

## PREVALENCE OF GASTRO-INTESTINAL NEMATODE PARASITES OF ECONOMIC IMPORTANCE IN DAIRY BUFFALOES IN PESHAWAR

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### ABSTRACT

Gastro-Intestinal (GI) nematode parasites were identified through coprological techniques out of 500 fecal samples examined from buffaloes in Peshawar District during the year 2004. The study revealed that out of total 500 fecal samples examined, 233 (46.6%) were found positive for the following gastro-intestinal nematode parasites. In descending order of frequency. The incidence was *Trichostrongylus* spp. (21.03 %), *Oesophagostomum* spp. (18.02 %), *Haemonchus* spp. (16.30 %), *Toxocara vitulorum* (13.14 %), *Ostertagia* spp. (9.44 %), *Bunostomum* spp. (8.15 %), *Strongyloides* spp. (7.72 %) and *Trichuris* spp. (3.86 %) respectively. The higher ( $P < 0.05$ ) occurrence was observed in male than in female animals. However the order of predominance observed in male buffalo bulls was somewhat inconsistent to that in females. No definite pattern was found for month wise variation in the incidence of gastro-intestinal nematode infection.

### INTRODUCTION

Livestock play a significant role in our national economy. Pakistan has a population of 28.4 million heads of Nili Ravi and Kundi breed of buffaloes which contribute 71 % of milk produced in the country (Economic Survey of Pakistan 2006). There are various factors affecting health and productivity of our livestock. One of these factors is parasitic load which causes great economic loss to livestock industry. Several studies (Marwat et al. 1988) reported that livestock industry in Pakistan with special reference to buffaloes was suffering from serious economic losses due to GI nematodes infestation. A wide variety of nematodes infestation which lead to clinical and sub clinical parasitism cause losses in body weight gain, decreased feed efficiency, reduced growth rate, delayed maturity, poor body condition, un-thriftiness, anemia and death Gupta et al (1978), Chaudhry and Riaz (1984) reported 20 - 22 % morbidity in calves due to *Neoscaris vitulorum* in Punjab.

As buffaloes constitute major part of livestock population with significant role of fulfilling the increasing demand of animal protein in the form of milk and meat in our country, destitute husbandry practices and unhygienic environments in traditional livestock production system are fostering causes of GI nematode infestation. There appears to be no systemic work carried out in the study area which could provide information to schedule correct and timely measures against the prevailing nematodes in buffaloes.

This study was planned to determine incidence and intensity of naturally occurring nematode infestation in buffaloes in Peshawar and surroundings. This will serve the basis for future control strategies in order to

minimize losses to live stock owners in terms of reduced milking and low weight gain.

### MATERIALS AND METHODS

In this study 500 fecal samples of buffaloes comprising both sexes were examined from Peshawar and surroundings villages of Gehgra, Nasirpur, Telaband, Watpaga and Khanzana Shahalam as a part of our acaricidal spray, fecal samples collection as well as vaccination against scheduled diseases during the year 2004. The area under concern is thickly populated with buffaloes usually kept in small herds under conventional husbandry system. The experiment continued for a period of one year (2004).

A minimum of 50 fecal samples were collected each month and examined for parasitic infestation in Parasitology Division of VRI, Peshawar. Fresh fecal sample about 30 gm each was collected per rectum, kept in individual polythene bag and each sample was identified separately.

About 30 ml Formaline (5%) solution was added to each sample bag prior to shipment to Lab. Efforts were made to examine the fecal sample immediately after collection.

### *Fecal Samples Examination*

All samples were processed and examined for the presence of helminth parasites according to the standard procedure as under.

The same ID as assigned at the time of collection was used to record laboratory observations in logbook.

Sample No

Sample ID

Date sampled

Laboratory results

Incidence	Positive	Negative
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**Coprological examination**

1. -
2. -
3. -

**Sedimentation**

Fecal samples were examined according to the procedure of (Urquhart *et al.* 1987) as follow. About five grams from each fecal sample were triturated in pistol mortar and then add enough tape water to make uniform suspension. The suspension was passed through fine mesh to remove debris. The centrifuge tube was filled and centrifuged at 1500 revolutions per minute (rpm) for five minutes. Supernatants were discarded and the sediment then processed for floatation.

