Diyala University College of Veterinary Medicine

Report

Detection gastrointestinal parasite in cows of Baquba city

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بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ [١] خَلَقَ الْإِنْسَانَ مِنْ عَلَقٍ [٢] اقْرَأْ وَرَبُّكَ الْأَكْرَمُ [٣] الَّذِي عَلَّمَ بِالْقَلَمِ [٤] عَلَّمَ الْإِنْسَانَ مَا لَمْ يَعْلَمْ [٥]

صدق الله العظيم

سورة العلق

Dedication

Dedication Personally, I'd like to thank all those who have helped with their advice and efforts I'd like also to thank to my supervisor, Dr. Hadi Saleh Mahdi. for his valuable advices.
For my parents, Friends and everyone, I offer my research.

Ali R. Hammed

Contents

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Summary

This study was conducted for the presence of infection , gastro-intestinal parasites in farms city of Baquba during 1.11.2013 to 1.04.2014 , amounting to fifty the number of samples sample different ages.

Study showed that the highest incidence of infection Coccidiosis ,The samples were collected directly from the cows of the rectum and by watching the animal defecates on the ground . And put in a clean and sterile containers and transported to the laboratory for the detection of parasites eggs , eggs have been diagnosed with a number of gastro-intestinal worms

in College of Veterinary Medicine - University of Diyala way floation and sedimentation methods

Present study record 13(0.26) gastrointestinal parasite as well as protozoa 6 *(0.12)Eimeria spp. , strongyles 4(0.08),Isospora spp. 1(0.02) ,and Haemonchus spp. 2(0.04).*

Introduction

The gastrointestinal tract (GIT) of cattle a variety of parasites particularly helminthes, which causes clinical and sub clinical parasitism These parasites industry adversely affect the health status of animals and cause enormous economic losses to the livestock. Gastrointestinal parasites not only affect the health
but also affect the productive and reproductive performance of the cattle.
Gastrointestinal worms
are recognized as by for the most significant part of diseases in livestock sector[(1)].
It has been established that parasitic infestation result
in considerable losses in milk production in cattle[(2)].
predisposing factors of internal parasites infection are climates, nutritional deficiency, grazing habits,
immunological status, pasture management , presence of intermediate host and vector and the number of infective larvae and eggs in the environment. Damages inflicted to the health and productivity includes loss in body weight, poor reproductive performance, digestive disturbance, and emaciation for longer period [(3)].

Almost mature worms produce toxins that
destroy Red Blood Cells, leading to unthrifty anemic condition. Immature worms migrating through the body tissues open the way for bacteria and fungi to enter, causing some other serious diseases. Other economic losses are poor work performance, involuntary culling lower milk production, treatment costs, and mortality in heavily parasitized animals [4].
, So it is important to control internal parasites through better management as in developed countries, and knowledge on prevalence of these parasites is mandatory.
The present research was designed to record the parasitic profile of GIT
and give awareness to the farmers about parasitism and its impact on the health and production of cattle . Furthermore to suggest proper treatment, control and preventive measures to the farmers regarding the GIT parasites

Literature review

The major important of gastrointestinal parasite in cattle[5]

Nematodes

•*Haemonchus*
•*Strongyloides*
•*Trichostrongylus*
•*Ostertagia*
•*Cooperia*

Cestode

•*Moniezia expansa*
•*Moniezia pendini*

Trematode

•*Fasciola hepatica*
•*Fascilo gigentica*

Protozoan

•*Eimeria zuernii*
•*Eimeria bovis*
•*Eimeria auburnesis*
Eimeria ellipsoidalis

The parasite of gastrointestinal infected cattle , among the predisposing factors of internal parasites infection are climates, Nutritional deficiency, grazing habits, immunological status, pasture management , presence of intermediate host and vector

and number of infective larvae and eggs in the environment[6].

