

PREVALENCE OF COMMON INTESTINAL PARASITES IN ZEBU CATTLE OF MYIN MHWE VILLAGE, SAGAING REGION

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Abstract

The gastro-intestinal tract (GIT) of animals harbour a wide variety of parasites mainly helminthes, which causes clinical and sub-clinical parasitism. These parasites adversely affect the health status of animals and cause enormous economic losses to the livestock industry. This study was conducted to detect seasonal variations in prevalence of common intestinal helminths in Zebu cattles of Sagaing Region. A total of 50 faecal samples were collected by simple random sampling method. Prevalence of infection was highest (52%-74%) at all seasons in Zebu. During the study period, four species of common intestinal parasites (four species of worms, *Strongyloides* sp., *Trichuris* sp., *Fasciola hepatica*, *Ascaris*) and one protozoan *Eimeria* sp. were occurred in Zebu cattles. *Strongyloides* sp were at high infection level. *Strongyloides* sp. and *Fasciola hepatica* were found in all ages. In this study, Zebu (or) ploughing cattle in Myin Mhwe village were found to be infected with intestinal parasites.

Keywords: Zebu cattle, intestinal parasites, seasonal prevalence

Introduction

Livestock production constitutes one of the principal means of achieving improved living standards in many regions of the developing world. Gastro-intestinal (GI) parasitic infections remain one of the major constraints to ruminant production. Insidious productivity losses through reduced feed intake and decreased efficiency in feed utilization, associated with subclinical or chronic conditions of parasitic infections are often the cause of large economic losses. The high incidence of parasitism of cows might have been due to the relative low influence of feeding behavior and a deworming program (Jittapalpong *et al.*, 2011).

Livestock plays a crucial role both in national economies and the livelihood of rural communities. It provides milk, meat, input for crop production and soil fertility and raw material for industry. Diseases have numerous negative impacts on productivity and fertility of herds i.e. losses due to mortality and morbidity, loss of weight, depressed growth, poor fertility performance and decreased physical power (Bacha and Haftu, 2014).

Gastro-intestinal (GI) parasitic infections may be either clinical or sub-clinical. Heavy infections can result in death before clinical signs appear such as progressive weight loss, weakness, anorexia and diarrhea. The prevalence of GIT parasite species and the severity of infection also vary considerably depending on local environmental conditions such as humidity, temperature, rainfall, vegetation and management practice (Bacha and Haftu, 2014).

The prevalence rates of bovine gastrointestinal parasitic infections in three states of northeast India bordering Myanmar and Bangladesh varied in different states. In that study, a total 50 faecal samples were examined by centrifugal flotation and sedimentation method. Samples collected from Tripura and Meghalaya showed that all the adult animals were infected with amphistomes species since the areas were favorable for propagation of snail intermediate host; considerable number (45.4 % in Meghalaya and 17 % in Tripura) were also infected with *Fasciola* sp. Samples were collected from Champhai district, area of Mizoram, bordering Myanmar but being hilly with no water logging, the occurrence of trematode infection was not found, in that

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study but the animals were found to be infected with *Strongyloides* sp. parasites (52.9 % and 56.7 %) in young and adult animals respectively (Lalrinkima, 2016).

Basically there are two types of cattle farming in Myanmar. They are Dairy cattle and Zebu (Ploughing cattle). There is limited data on cow intestinal parasites in Myanmar. It is necessary to detect the incidence of intestinal parasites in cows since the high incidence of parasitism. Thus the present study was conducted with the aim to determine the occurrence of common GI parasites in Zebu and to assess seasonal prevalence rates of the intestinal parasites.

Material and Methods

Study site

The fresh faecal samples of Zebu were collected from Myin Hmwe Village 21°55' N, 95°53' E in Saging Township, Sagaing Region.

(Plate 1 and 2)

Study period

The study period was from January to December, 2019.



Plate 1 Satellite Image of Myin Hmwe Village (Google Earth, 2019)



Plate 2 Zebu Cattle

Sampling procedure

Samples were collected by simple random sampling method. In Myin Hmwe village, there are about 290 houses and total numbers of cattles were about 1200 and there were about 4 cattles in each household farm. A total of 50 faecal samples were collected for analysis of gastrointestinal parasites in each season (hot season, rainy season and cold season).