**Flootation**

For floatation saturated salt solution was added to each of the sample tube and again centrifuged at 1500 rpm for 2 minutes only. After centrifugation the samples were removed, top layer from each sample was taken using fine pasture pipette. Put 2 - 3 drops from each sample apply cover slip and examined under microscope (10x, 25x or 40x) and results were recorded. Care was taken to keep the centrifuge speed low for shortest time in order to avoid damage or ruptured of the parasitic ova's present in suspension (Urquhart *et al.* 1987).

**RESULTS AND DISCUSSION**

The attendant study was directed to comprehend the incidence of nematodes infestation in buffaloes in Peshawar and environs through coprological examination during the year 2004 and eight genera's of intestinal nematodes were identified.

Relative incidence of various species is shown in Table I. The results indicated a wide range of infestation among the recorded nematode species. The incidence of *Trichostrongylus* was 49 (21.03 %) followed by *Oesophagostomum* 42 (18.02 %), *Haemonchus* 38 (16.30 %), *Toxocara vitulorum* 36 (15.45 %), *Ostertagia* 22 (9.44 %), *Bunostomum* 19 (8.15 %), *Strongyloides* 18 (7.72 %) and *Trichuris* 9 (7.86 %) respectively. The infection range recorded was from (9 – 49), where as average range of infection recorded was (12. 49). Out of the total 500 fecal samples examined, 233 were found positive (46.6%) with one or more species of above mentioned nematodes parasites.

The incidence reported by other workers (Mourad *et al.* 1985, Borkakoty *et al.* 1984, Masud and Majid

1984 and Ahmad. 1972) was 53.00%, 54.00%, 52.7% and 55.00% respectively, and the findings were in agreement with our study. Hussain (1985) and Dairo *et al.* (1975) reported 76.7 and 64.9% parasitic infestation, which were higher than the findings of our study. Hunjra (1991) on the other hand recorded 44.4 and 39.8 % infestation in buffaloes and cow calves respectively, and the findings were in agreement with the findings of this study. Variation in nematodes infestation might have attributed to difference in physiological status, age, animal spp, climatic conditions and the existing Manage-mental practices at farm.

Table. II elucidate incidence of individual nematode parasite in male buffalo bulls. The highest infection was recorded for *Oesophagostomum* 12 (25. 00%) followed by *Haemonchus* and *Trichostrongyl* 8 (16. 66%) each. *Bunostomum* was trace at the rate of 5 (10 . 41%), where as *Toxocara vitulorum*, *Ostertagia* and *Strongyloides* recorded were 4 (8. 33%) each respectively. The lowest infection observed was 3 (6. 25%) for *Trichuris* in this meditation. Infestation rate of nematode parasites in male buffalo bulls ranged from (3 – 12) with mean vale of (12. 49) respectively.

Table. III intricates incidence of individual nematode parasite in female buffaloes. In descending order of infection the highest infestation recorded was *Trichostrongyl* 45 (24. 23%) followed by *Oesophagostomum* 34 (18.37%) in this thought. *Toxocara vitulorum* recorded was 29 (15. 67%), where as *Haemonchus* was recorded as 25 (13.51%) respectively. The incidence of *Ostertagia* witness was 22 (11. 89%) and *Bunostomum* was recorded as 12 (6. 48%). The lowest incidence testimony in female buffaloes was *Trichuris* 5 (2. 70%) respectively.