Parasites of gastrointestinal tract, lay microscope eggs that shed in the animals feces. Once on the ground in the feces, the parasite eggs develop to contain larvae that hatch on ground. The larvae then develop to the stage where they are capable of infecting another animal.

The time needed for this maturation step is variable, but general it occurs over matter of several day during warm weather.

During very cold weather, maturation can be delayed for weeks to months.

Larvae are capable of traveling a small distance (millimeter to centimeters) away from the fecal matter and reside on nearby blades of grass or other plant matter, such as hay that is on ground. as shower in fig.(1).

Larvae can be spread by animals in their manure and stepping onto nearly grass or feed, which is then ingested

By another animal[7].

Life cycle of coccidiosis can explained, when the host ingested with feed and water a sporulated oocyst, the infection process strated and the infection process started

and the host become infected[8].
Under especial stimuli such as an aerobic environment of bile salts and enzyme, the sporozoites were released from their oocyte and sporocyst. The released epithelial cells of the intestine[9].
The sporozoites change their shape to become round(trophozoites), increase in number by mitosi (merogony) to form first generation schizont(meront) which break up the host cell walls and pass into the intestinal lumen and then invade new host cell,and gain increase in number by mitosis forming second generation schizont[10].
The invasion for fresh host cells include the develop of microgamonts (mal ganonts)while most other into microgamonts(female ganonts) the sexual stage starts at this point(gamogony) and ther forming unsporulated
Oocysts. These oocysts were released into the environment by fecal contamination[11].as showen in figure(2).
Moisture ,temperature, and direct exposure to sun light influence the ability of oocysts
To sporulate in the external enivironment[12].