Preparation of samples for egg count

In a paper cup, 3 grams of faeces were mixed with 50 ml of sugar solution and stirred well. The mixes were poured through a strainer into another paper cup. The strained sample was poured from the paper cup into the test tubes that was secured in an upright position. The test tubes were filled up to the top so that when a cover slip was put onto the test tube, the fluid would be just in contact with the cover slip, but not spilled over and kept for 20 minutes. Subsequently the cover slip was carefully lifted straight up and gently placed onto the center of a microscope slide (WHO, 1991). The slides were then examined under the light microscope at 100X and 400X magnifications.

Identification of parasites eggs

The parasite ova were identified according to Soulsby, (1982) Chiodin *et al.*, Cheesbrough and Monica, (1991), WHO (1991) and Zajac and Conboy (2012).

Intensity of infection

The number of helminths infecting individual cattle was measured directly by counting the number of eggs excreted in faeces.

Calculation of egg count per gram (EPG)

The following formula was used:

$$\text{Eggs / g} = (\text{no. eggs counted} \times \text{T/V})/\text{F}$$

T = total volume of faeces /flotation solution mixture

V = volume of aliquot examined in slide

F = grams of faeces

100 – 250 EPG – Not significant amount

250 -500 EPG – Low infection level

500 -1000 EPG – Moderate infection level

>1000 EPG - High infection level

(WHO, 2002; Zajac and Conboy, 2012)

Results

A total of 50 faecal samples were examined. Most Zebu cattles were found to be infected i.e. in the hot season 37 (74%), followed by cold season 30 (60%) and lowest in rainy season 26 (52%) (Table 1). A total of 15 males and 22 females were found to be infected in the hot season, 12 and 14 in the rainy season, and 11 and 18 in the cold season respectively (Table2).

In the present study, intestinal parasites namely, eggs of *Strongyloides* sp., *Trichuris* sp. *Fasciola hepatica*, *Ascaris* sp. and oocysts of *Eimeria* sp. were detected in the faeces of zebu cattles (Table 3,4,5 and Fig. 2,3, 4, Plate 3).

Only three types of warm parasites and one protozoan were observed in hot season i.e. *Strongyloides* sp., *Trichuris* sp., *Fasciola hepatica* and *Eimeria* sp. (Table 3, Fig.3). Moreover, many species of parasites consisting *Strongyloides* sp., *Trichuris* sp., *Ascaris* sp., *Fasciola hepatica* and *Eimeria* sp. were found in cold season (Table 5, Fig.4).

Eimeria sp. was higher in the rainy season than in the cold season. *Ascaris* sp. was found only in the cold season. *Trichuris* sp. was not found in the rainy season.

Strongyloides sp. and *Fasciola hepatica* were found in all ages of the cattle. *Eimeria* sp. and *Trichuris* sp. infections were detected in only young cattle.

In this study, regarding of the studied cattle, parasitism was high in Zebu and seasonal variation was also detected (Table 6 Fig.5).

Table 1 Seasonal prevalence of common parasites in the Zebu ploughing cattles of Myin Hmwe Village (January– December, 2019)

Number of cattles	Season	Infected (n)	% of total
n=50/season	Hot	37	74
	Rainy	26	52
	Cold	30	60

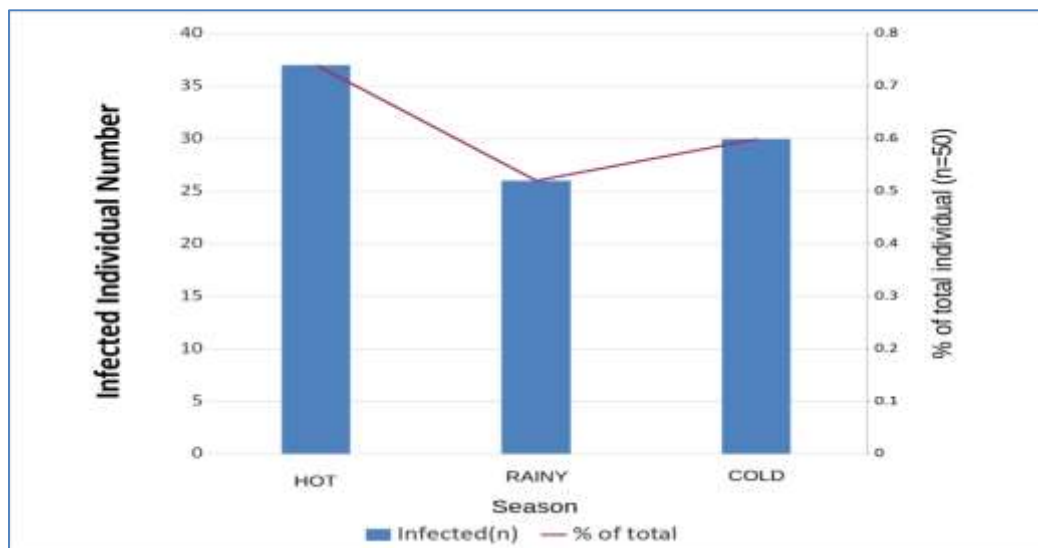


Figure 1 Seasonal prevalence of common parasites in faeces of Zebu cattles

Table 2 Seasonal prevalence of intestinal parasites in different sexes of Zebu (2019)