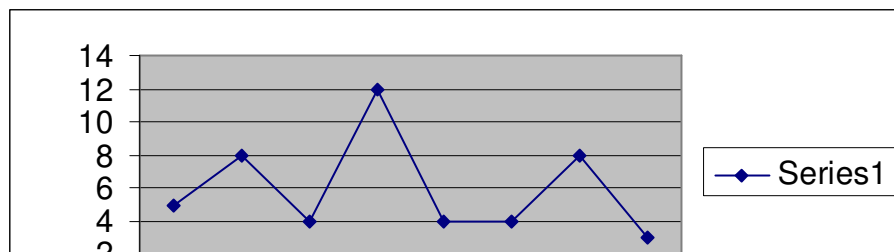
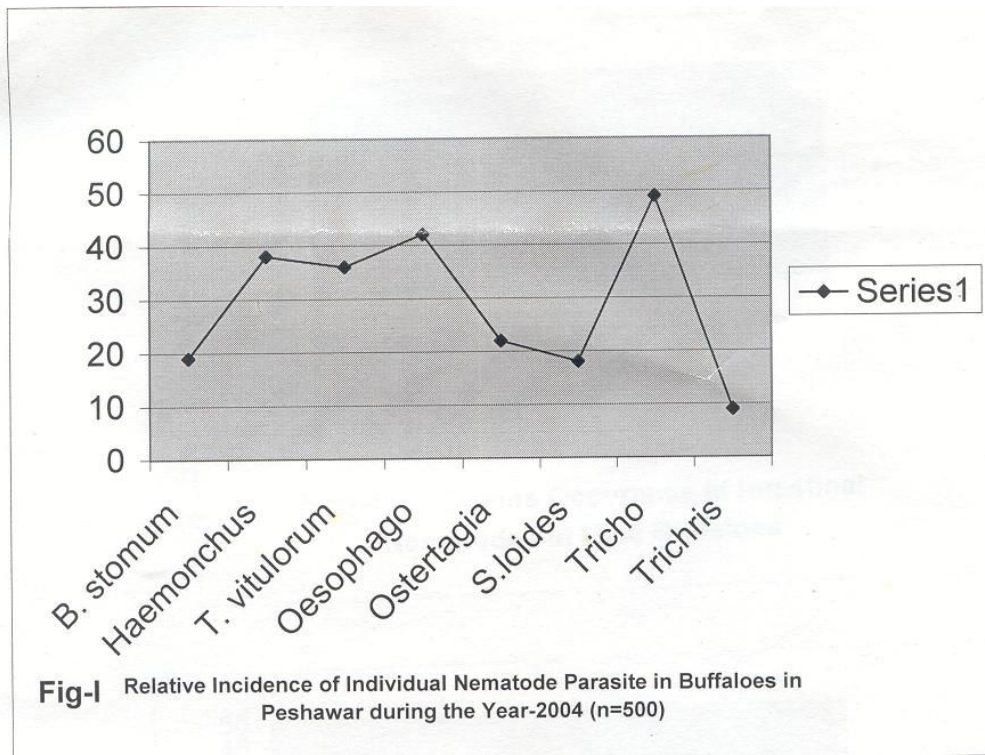
The outcome recorded in case of female buffaloes were quite interesting compared to male buffaloes bulls. In female buffaloes *Tricostrongylus* was recorded as the uppermost incidence rather than *Oesophagostomum* as in males. Likewise incidence of *Toxocara vitulorum* was higher in female buffloes and not *Haemonchus* as in male. Forth with incidence of *Ostertagia* and *Strongyloides* which are innovative compared to male buffalo bulls.

