

Dept. of Parasitology,  
Faculty of Vet. Med., Suez Canal University,  
Head of Dept. Prof. Dr. A.A. El-Miligy.

**COMPARITIVE STUDY ON ENTERIC PARASITES INFESTING FARM;  
FIELD CATTLE AND BUFFALOES AT SUEZ GOVERNORATE**  
(With 4 Tables)

By

**M.G. HASSAN and M.M. EL-BAHI\***  
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دراسة مقارنة على الطفيليات التي تصيب الأبقار والجاموس  
داخل المزارع وفي الحقل في محافظة السويس

محمد جمال ، محمد الباهي

أوضحت هذه الدراسة التي أجريت على الحيوانات الموجودة في المزارع والحقلية أن الإصابة بالطفيليات الداخلية أعلى في الحيوانات الحقلية عنها في حيوانات المزارع ووجد أن أعلى نسبة من بويضات الإسترونجيلوديا والمونيزيا سجلت في الأبقار الحقلية صغيرة السن ( أقل من 1 سنة ) حيث سجلت نسبة الإصابة 75 ، ( 28.1% بينما سجلت 14.3 ، صفر % في حيوانات المزارع من نفس نوع وسن هذه الحيوانات وبالنسبة لبويضات الفاشيولا فلقد وجدت في نسب متباينة حيث سجلت أعلى نسبة لها 13.33 % بالنسبة للأبقار ( أعلى من 2 سنوات ) والموجودة بالحقل أما بالنسبة لبويضات التكسوكارا فيتلورم فقد وصلت إلى أعلى نسبة لها 15.4% بالنسبة للجاموس صغير السن ( أقل من سنة ) والموجود في الحقل وبينت الدراسة وجود ثمانية أنواع مختلفة من اليرقات نتجت من فقس بويضات الإسترونجيلوديا .

**SUMMARY**

The present investigation is dealing with the faecal samples of the farm and field cattle and buffaloes of different ages against enteric parasitic infection. The study indicated that the infection was higher among field animals than in farm ones. Strongylids, and Moniezia species eggs released with the highest percentages from the field cattle calves, where it reached 75% and 28.1% respectively and 14.3% & 0.0% for corresponding farm ones. *Fasciola* species eggs appeared in a variable percentage, where it reached the maximum (13.33%)

\* Dept. of Parasitology, Faculty of Vet. Med., Cairo University.

among adult field cattle and 0.0% among the corresponding adult field buffaloes. Toxocara vitulorum eggs reached its maximum (15.4%) among field buffalo calves. Faecal culture for embryonation of variable Strongylid species eggs revealed 8 larval species in variable percentages in different positive animals. Four species of Eimeria were detected.

## INTRODUCTION

Percentage of parasitic infection in the Egyptian field animals fluctuated according to many factors including irrigation, season, frequency of exposure of the animal to infection, immune condition and interest of the owner and his ability to apply regular treatment for the exposed animals. According to SZANTO, et al. (1974) MONDAL and GADIR (1978), WARD, et al. (1979) and CARNEIRO, et al. (1987) the percentage of infection was higher in the field animals than in those controlled in the farm. The field is considered as a continuous supplying source of infection to the farm ones.

The present study spots more light on the epidemiology of enteric parasitic infectin including their types, rate of infection as well as larval and oocyst differentiation.

## MATERIAL and METHODS

The present investigation was carried out on farm and field cattle and buffaloes of different ages (calves under one year old, yearling from 1-3 years old and adults above three years old). One hundred eighty and 440 farm and 285 and 405 field cattle and buffaloes were examined respectively.

Faecal samples of these animals were collected from different localities at Suez Governorate during a period of four months from the beginning of June 1991 till the end of September 1991.

Faecal examinations for helminth eggs and oocyst count were done after SOULSBY (1982) while eggs and oocysts count was done by the McMaster slide after GORDON and WHITELOCK (1939). Positive faecal samples with Strongylida eggs were embryonated through faecal culture and larval differentiation was done according to BURGER and STOYE (1968). The isolated oocysts were differentiated according to CHRISTENSEN (1941) and LEVINE (1973).

Percentages of infection for different parasites were calculated in a ratio for total number of the examined animals.