Types of cattle	Hot season		Rainy season		Cold season	
	Male	Female	Male	Female	Male	Female
Infected cattle	15	22	12	14	11	18
Non-infected cattle	10	3	13	11	14	7
Total	25	25	25	25	25	25

Table 3 Distribution of parasitic eggs and oocysts in different ages of Zebu (Hot season, 2019)

Age (Yr) of cattle	Parasite species	Eggs/g
1½, 2,3, 4,5,6,7	<i>Strongyloides</i> sp.	8133
1½, 2	<i>Trichuris</i> sp.	600
1½, 2, 4, 7	<i>Fasciola hepatica</i>	1333
1½, 2, 5	<i>Eimeria</i> sp.	43733

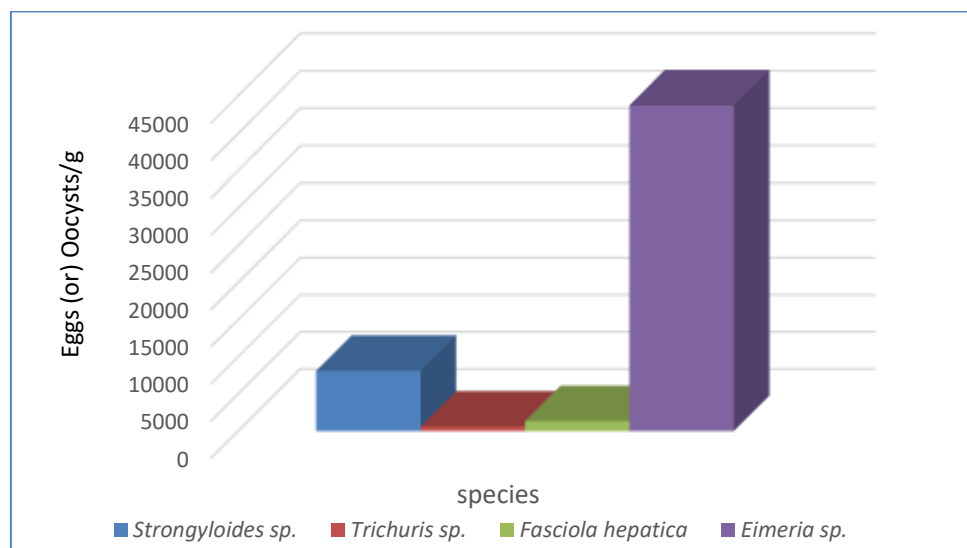


Figure 2 Number of parasitic eggs and oocysts in the faecal samples of Zebu (Hot season, 2019)

Table 4 Distribution of parasitic eggs and oocysts in the different ages of Zebu (Rainy season, 2019)

Age (Yr) of cattle	Parasite species	Eggs/g
1 ½, 2, 3, 4, 6	<i>Strongyloides</i> sp.	3200
1 ½, 2, 4, 6, 7	<i>Fasciola hepatica</i>	3467
1 ½, 2, 3, 5	<i>Eimeria</i> sp.	6733

