been some effort to expand poultry industry in the sectors of traditional and commercial poultry production.

The rapid development of intensive poultry farming in Dar es Salaam has raised questions on the significance of poultry diseases, among these, endoparasitism. The present study is intended to identify and highlight the incidence of various helminthic species affecting poultry in Dar es Salaam region and the prevalence and seasonal variation of poultry helminthiasis in

relation to the expanding commercial poultry production.

MATERIALS AND METHODS

Poultry carcasses

The present work is based on results of helminthological examination of poultry carcasses received at ADRI, Dar es Salaam for 16 years (1970 - 1985) and covered helminthiasis suspected specimens only. The oesophagus, proventriculus, small intestine and caecum, were examined in order to determine the type and abundance of the species present. The criteria used were mainly the size and characteristic shape of the worms.

Incidence and prevalence

The incidence was calculated from the ratio of the number of samples found infected with a particular species of helminths to the total number of samples received.

The prevalence was computed from the ratio of monthly helminthiasis cases during the study period to the total number of poultry carcasses received during the same period of time.

Climate and season variation

Monthly total precipitation (cm) and temperature ($^{\circ}\text{C}$) were obtained from the Meteorological Department, Dar es Salaam. Seasonal changes were evaluated by drawing together respective monthly poultry carcasses received, helminthiasis cases diagnosed and climate. The mean for each period was determined and subsequently compared statistically (McCullagh, 1974 and Sokal and Rohlf 1981).

RESULTS

The prevalence and the seasonal variation of poultry helminthiasis as recorded in Dar es Salaam in the period under review are given in Table 1. Table 2 shows monthly precipitation and temperature for the same period.

DISCUSSION.

Among the nine helminth species belonging to eight different genera diagnosed in the present work, four spp. belonging to four different genera are reported for the first time (*Raillietina echinochothridae*, *Subulura brumpti*, *Capillaria* sp. and *Ansobotsenia sphenoides*). Records of *Ascaridia* sp. and *Heterakis* sp. were given by Bwaganzi (1970), while Mbise et al. (1983) reported on *Acuaris (Dispharynx) spiralis*, *Tetrameres americana* and *Raillietina tetragona*.

The present work registers a reasonably low percentage of poultry helminthiasis in Dar es Salaam. Helminthiasis cases were detected in 96

Table 1: Prevalence and seasonal changes on helminthiasis in poultry between 1970 and 1985

MONTHS	POULTRY CARCASSES RECEIVED		HELMINTHIASIS CASES		PREVALENCE %
	MONTHLY TOTAL	MEAN $\pm$ sd	MONTHLY TOTAL	MEAN $\pm$ sd	
January	1201	75.0 $\pm$ 58.7	3	0.2 $\pm$ 0.5	0.2
February	893	55.8 $\pm$ 31.2	3	0.2 $\pm$ 0.5	0.3
March	1236	77.3 $\pm$ 53.8	8	0.5 $\pm$ 0.7	0.6
April	975	60.9 $\pm$ 38.3	8	0.5 $\pm$ 0.6	0.8
May	957	59.8 $\pm$ 29.4	8	0.5 $\pm$ 0.2	0.8
June	1207	75.4 $\pm$ 48.0	10	0.6 $\pm$ 0.9	0.8
July	1001	62.6 $\pm$ 33.3	6	0.4 $\pm$ 0.8	0.6
August	1054	65.9 $\pm$ 44.4	7	0.4 $\pm$ 0.8	0.6
September	922	57.6 $\pm$ 36.4	12	0.8 $\pm$ 0.9	0.8
October	1131	70.7 $\pm$ 34.9	10	0.6 $\pm$ 0.9	1.3
November	932	58.3 $\pm$ 31.3	11	0.7 $\pm$ 0.6	1.2
December	1296	81.0 $\pm$ 49.4	10	0.6 $\pm$ 0.9	0.8

Single helminth infestation was detected in 53.8% of the total samples examined (helminthiasis cases). The commonest poultry helminths encountered were *Ascaridia galli*, *Heterakis gallinarum* and tapeworm *Raillietina* spp.

(0.7%) samples out of the total 12,805 poultry carcasses received at MVI Dar es Salaam. However, it is felt that, the observed low worm incidence might have been partly due to the fact that the study covered helminthiasis suspected-cases only and not all specimens. Furthermore, the low degree of infection may be due the fact

that most of the samples examined were from poultry keepers, who raise their stock indoors and who maintained satisfactory hygienic management and the use of anthelmintics.

Ascaridia galli, *Heterakis gallinarum* and *Raillietina tetragona*, in that order of abundance, were commonly encountered in the study. Godfrey (1962) stated that, basing on the life cycle of the parasite, birds kept in pens have a higher risk of being infected with round worms and a low risk of being infected with tapeworm than birds on free range.

appreciation is due to the technical staff of the Parasitology Department, ADRI, for their technical assistance.

Table 2: Monthly precipitation and temperature recorded at DSM.

MONTHS	MONTHLY TOTAL	MEAN $\pm$ sd	MONTHLY TOTAL	MEAN $\pm$ sd
January	1288.2	80.5 $\pm$ 54.6	437.1	27.3 $\pm$ 0.4
February	662.4	41.4 $\pm$ 41.8	439.7	27.5 $\pm$ 0.1
March	1912.1	119.5 $\pm$ 45.9	436.6	27.3 $\pm$ 0.5
April	4047.5	253.0 $\pm$ 97.4	422.7	26.4 $\pm$ 0.4
May	3070.6	191.9 $\pm$ 98.1	406.5	25.4 $\pm$ 0.3
June	663.1	41.4 $\pm$ 40.4	345.9	24.1 $\pm$ 0.4
July	472.4	29.5 $\pm$ 20.4	375.2	23.4 $\pm$ 0.4
August	208.2	19.3 $\pm$ 17.0	376.9	23.6 $\pm$ 0.7
September	468.0	29.3 $\pm$ 28.6	386.7	24.2 $\pm$ 0.7
October	956.0	59.8 $\pm$ 44.5	403.1	25.2 $\pm$ 0.5
November	1814.8	113.4 $\pm$ 116.5	420.1	26.3 $\pm$ 0.4
December	1973.5	123.3 $\pm$ 68.6	433.2	27.1 $\pm$ 0.6

Wet conditions in some poultry houses due to poor management is likely to be the reason why the two round worms, *Ascaridia galli* (65%) and *Heterakis gallinarum* (28%) dominated. The tapeworm, *Raillietina tetragona* (22%) also dominated probably due to the behaviour of the intermediate hosts (the housefly - *Musca domestica* - and the ants of genus *Tetramorium* and *Pheidole* (Soulsby 1982). The intermediate hosts are difficult to control, they can easily get accessibility into poultry houses and more so when the house is badly built.

ACKNOWLEDGEMENT

The authors are grateful to Dr. P.M.P. Nalla, Director, ADRI, for his useful advice and criticism in the preparation of this work. Much

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