

## **PASSIVE SURVEILLANCE OF GASTROINTESTINAL PARASITES IN BUFFLAOES OF MANDI BAHAUDDIN AND GUJRAT DISTRICTS OF THE PUNJAB**

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### **ABSTRACT**

The study was carried out to find out the occurrence of parasitic infestation in buffaloes in Mandi Baha-ud-din and Gujrat districts of the Punjab. A total of 28880 faecal samples were examined in diagnostic laboratories from 1994 to 2004 out of which 26408 (91.44 percent) were positive for different parasites during the study period. The prevalence of trematodes, nematodes, cestodes and mixed infestation in buffaloes was 49.01, 28.55, 7.08 and 15.19 percent, respectively. Maximum prevalence was observed from January to September, while minimum parasitism was observed from October to December. The results of the present study indicated that there was heavy worm load present in buffaloes causing huge economic loss to the farmers by reducing milk production and retarded growth. The worm load can be minimized through better housing and husbandry practices besides use of proper anthelmintics.

**Key Words:** Cestodes; Nematodes; Trematodes; Buffaloes; Pakistan

### **INTRODUCTION**

Pakistan has population of 27.3 million of buffaloes, which play an important role in the national economy of the country and are the major source of meat and milk. Out of total milk (38.38 million tons) produced in Pakistan, 64% comes from buffaloes (Anonymous, 2008). There are some factors which affect the production performance of buffaloes. Among these diseases caused by different viruses, fungi, bacteria and parasites are of importance as they cause great economic losses in terms of mortality and decreased milk production. It is an established fact that parasitic diseases present a far greater threat to the livestock than visible outbreaks of the diseases. These dormant infestations adversely affect the whole flock or herd leading to retarded growth rate, lower milk yield, milk quality, causing unthriftiness, poor furnishing and predisposing for bacterial/viral diseases due to stress and body damage. Economic losses may be obvious like death, wasting condemnation of parts used as human food and hidden losses like reduced live weight gain, poor feed conversion, reduced lactation and poor fleece etc. Internal parasites constantly affect the production and health of livestock.

Nematode infestation lowers the resistance of animals and predisposes them to secondary infestations (Soulsby, 1982). Durani (1965) estimated 470 million Rupees annual economic losses caused due to parasitic diseases of animals in Pakistan. However a complete and accurate knowledge about the incidence and taxonomy of

these parasites is the utmost need for their effective control and in order to boost up the productive performance of buffaloes and cattle in districts Mandi Baha-ud-din and Gujrat. Keeping in view the above objective, the present project was executed to estimate the magnitude of different types of parasitic infestation in the buffaloes in districts of Mandi Baha-ud-din and Gujarat.

### **MATERIALS AND METHODS**

The major population of the districts of Mandi Baha-ud-Din and Gujrat belongs to rural areas and 80% livestock farming and agriculture are the main professions in which they are directly or indirectly involved. This area is rich in livestock especially the Nili Ravi buffaloes, which are mainly raised for milk production. A diagnostic laboratory for diagnoses of different diseases is working in Gujarat, where all the samples are sent for diagnosis from different parts of the two districts. The study was carried out in buffalo population to find out the occurrence of parasitic infestation in Mandi Baha-ud-Din and Gujrat districts of Punjab province from July 1994 to June 2005. The weather of the study area is hot and humid from April to September, with mercury touching 48°C regularly, while during winter it dips down to as low as 5 or 6 °C. The study areas are situated in between two rivers i.e. River Chenab and Jhelum. The soil is fertile and irrigated with canals and sub soil water. The area is full of cultivated

land which is arid in nature and is suitable for livestock farming.

**Sample size and data collection:** The data on animal affected by different endoparasites were collected from veterinary diagnostic laboratory Gujrat for the study period. A total of 28880 fecal samples were brought to district diagnostic laboratory, Gujrat for identification of different endoparasites during the period July 1994 to June 2004. About 10-15 gm of faecal material was collected separately in polyethylene bags from each animal and was stored at 10 °C for further process. The prevalence of endoparasites such as trematodes, nematodes and cestodes was recorded and subjected to Chi-square analysis (Steel *et al.*, 1997).

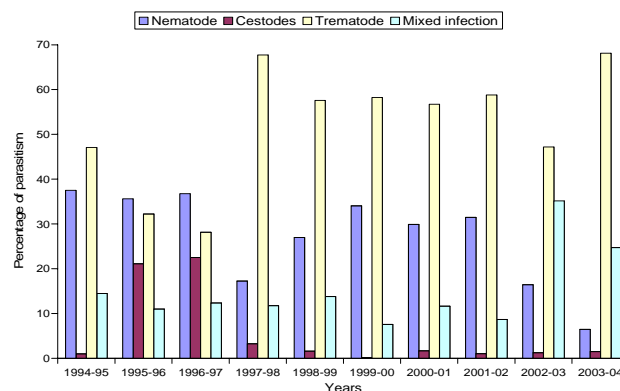
## RESULTS AND DISCUSSION

A total 26408 samples out of 28880 were observed to be positive for different parasites during the study period, indicating a very high incidence of worm infestation in buffaloes. There was wide variation in the percentage of worm infestation in buffaloes observed during the study period. The results of present study indicated that total overall prevalence of worm infestation in buffaloes during the study period (1994 to 2004) was 91.44%. It may be attributed to, the fact that buffaloes are more likely prone to internal parasites due to their habit of wallowing in marshy areas, from where they may have engulfed the eggs/larvae of different species of worms.