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## RESULTS

Faecal examination of different age groups of cattle and buffaloes reared sporadic in the field or restricted in special farms revealed variable percentages of enteric parasitic infection as shown in table (1). The infection rate was higher in different age groups of cattle than the corresponding age in buffaloes which were reared in the field or even in farms. Also the results showed the higher infection rate in all field examined animals than that examined in the farms, where its percentages reached 87.50, 80.31 and 66.66% among calves, yearling and adult in the field respectively. On the contrary, among buffaloes in the same locality it reached 19.23%, 15.71 and 10.35% respectively. The corresponding percentages in the farm cattle reached 28.57%, 23.96 and 14.29% while in the farm buffaloes about 10.0, 7.95 and 5.0% in calves, yearling and adult respectively. The highest level of trematode infection was 15% in adult field cattle, while the highest level of infection by cestodes, nematodes and coccidian oocysts occurred among field cattle calves (28.13%, 78.13% and 31.25% respectively) as shown in table (1).

Concerning the helminth eggs and oocyst count among different examined animals, generally the cattle were harbouring the highest eggs and oocyst count in comparison with buffaloes in different age groups. Field animals usually shed more eggs and oocysts than the restricted farm ones. High percentage from the infected calves shed more than 300 eggs & oocyst per gram of feces were recorded among infected cattle calves followed by yearling and finally by adult as shown in table (2).

Concerning the different helminth species eggs, the highest percentage appear for Strongylida and Monizia eggs (75.0% and 28.13% respectively) among field cattle calves, corresponded by 14.29% and 0.0% respectively in the farm one. The percentage is low in field buffalo calves where it reached 3.85% for Strongylida and 0.0% for Montezia species eggs. Fasciola species eggs appeared in variable percentage where it reached the maximum (13.33%) among adult field cattle and (0.0%) in the corresponding adult field buffalo. Toxocara vitulorum eggs reached its maximum (15.39%) in field buffalo calves while it was about 6.67% in the farm one. The percentage was low (4.76% and 3.13%) in farm and field cattle calves respectively. Parmphistomum species eggs appeared in very low percentage with the maximum (2.08%) in farm yearling cattle (Table 3).

Faecal culture for embryonation of variable Strongylidae eggs revealed eight larval species in variable percentages in different age groups (Table 4). About 50% from farm calves and adult have Cooperia oncophora, the highest percentage for C. pectinata (12.37%) occurred in adult field cattle, for Trichostrongylus and Haemonchus species (33.33%) appeared in farm buffalo calves and farm & field adult ones, for Ostertagia species, the highest percentage was 25% in farm cattle and field buffalo

calves, for Bunostomum species (7.71%) appeared only in field yearling cattle, and for Oesophagostomum columbianum about 25% in farm cattle calves. O.venulosum larvae appeared in field adult cattle only in about 4.01% from Strongylida infected samples only. On the other hand, four species of Eimeria oocysts were detected, E.bovis appeared as 75% in yearling farm cattle, E.subspherica reached 100% among buffalo calves and adult in farm and field. E.ellipsoidalis reached 20% in field cattle calves and yearling farm buffaloes while E.zurnii was detected as 7.5% in yearling field cattle only (table 4).

### DISCUSSION

Parasitic infection among animals is considered to be one of the most important problems which induce either death or decrease of animal production (HIEPE, et al. 1978). In the present study the rate of infection by enteric parasites appeared higher in cattle than in buffaloes as mentioned by PETHLKAR and HIREGAUDAR (1972) PALOVIC (1975) and HASSAN (1985). Low grade infection among buffaloes may be due to the high resistance of this animal species (EZZAT, 1960). The field animals appeared more susceptible than those corresponding in farm, this agree with SELIM, et al. (1962), KYURTOV (1975), MONDAL and GADIR (1978) and BARUTZKI (1986). This may be due to the continuous exposure of field animals to infective stages from the banks of the channels and always exposed to infested pastures. The field animals usually produce more work and take less food (almost did not feed on concentrate) so they usually appear more susceptible to infection. On the other side, the farm animals have a good chance for feeding on concentrate, regular examination and treatment.

In the present work cattle calves appeared more susceptible for infection followed by yearling then the adult ones. This agrees with SELIM and TAWFIK (1966 & 1972) BATTELLI (1972), BORGSTEEDE and OOSTENDROP (1982) and ESTERRE (1985). They recorded high incidence of infection among calves followed by yearling and then adult. They attributed this conclusion to the increased immunity, resistance by increased ages as well as to the longer exposure of the adult animal to the infection. In this respect ROBERTS, et al. (1952) concluded that the host resistance develop in a very early stage after the first infection and continued through the existence of the animals.

Concerning the number of eggs and oocyst per gram of faeces, generally field animals shed more eggs and oocysts than farm ones. This agrees with ARMOUR, et al. (1979). Cattle calves have the highest rate of infection. This is in agreement with KYURTOV (1975) and CARNEIRO, et al. (1987). For Cestode eggs and Eimeria oocyst, in buffaloes, yearling have a higher percentage than calves, this is present in young age yearling or come from weak animals which have more susceptibility

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or due to condition of exposure. The eggs & oocyst counts per gram of faeces appeared generally low. This may be due to the present study being done in the dry season of the year and this coincided with PERL, et al. (1981).