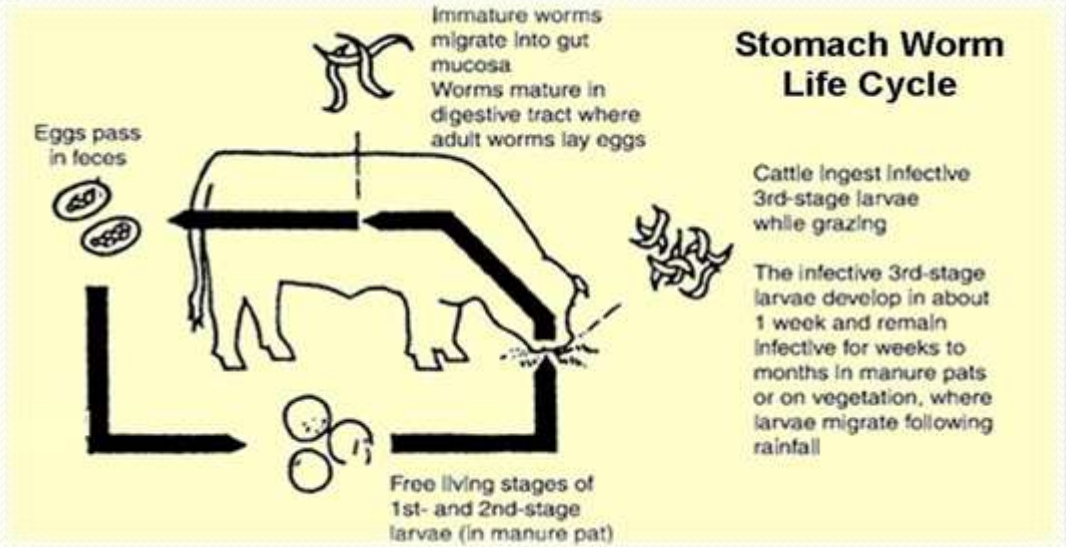


Fig.1: life cycle gastrointestinal nematode in cattle

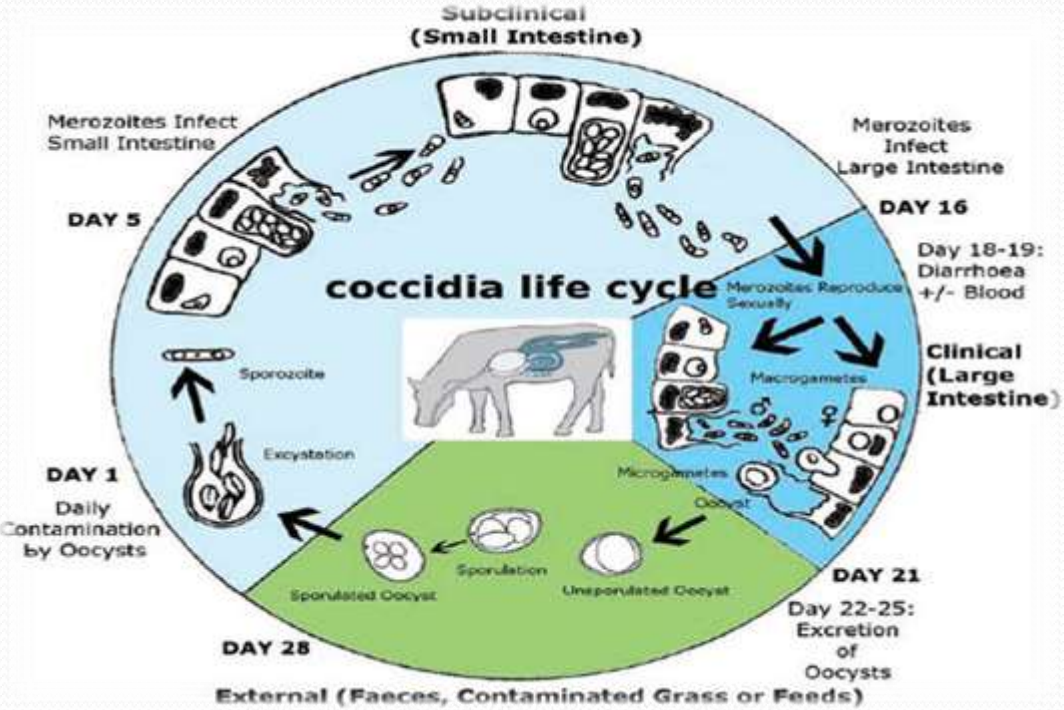


Fig.2: life cycle Eimeria spp. in cattle

A cross sectional study was carried out from October 2010 to March 2011 to determine the prevalence and risk factors associated with gastrointestinal (GI) nematode parasitism in cattle in and around Gondar town, North Gondar, Amhara region, Northwest Ethiopia. A total of 388 fecal samples of cattle of different sexes and ages were collected and examined for GI nematode eggs using sedimentation and floatation techniques. Out of these, 107 (27.57%) animals were found positive for one or -mixed GI nematode infection.

The result of fecal examination revealed eggs of *strongly*-type, *Ascaris* and *Trichuris* species. Cattle harboring one-parasite eggs were more common two (28.79%) or three (71.02%) than those harboring (0.9%).-. Three G1 nematode parasite egg-types were detected; Ascaris (57%), Strongles (56.07%) and Trichuis (16,82%). A significantly higher prevalence ($P<0.05$) of infection with GI nematodes was recorded in calf **(13)**

To identify some of the factors associated with bovine coccidiosis in calves (*Bos indicus*) in a subhumid tropical climate and identify the species of *Eimeria* present in the animals. **.** The state of Yucatan, Mexico was divided into three zones according to annual rainfall records. In each zone two small herds (<100 animals) and two large herds (>200 animals)
were selected. Faecal samples were taken from two hundred calves (*Bos indicus*) six times in one year (1200 faecal samples).
Samples were tested by McMaster and flotation techniques.
Samples positive to *Eimeria* oocysts were cultured in potassium dichromate. *Eimeria* oocysts were found in 87.8% of the samples (1054/1200). A high prevalence was associated
with the high rainfall zone (OR= 1.93; 1.16 to 3.20 CI 95%),
with large herd-size (OR=1.83; 1.27 to 2.63 CI 95%)
and with rainy season (OR= 3.34; 2.03 to 5.56 CI 95%) . Oocyst excretion was positively affected by large herd-sizewas positively affected by large herd-sizeand rainy season. Nine species of *Eimeria* were identified

The most frequent species were *E. bovis* (26.4%), *E. auburnensis* (16.2%), *E. ellipsoidalis* (14.7%), *E. canadensis* (12.1%) and *E. zuernii* (10.6%)[14].