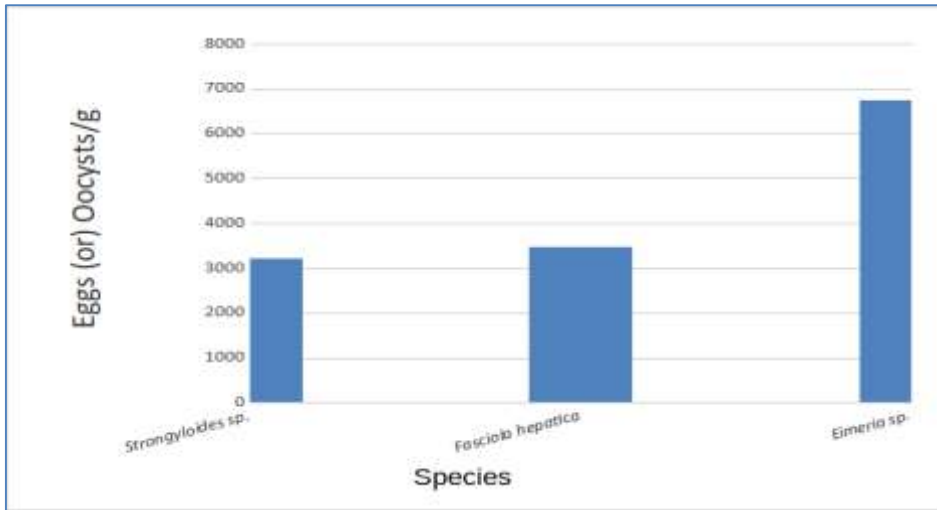


Figure 3 Number of parasitic eggs and oocysts in the faecal samples of Zebu (Rainy season, 2019)

Table 5 Distribution of parasitic eggs and oocysts among the different ages of Zebu (Cold season, 2019)

Age (Yr) of cattle	Types of parasites	eggs/g
1 ½, 3, 5	<i>Strongyloides</i> sp.	267
2, 7	<i>Trichuris</i> sp.	200
1 ½, 3, 5	<i>Ascaris</i> sp.	333
1 ½, 2, 3, 4, 5, 6, 7	<i>Fasciola hepatica</i>	1200
1 ½, 2	<i>Eimeria</i> sp.	133

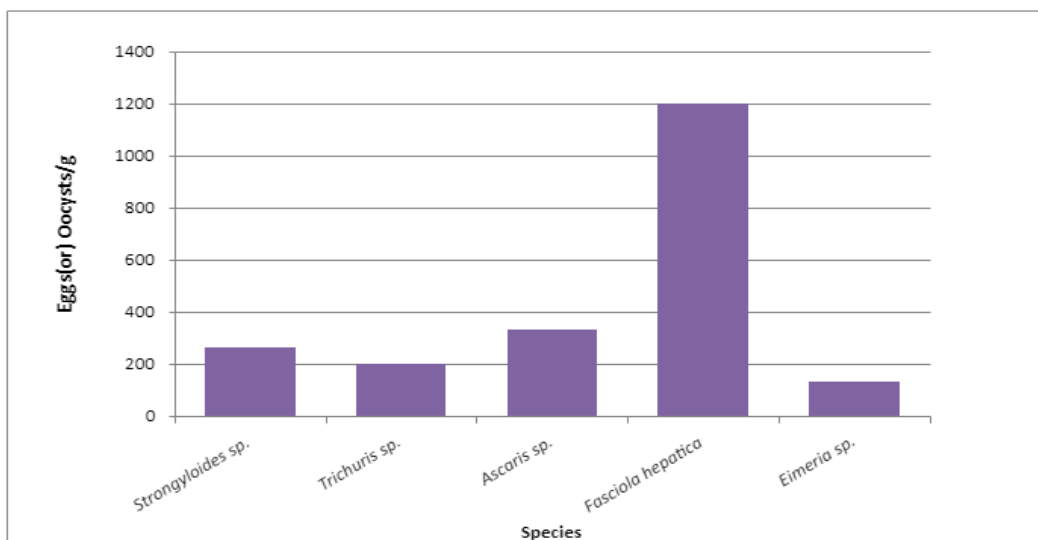


Figure 4 Counts of parasitic eggs and of oocysts among the Zebu (Cold season, 2019)

Table 6 Seasonal variations of common intestinal parasites among the Zebu (2019)

No	Parasite species	Hot season	Rainy season	Cold season
1	<i>Strongyloides</i> sp.	8133	3200	267
2	<i>Trichuris</i> sp.	600	0	200
3	<i>Ascaris</i> sp.	0	0	333
4	<i>Fasciola hepatica</i>	1333	3467	1200
5	<i>Eimeria</i> sp.	43733	6733	133

