

## Short Communication

Seasonal Prevalence of *Fasciola hepatica* Infection in Buffaloes of Bahawalpur District of Punjab, Pakistan

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**Abstract** | A cross-sectional study was conducted to determine the prevalence of *Fasciola hepatica* in buffaloes of Bahawalpur District, Pakistan from May, 2010 to April, 2011. Epidemiological data on fasciolosis was collected from buffaloes at livestock farms of Bahawalpur, Ahmadpur East, Hasilpur, Khairpur Tamewali and Yazman Tehsils. Data was analyzed on the basis of seasonal prevalence and it was observed that a higher prevalence of fasciolosis occurred during autumn followed by spring and winter, while it was the lowest during summer. There was no significant difference ( $P > 0.05$ ) in the prevalence of fasciolosis between the five study sites. In conclusion, this study highlights the importance of initiating a control program for fasciolosis based on regular treatment in the areas of Bahawalpur having a relatively high prevalence of fasciolosis.

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## INTRODUCTION

Parasitism is considered as one of the most important problems of livestock sector responsible for lowering productivity and accounts for infecting more than 300 million cattle and buffaloes around the globe (Vercruyse and Claerebout, 2001; Khan et al., 2011). Fasciolosis, commonly known as liver fluke infection, is the most important infection caused by helminthes. It is the most important parasitic disease of livestock sector and humans. This disease is most familiar due to its wider range of definitive hosts. Acute and chronic infections are caused by *Fasciola hepatica* in the livestock (Shahzad et al., 2012). Two species of *Fasciola* genus are associated with the disease i.e. *F. hepatica* and *F. gigantica*. It requires an aquatic snail for asexual development, which increases its prevalence up to 80% in the animals which are in closed interaction with ponds. Both the species can give rise to

acute and chronic infection in livestock, with expected blood loss of about 0.2–0.5 mL /worm/animal/day (Khan et al., 2009; Khan et al., 2011). In Pakistan, surveillance record showed estimated prevalence of fasciolosis in Punjab 14.71%, 17.68% in Bahawalpur, 23.97% in Multan, 10.48% in Lahore and 55% in Peshawar (Khan et al., 2009). This problem appears to constitute a serious constraint to the development of buffalo industry in the area. Unfortunately, no up to date information is available on the prevalence and economic importance of fasciolosis in buffaloes in the Bahawalpur district of Punjab province. The primary objective of this study was to examine the current status of this disease in Bahawalpur district of Punjab province.

A carpological survey of buffaloes of the district Bahawalpur was carried out to check the overall prevalence of fasciolosis. The study area was divided into distinct

five study sites which are the five Tehsils of district Bahawalpur. To record the prevalence of fasciolosis, dairy farms of 5 tehsils named Bahawalpur, Hasilpur, Ahmadpur, Yazman and Khairpur Tamewali were surveyed on monthly basis, from May, 2010 to April, 2011. Fecal samples were collected and the presence of parasites was observed through microscopy. Data regarding the number of total observed animals and infected animals was recorded along with meteorological record. For this reason, the whole year was divided into four seasons with the following breakups viz winter (Nov–Feb), spring (March–April), summer (May–Aug) and autumn (Sep–Oct).

**Table 1:** Seasonal Prevalence of Fasciolosis in Buffaloes in district Bahawalpur.

Study Site	Summer May– Aug	Autumn Sep–Oct	Winter Nov–Feb	Spring Mar– Apr
Bahawalpur	4%	28%	6%	23%
Ahmadpur	3.5%	29%	5%	22%
Hasilpur	3%	27%	4%	24%
Khairpur	5%	33%	7%	27%
Yazman	6%	30%	8.5%	25%