The current study was conducted to detect the presence of *Buxtonella sulcata* (an intestinal ciliate) in faecal samples of cattle suffering from diarrhea in Mosul city.

One hundred and twenty faecal samples were examined, and collected from calves (44), beef cattle (34) and dairy cattle (42) these animals were divided into two groups those showed diarrhea (86) and (34) had
no symptomatic diarrhea. Direct smear and formalin-ether sedimentation methods were used for detection of this parasite. The total percentage of infection with *Buxtonella sulcata* was 24.16%. There was no significant differences in the percentage of infection and intensity of infection between calves, beef anddairy cattle where as there were significant differences between diarrheic and non-diarrheic animals[15].

The present study was carried out to determine the prevalence of gastrointestinal helminthiasis in large ruminants (cattle and buffalo) in Jammu area of J&K. For this purpose, 310 faecal samples were collected from cattle and buffalo from different areas of Jammu. Parasitological procedures used for the identification of helminthes were direct and indirect methods.

overall prevalence of helminthiasis was 51.29 %. Helminthic infection was recorded throughout the year with seasonal variations[16].

internal parasites of cattle in select Western Pomerania farms. The studies were carried out in five farms, on 84 calves and 153 cows. The prevalence and intensity of the Coccidia and gastro-intestinal nematodes infection were determined by means of the Willis-Schlaafs and McMaster's methods. The Coccidia composition in the examined animals was determined by morphological features of the oocysts and the sporulation time. The following four Eimeria species were isolated: E. bovis, E.

aubernensis, E. zürni and E. ellipsoidalis. Two methods were used for detection of Cryptosporidium sp. - the Ziehl-Neelsen staining technique and coproantigen test. In cows, the overall prevalence was Eimeria sp. ranged from 5.5 to 23.4%, gastro-intestinal nematodes ranged from 12.7 to 42.6%. In calves, the overall prevalence Eimeria sp. was ranged from 10.0 to 36.8% oocysts and Cryptosporidium sp. 22.8%[17].

Materials and methods

Material:

1.centrifuge
2.compound light microscope
3.phone camera
4.pasture pipette
5.mortar
6. gauze
7.test tube glass
8.steriae container
9.gloves
10.microscope slide
11. microscope cover glass
12.sodium chloride (NaCl)
13. tap water

Methods:

Area of the study

The study conducted in farm cows in baquba city and farm college vet. Med. University of diyala.

Animals:

Total number of cows are 50 in different species,age,sex and breed .

Samples collection:

-Introduce the hand into the anus using gloves and lubricant.
-From the ground: When the animal is observed defecating.
The sample were put separately into plastic container with a lid and data pertaining to the sex,age,and consistency of faces were recorded.

Diagnosis of parasites

The parasites were identified by using low and high power of microscope according to the keys and morphological characteristics.

After sample collected from cows the gastrointestinal parasite are diagnostic.

Microscopic examination

1. fecal flotation

This tachinque is used easily for the identification of eggs of nematodes and cestodes.