Worm load infestation was maximum during the years 1995-96, 1996-97, 1998-99 and 2002-03 which was 95.17%, 95.12%, 94.91%, 94.45% and 95.15%, respectively while in other years it remained higher than 85%. The higher incidence of worm infestation during these years may be attributed to higher rainfall during these periods. The results were substantiated by Shien *et al.* (1974) who reported that beef cattle were heavily infected with endoparasites than dairy cattle in Taiwan. The results of the present study indicated that trematode infestation in buffaloes was 49.16%. Similar results were also indicated by Veen *et al.* (1980) and Krishna *et al.* (1989) in their studies on buffaloes in Nigeria and India, respectively.

The incidence of *Fasciola hepatica* was 65% in the examined fecal samples. The results were substantiated by the findings of Keyyu *et al.* (2006) who observed that prevalence of both *Fasciola* and *Amphistomes* was higher (85.5%, 75.2%) in adults. The result of present study indicated that a total of 7541 fecal samples (28.55%) were positive for nematode infestation in buffaloes during the study period. During the years 1994-95, 1995-1996 and 1996-1997 the infestation rate was high (37.5%, 35.63% and 36.75%), respectively and it decreased during the following years and remained

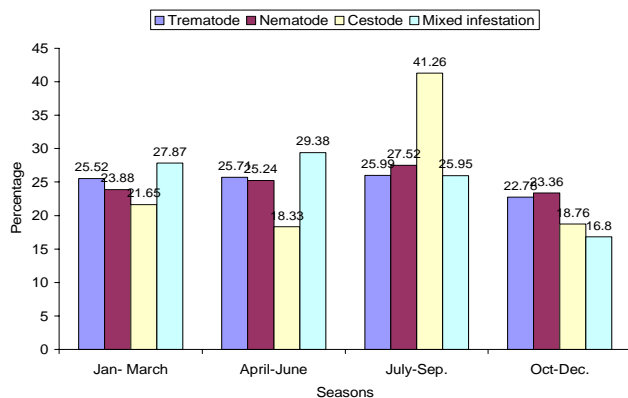
fluctuating from 16% to 34% except during 2003-04 when it decreased to 6.4%. These results lineup with the report of Krishna *et al.* (1989) who reported *Strongyloides* species in 26% of all animals examined in India. Maichomo *et al.* (2004) reported that overall prevalence of nematodes in calves was 69.2% which was much higher than that of the present study.



**Figure 1. Year-wise prevalence of different kinds of parasitism in buffaloes**

The results of our study indicated that cestodes infestation in buffaloes during the study period (1994-2004) remained 1% to 1.5% except in the year 1995-96 and 1996-97 where the rate of infestation was 21.12% and 22.52%, respectively. The overall infestation rate was 7.08% for ten years period much higher in buffaloes. The results of Wymann *et al.* (2006) also were in accordance with the findings of present study who reported a parasite spectrum included 11 nematodes, 3 cestodes, and one protozoan parasite in young calves in Mali. The present study revealed that overall mixed worm infestation in buffaloes during the study period was observed as 15.19%. The results of the present investigation revealed that the Trematode infestation rate was much higher in Tehsil Gujrat as compared to other Tehsils. Trematode infestation in the Gujrat Tehsil was 58.93% while the minimum (6.30%) worm load in buffaloes was found in Tehsil Phalia of Mandi Baha-ud-Din district.

A high Cestode infestation was observed in July to September (41.26 %,) while the lowest infestation (18.33 %) was observed in April to June. The results showed that the trematode infestation remained static with a little variation through out the study period. Nematodes infestation in buffaloes was at high level (27.52 %) during July to September of the year and minimum level (23.36 %) during October to December, period of the year. The mixed infestation was high (25.95 %) during July-September and 27.87% in January-March, 29.38% in April-June while it was low (16.8 %) in October to December. The result indicated that worm infestation in buffaloes remained at a minimum level in October to December and was high in July to September



**Figure 2. Seasonal prevalence of different kinds of parasitism in buffaloes.**

and April to June while during January to March, the infestation was moderate. Usually this area receives rains during July-August and the temperature also remains fairly high. Such environment is very conducive for worm infestation.

The results of the present study were also substantiated by the findings of Waruiru et al. (2001) who studied gastrointestinal nematodes in yearling dairy cattle in Kenya and reported that the total worm burden in the animals was highest during the rainy season and low during the dry season.

Nematode infestation was 63.99% in Tehsil Gujrat and 18.67% in Tehsil Kharian of District Gujrat. While the rate of nematodes infestation in Tehsil Mandi Baha-ud-din and Phalia of District Mandi Baha-ud-din were 10.67% and 6.67%, respectively. Cestode infestation in Tehsil Gujrat, Kharian, Mandi Baha-ud-din and Phalia was 56.13%, 24.55%, 13.29% and 6.03% respectively. Present study revealed that the worm infestation remained higher in the dairy buffaloes maintained in Tehsil Gujrat, while minimum in the buffaloes kept by the farmers of Tehsil Kharian. Mixed infestation was observed high in Tehsil Gujrat and low in the Tehsil Phalia. The rate of infestation in Tehsil Gujrat, Kharian, Mandi Baha-ud-din and Phalia was 50.79%, 25.63%, 14.61%, respectively. The reason may be the differences in the presence of more marshy areas in Tehsil Gujrat as compared to other areas. Also the population density of buffaloes and other livestock species may have some influence on the overall prevalence of different worm infestations in the area.

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