Concerning the predominant parasitic species, Toxocara vitulorum appeared mainly in buffalo calves with decreasing percentage in other animals specially the adult one. This may be due to presence of some age resistance. This is in agreement with ROBERTS, et al. (1952), EZZAT (1960), SELIM and TAWFIK (1966 & 1972) and SUKHAPESNSA (1983) and contradictory with CUPTA, et al. (1985). They mentioned that no correlation between age and T.vitulorum and Coccidia. Strongylida eggs represented the highest infection among field cattle in comparison with other parasites which is in agreement with ESTERRE (1985), C.oncophora resembled the predominant species in the present study. This concided with CARNEIRO, et al. (1987). Among Coccidia E.bovis and E.subspherica were the most predimontant species among cattle and buffaloes respectively. This is in agreement with PALVOIC (1975) and ABD EL-AAL (1981). Moniezia species eggs were detected in field cattle mainly and in yearling field buffaloes. No Moniezia eggs were detected among farm animals. This may be mainly due to the period of examination as mentioned by BARUTZKI, et al. (1986).

On the other side, Fasciola species eggs appeared in high percentage in the field animals than that in farm ones. This may be due to feeding on grass in field animal and concentrate in the farm ones as mentioned by WELCH, et al. (1987).

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Table (1): Incidence of enteric parasites that infect farm &amp; field Cattle and Buffaloes

Infection	FARM ANIMALS						FIELD ANIMALS						TOTAL			
	Calves		Yearling		Adult		Calves		Yearling		Adult		Farm		Field	
No. of exam.	21	30	96	390	21	20	32	26	193	350	60	29	138	440	285	405
No. of Infest.	6	3	23	31	3	1	28	5	155	55	40	3	32	35	223	63
%	28.57	10.00	23.96	7.95	14.29	5.00	87.50	19.23	80.31	15.71	66.66	10.35	23.19	7.96	78.25	15.56
Trans- code	No.	-	6	1	1	-	2 <sup>f</sup>	-	12 <sup>f</sup>	2	9 <sup>f</sup>	-	7	1	23 <sup>f</sup>	2 <sup>f</sup>
	%	0.0	0.0	6.25	0.26	4.76	0.0	6.25	0.0	6.22	0.57	15.0	0.0	5.07	0.23	8.10
Caste- do	No.	-	-	-	-	-	9 <sup>f</sup>	-	28 <sup>f</sup>	25 <sup>f</sup>	4 <sup>f</sup>	-	-	-	41 <sup>f</sup>	25 <sup>f</sup>
	%	0.0	0.0	0.0	0.0	0.0	28.13	0.0	14.51	7.14	5.67	0.0	0.0	0.0	14.39	6.17
Normal- code	No.	4 <sup>f</sup>	3 <sup>f</sup>	9 <sup>f</sup>	15 <sup>f</sup>	2	25 <sup>f</sup>	5 <sup>f</sup>	146 <sup>f</sup>	28 <sup>f</sup>	39 <sup>f</sup>	2	15 <sup>f</sup>	19	210 <sup>f</sup>	35 <sup>f</sup>
	%	19.04	10.0	9.38	3.85	9.52	78.13	19.23	75.65	8.0	65.0	6.89	10.87	4.32	73.68	8.64
Dasyat	No.	5 <sup>f</sup>	1 <sup>f</sup>	8 <sup>f</sup>	20 <sup>f</sup>	-	10 <sup>f</sup>	1 <sup>f</sup>	14 <sup>f</sup>	17 <sup>f</sup>	4 <sup>f</sup>	1	14 <sup>f</sup>	23	28	20
	%	23.81	3.33	8.33	5.13	0.0	31.25	3.85	7.25	8.86	6.67	3.45	10.15	5.23	9.83	4.94

\* Animals have mixed infection.