1. Obtain about one to two gram of feces, you will need more for herbivores because of the high roughage content which can dilute the sample.
2. Mix the fecal sample with the flotation solution, Strain or screen the fecal debris into another cup and squeeze out the excess fluid.
3. Pour the filtered preparation into a tube.
4. Add fecal flotation solution to the tope of the tube so that it bulges slightly- creating a reverse meniscus.
5. Place a cover slip on top of the tube, Let stand for 15 minutes. The fecal debris will sink to the bottom of the tube.
6. Carefully remove cover slip with the adherent drop of fecal flotation solution that will also contain any ova,
7. Place cover slip on a microscopic slide. There should be no chunky debris or air bubbles on the slide. Examine the entire cover slip area at 10X lens objective, Switch to 40X lens objective as needed. Remember to change your plane of focus slightly as you view each field, since not all diagnostic stages of parasites will be in the same plane of focus. Some will be closer to the cover slip than others[(18)].

2-Fecal Sedimentation technique:

Fecal sedimentation is used to detect large or heavy ova such as many fluke eggs (Trematodes), and many tapeworm (Cestodes) eggs that will not float in fecal flotation techniques.

It is sometimes helpful to apply new methylene blue as a background stain to highlight the ova, or Lugol's iodine solution can be used instead to highlight the internal structures of ova, oocysts and cysts.

Procedure:

Obtain about a one to two gram fecal sample and mix it with tap water, strain the mixture; pour the strained preparation into a centrifuge tube.

Here is the appearance of the suspension before centrifugation. Centrifuge at 1500 rpm for 5 minutes, or you may leave it in a rack for 15-20 minutes. Here is the appearance of the suspension before and after centrifugation.

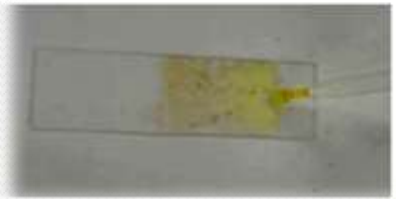
Decant the supernatant, and refill the tube with fresh water, mix and recentrifuge or leave it to stand. Repeat this process of washing for 3-5 times till the supernatant is clear, decant the supernatant. Using a loop or Pasteur pipette put a drop of the sediment on a clean slide, cover it and examine[19].

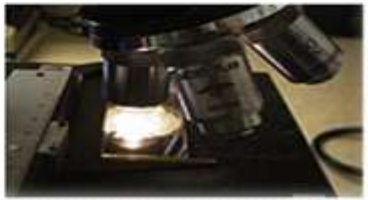










Results

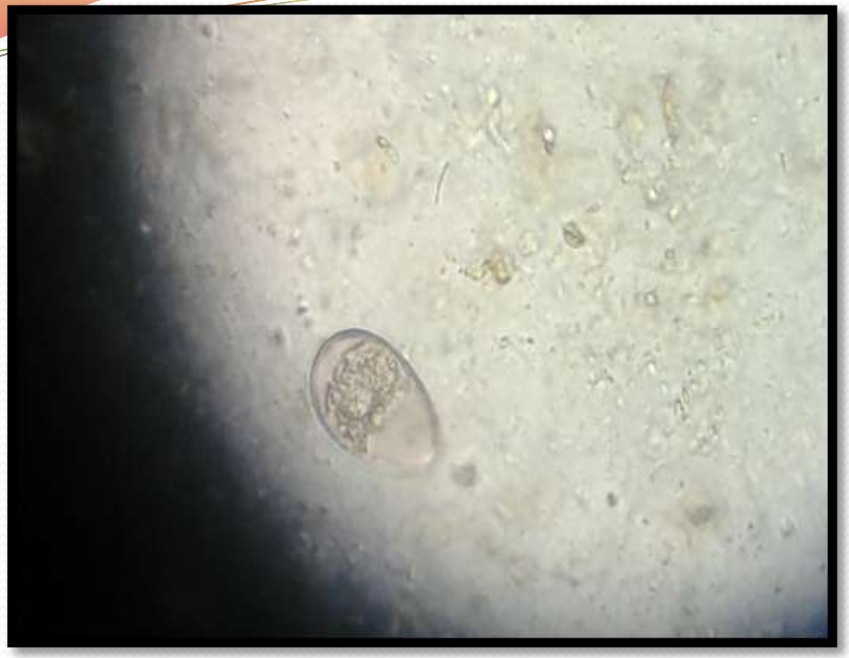
During the microscopic examination of 50 samples of cattle feces in farm city of Baquba, during 1 .11.2013 to 01.04.2014 using two methods floatation and sedimentation.