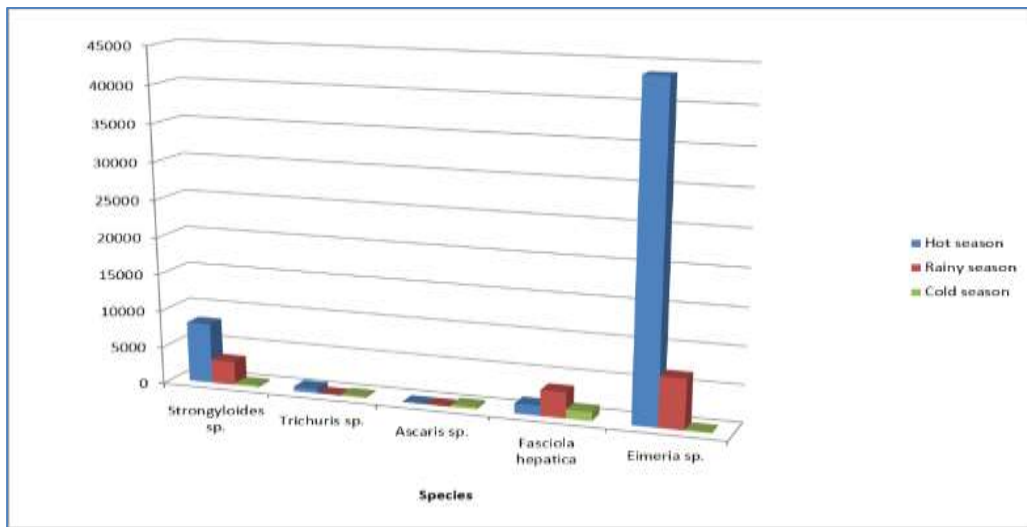


Figure 5 Seasonal variations of types of common intestinal parasitic eggs and oocysts among the Zebu



A. *Strongyloides* eggs (400X)



B. *Trichuris* eggs (400X)



C. *Ascaris* egg (400X)



D. *Eimeria* (400X)



E. *Fasciola hepatica* (400X)

Plate 3 Recorded parasitic eggs and oocysts

Discussion

The gastrointestinal parasites are one of the major health problems affecting the productivity of the cattle and sheep worldwide. In this study, prevalence of infection were high (52% -74%) in Zebu cattle at all season but was highest (74%) in the hot season.

In this study, cattle were infected mostly with nematodes including mostly *Strongyloides* sp. followed by *Trichuris* sp., and *Ascaris* sp. In addition, there was a common cestode, *Fasciola hepatica* and a protozoan parasite, *Eimeria* sp. among the parasites detected.

Cattle can acquire infections with any of several species of roundworms like *Ascaris* when grazing in pastures. The gastrointestinal tract of cattle is often infected with hairworms also called stomach worms and intestinal worms. These worms are transmitted when infected cattle pass eggs in manure onto the ground where the eggs hatch into larvae in the manure. After rain washes the larvae from the manure, the cattle then swallow larvae on wet grass in moderate temperatures.

Eberhard *et al.*, (2008) reported that in Southern Germany the predominant *Strongyloides* species were found in cattle and in sheep. The results of the present study for Zebu cattle were in agreement with their findings. *Strongyloides* sp. were most infected among the Zebu cattle in Myin Hmwe village. The recorded species of *Eimeria* had also high infection level.

Eimeria sp. cause Coccidiosis, a commonly disease of young cattle (1-2 months to 1 year of age) and usually is sporadic during the wet season of the year: coccidiosis typically results in diarrhea, weight loss and dehydration. A combination of these factors may result in poor growth and death of the animal (Thanmborg *et al.*, 2017).

Interestingly, female cattle were found to be more infected in this study. However in the study of Algeria, except the *Emiera* sp, all prevalence rate of gastrointestinal parasites in male cattle were higher than female cattle (Moussouni, 2018).

High infection level of *Fasciola hepatica* was also observed in the study site. The Liver fluke is a widely spread parasite of ruminants which can have significant economic impact on cattle production (Schweizer *et al.*, 2005).

Trichuris sp. infections are common in young calves and yearlings but the numbers of worms are seldom large. The eggs are resistant and infections are likely to persist in cattle premises. Clinical signs are unlikely but in occasional heavy infections, dark feces, anemia and anorexia may be seen (Merck manual, 1955).

Similar to the present study, the prevalence rates of *Strongyloides* sp., *Fasciola hepatica*, *Eimeria* sp. in young cattle were higher than old cattles (Moussouni, 2018)

In this study, Zebu (or) ploughing cattle in Myin Mhwe Village was found to be moderately to highly infected with common intestinal parasites. It is advisable to carry out regular deworming of cattle to reduce these infections. However, sanitary disposal of their faeces and proper hygiene of their feed are also essential to control the intestinal parasitic infections in Zebu cattle of the village in Sagaing Township.

Conclusion

In the present study, five species of intestinal parasites namely (i) *Strongyloides* sp. (ii) *Trichuris* sp. (iii) *Ascaris* sp. (iv) *Fasciola hepatica*, and (v) *Eimeria* sp. were observed in faecal sample of Zebu cattle. Female cattle were more infected than the males. Seasonally, hot (summer or dry) season showed the highest rate of intestinal parasitic infections.

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