Table (2): Helminth eggs and oocysts count (E & O P G) among infected cattle and buffaloes

Species	No. of eggs & Oocysts Per/Animal faeces	Age	Trichostrongyle Eggs				Gastrophilus Eggs				Nematode Eggs				Eimeria Oocysts			
			Farm		Field		Farm		Field		Farm		Field		Farm		Field	
			Post no.	%	Post no.	%	Post no.	%	Post no.	%	Post no.	%	Post no.	%	Post no.	%	Post no.	%
C A T T L E	Low than 300 R.P.G.	Calves	-	0.0	2	100.0	-	0.0	4	44.44	3	75.0	10	40.0	4	66.66	5	50.0
		Yearling	6	100.0	12	100.0	-	0.0	15	53.57	7	77.77	93	63.69	8	100.0	10	71.43
		Adult	1	100.0	9	100.0	-	0.0	3	75.0	2	100	27	69.23	-	0.0	2	50.0
B U F F A L O	Higher than 300 R.P.G.	Calves	-	0.0	-	0.0	-	0.0	5	55.66	1	25.0	15	60.0	2	33.34	5	50.0
		Yearling	-	0.0	-	0.0	-	0.0	13	46.43	2	22.23	53	36.31	-	0.0	2	50.0
		Adult	-	0.0	-	0.0	-	0.0	1	25.0	-	0.0	12	30.77	-	0.0	2	50.0
B U F F A L O	Low than 300 R.P.G.	Calves	-	0.0	-	0.0	-	0.0	-	0.0	3	100.0	5	100.0	1	100.0	1	100.0
		Yearling	1	100.0	2	100.0	-	0.0	16	64.0	15	100.0	28	100.0	17	85.0	16	94.12
		Adult	-	0.0	-	0.0	-	0.0	-	0.0	1	100.0	2	100.0	2	100.0	2	100.0
B U F F A L O	Higher than 300 R.P.G.	Calves	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	3	0.0	1	0.0
		Yearling	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	1	0.0
		Adult	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	1	0.0

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Table (3): Percentage of *G. helminth* eggs among different groups

Species	Animals		No. of exam.	Trichostrongylus		Paraphrostrongylus		Castoreostrongylus		Nematostomum		Strongylus	
	Types	Age		No. of Infest.	%	No. of Infest.	%	No. of Infest.	%	No. of Infest.	%	No. of Infest.	%
C A T L K	Farm	Calves	21	-	0.0	-	0.0	-	0.0	1	4.76	3	14.29
		Yearlings	96	4	4.17	2	2.08	-	0.0	-	0.0	9	9.38
		Adult	21	1	4.76	-	0.0	-	0.0	-	0.0	2	9.52
	Field	Calves	32	2	6.25	-	0.0	9	28.13	1	3.13	24	75.0
		Yearlings	193	10	5.18	2	1.04	28	14.51	2	1.04	144	74.61
		Adult	60	8	13.33	1	1.67	4	6.67	-	0.0	39	65.0
B U F F A L O	Farm	Calves	30	-	0.0	-	0.0	-	0.0	2	6.67	1	3.33
		Yearlings	390	1	0.26	-	0.0	-	0.0	9	2.31	6	1.54
		Adult	20	-	0.0	-	0.0	-	0.0	-	-	1	5.0
	Field	Calves	26	-	0.0	-	0.0	-	0.0	4	15.39	1	3.85
		Yearlings	350	2	0.57	-	0.0	-	7.14	15	4.29	13	3.71
		Adult	29	-	0.0	-	0.0	-	0.0	-	2	6.90	

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Table (4): Types and Percentages of Strongyle larvae and Eimeria oocysts detected from infected Faecal Samples.

Species	Type	Age	% of different Strongyle Larvae from Synchronized Eggs										% of different Eimeria Oocysts				
			C. concophora	C. pectinifera	F. (strong)	O. (strong)	H. (strong)	S. (strong)	O. (strong)	O. (strong)	E. (strong)	E. (strong)	E. (strong)	E. (strong)			
CATTLE	Farm	Calves	50.0	-	-	25.0	-	-	25.0	-	-	50.0	33.24	16.76	-		
		Yearling	36.36	9.11	27.21	18.21	9.11	-	-	-	75.0	12.50	12.50	-			
BUFFALO	Field	Calves	36.81	2.81	7.85	15.81	26.31	-	10.41	-	50.0	30.0	20.0	20.0	7.50		
		Yearling	30.65	3.82	19.23	13.35	15.42	7.71	13.02	-	60.0	20.0	12.50	-			
BUFFALO	Farm	Calves	33.33	-	33.33	15.0	33.33	-	-	-	30.0	100.0	20.0	-			
		Yearling	35.0	-	28.0	15.0	21.0	-	-	-	50.0	100.0	20.0	-			
BUFFALO	Field	Calves	25.0	-	25.0	25.0	25.0	-	10.0	-	25.0	100.0	15.0	-			
		Yearling	16.0	-	24.0	20.0	30.0	-	-	-	60.0	100.0	-	-			
BUFFALO	Field	Calves	13.33	-	33.33	-	33.33	-	-	-	-	100.0	-	-			
		Yearling	13.33	-	33.33	-	33.33	-	-	-	-	100.0	-	-			