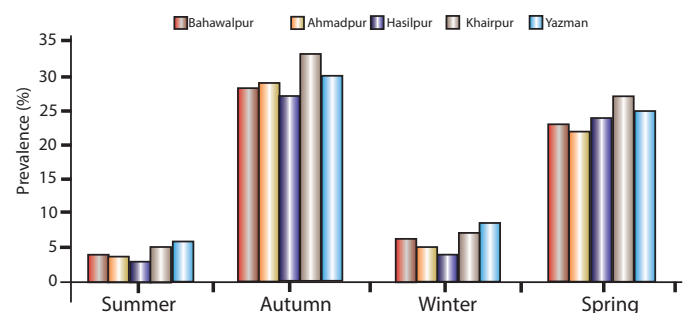
Fresh fecal samples were collected randomly from all the five study sites on monthly basis and transferred to the laboratory of University College of Veterinary and Animal Sciences, The Islamia University of Bahawalpur, where coprological examination (Simple Sedimentation method) was done according to Gonzalez–Lanza et al., (1989).

During this study, a total of 3000 fecal samples were collected from the district Bahawalpur, 600 samples were collected from each of the five study sites which are the five tehsils Bahawalpur, Ahmadpur East, Hasilpur, Khairpur Tamewali and Yazman of district Bahawalpur and were examined for the infection of Fasciolosis. Of which 84 (14%) Khairpur Tamewali, 65 (10.83%) Hasilpur, 68 (11.33%) Ahmadpur East, 71 (11.83%) Bahawalpur and 84 (14%) Yazman samples were infected with Fasciola hepatica. The overall infection was 369 (12.3%). Among all the five study sites the highest overall prevalence was observed during the autumn season, in Bahawalpur (28%), in Ahmadpur East (29%), in Hasilpur (27%), in Khairpur Tamewali (33%) and in Yazman (30%). The sec-

ond highest prevalence rate was observed during the spring season, in Bahawalpur (23%), in Ahmadpur East (22%), in Hasilpur (24%), in Khairpur–Tamewali (27%) and in Yazman (25%), followed by winter 6%, 5%, 4%, 7% and 8.5% then summer 4%, 3.5%, 3%, 5% and 6% from all the five study sites respectively.

Prevalence of fasciolosis was found to be high in the autumn season while lowest prevalence was recorded in the summer. So a positive correlation of the disease with temperature and humidity was reported. Closer analysis of prevalence findings in relation to ecology revealed that no significant difference was recorded from all the five study sites. That means that the disease prevalence was same in all the five study sites in all the four seasons.

Poor reproductive efficiency and parasitic infestation are the most important obstacles for increasing buffalo productivity and cause great economic losses. The occurrence of fasciolosis in an area is predisposed by a multifactorial system which comprises parasite, hosts along with many other environmental factors. In the natural foci of fasciolosis, the Fasciola and their intermediate and final hosts make an association posing a potential epidemiological threat and it is important that the existence and localization of such an association should be recognized in advance so that the situation can be brought under control.



**Figure 1:** Seasonal prevalence comparison of Fasciolosis in district Bahawalpur.

The absence of a significant difference in the prevalence of fasciolosis in five study sites may be explained by the fact that all the study sites were located in the same geographical area. The findings of this study correlates with the findings of Swarup and Pachauri (1987) and Chaudhri et al., (1993). They reported that fasciolosis is certainly seasonal and mostly restricted to two seasons of the year, i.e. autumn and spring sea-

son. Ollerenshaw (1958) reported that temperature and moisture are the two most significant factors affecting the prevalence of fasciolosis, as they have significant affection to the viability of encysting cercariae, hatching of fluke ova and population of snails. He also highlight that there are at least two seasonal periods in which temperature and moisture are favorable for the rapid propagation of the parasitic life cycle.

In present study, it is observed that the maximum humidity level is during autumn and spring season as well as the optimum temperature of about 30°C. These are the major factors for *Fasciola cercariae* and *Lymnaea* snails to survive. In the present study, highest prevalence of *F. hepatica* may also be attributed to use of lakes and ponds as mean of drinking water and regional variations due to change in agro-climatic conditions required for the development of free living stages of *F. hepatica*.

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