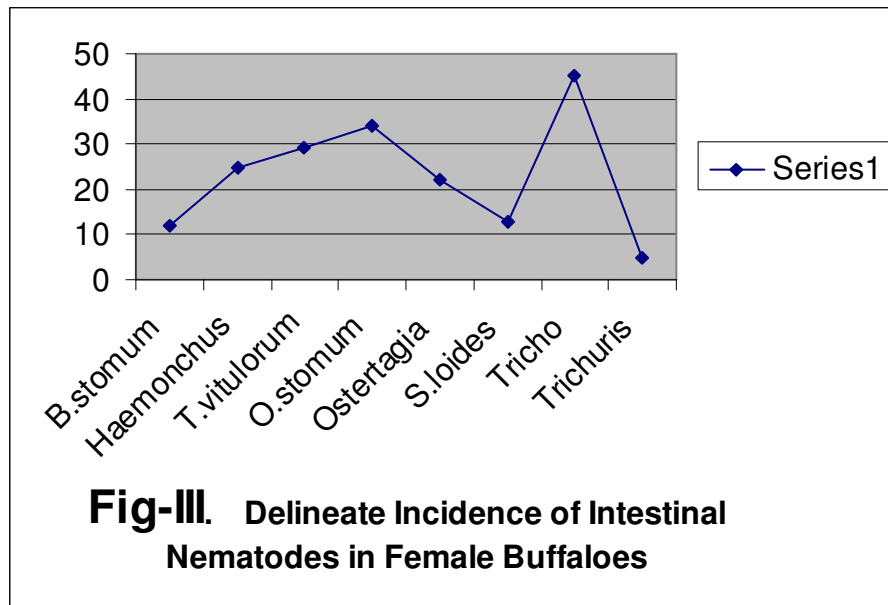
Results of this tuition showed that individual range of infestation of nematode parasites in female buffaloes is lower as compared to incidence rate of individual nematode parasite in male buffalo bulls. This may be due to the fact that livestock farmers usually pay more attention for proper health and husbandry practices of dairying buffaloes, being a common source of income as well as livelihood of buffaloes farmers, where as

male animals received less attention and care for their health.

These findings were in agreement with Tawfiq (1978) and Hussain (1985) who also recorded higher incidence in male than the female calves. The variation in occurrence of GI nematodes due to sex might have been attributed to the negligence and improper care of male animals. The development and survival of helminth as mentioned before were also influenced by temperature and moisture. (Urquhart et al 1987).

Based on findings of our study we accomplished that infestation of intestinal nematode parasites triumph in buffaloes population of the study areas in a trivial percentage affecting health and production of these precious animals. Type of infection screened in the area was based on large spectrum of eight genera's of nematodes. It is hoped that this study would pave the way for timely eradication and control of parasitic diseases ultimately improving the living status of livestock holders.





**Table I. Relative Incidence of Individual Nematode Parasite in Buffaloes in Peshawar during the year (2004) n = 500.**

S.NO.	Parasite Species	No. of samples positive	Percentage
1.	Bunostomum	19	8.15
2.	Haemonchus	38	16.30
3.	Toxocara vitulorum	36	15.45
4.	Oesophagostomum	42	18.02
5.	Ostertagia	22	9.44
6.	Strongyloides	18	7.72
7.	Trichostrongylus	49	21.03
8.	Trichuris	9	3.86

A total of 500 fecal samples were examined using coprological techniques.

1. Range of infection (9 – 49)
2. Mean (12. 49)

**Table II. Outline Occurrence of Intestinal Nematodes in Male Buffaloes**

S.No.	Parasite spp.	Incidence in Male	% age in Male
1.	Bunostomum	5	10. 41
2.	Haemonchus	8	16. 66
3.	Toxocara vitulorum	4	8. 33
4.	Oesophagostomum	12	25. 00
5.	Ostertagia	4	8. 33
6.	Strongyloides	4	8. 33
7.	Trichostrongylus	8	16. 66
8.	Trichuris	3	6. 25

1. Infection range (3 – 12)
2. Mean (12. 49)

**Table. III Delineate Incidence of Intestinal Nematodes in Female Buffaloes**

S.No	Parasites spp.	Incidence in Female	% age in Female
1.	Bunostomum	12	6 . 48
2.	Haemonchus	25	13 . 51
3	Toxocara vitulorum	29	15 . 67
4..	Oesophagostomum	34	18 . 37
5.	Ostertagia	22	11 . 89
6.	Strongyloides	13	7 . 02
7.	Trichostrongylus	45	24 . 32
8.	Trichuris	5	2 . 70

1. Infection range (5 – 45)
2. Mean (12. 49)

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