Present study record three types gastrointestinal parasite as well as protozoa (0.12)*Eimeria spp*. , *strongyles* (0.08) , *Isospora spp.* (0.02) and *Haemonchus spp*(0.04).

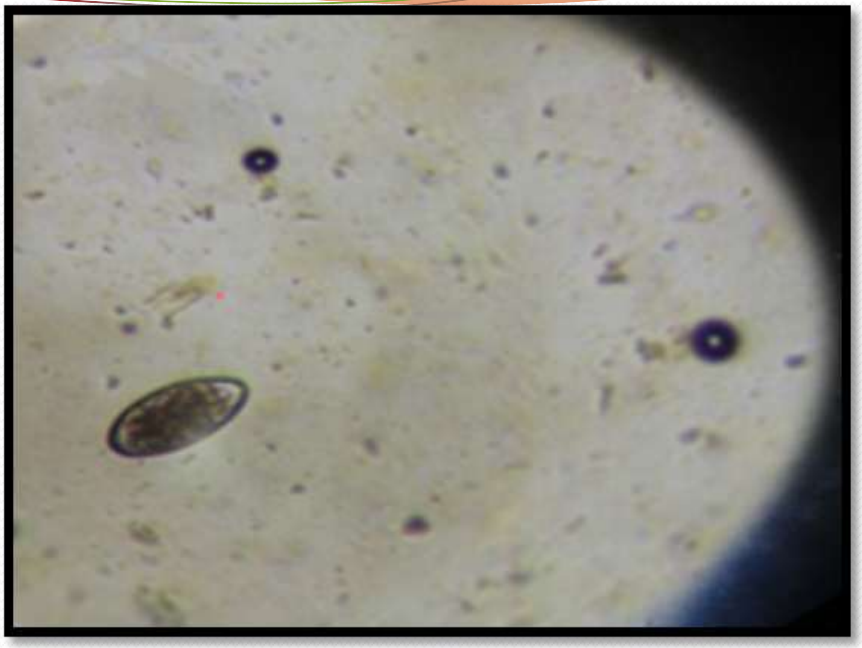
No. Fecal Sample	Positive	Negative
50	13 (0. 26)	37 (0.74)

Sample	*Strongyle eggs*	*Oocyte of Eimeria*	*Isospora cyst*	*Haemonchus eggs*
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	+	+	-	-
5	-	-	-	-
6	-	-	-	-
7	-	+	-	-
8	-	-	-	-
9	-	-	-	-
10	-	+	-	-
11	+	-	-	-
12	-	-	+	-
13	-	-	-	-
14	-	+	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	+	-	-	-
21	-	-	-	-
22	-	-	-	-
23	-	-	-	-
24	-	+	-	-
25	-	-	-	+
26	-	-	-	-

Sample	*Strongyles eggs*	*Oocyte of Eimeria*	*Isospora cyst*	*Haemonchus spp. eggs*
27	-	-	-	-
28	-	-	-	+
29	-	-	-	-
30	-	+	-	-
31	-	-	-	-
32	-	-	-	-
34	-	-	-	-
35	-	-	-	-
36	-	-	-	-
37	-	-	-	-
38	+	-	-	-
39	-	-	-	-
40	-	-	-	-
41	-	-	-	-
42	-	-	-	-
43	-	-	-	-
44	-	-	-	-
45	-	-	-	-
46	-	-	-	-
47	-	-	-	-
48	-	-	-	-
49	-	-	-	-
50	-	-	-	-
Total	4 (0.08)	6 (0.12)	1 (0.02)	2 (0.04)

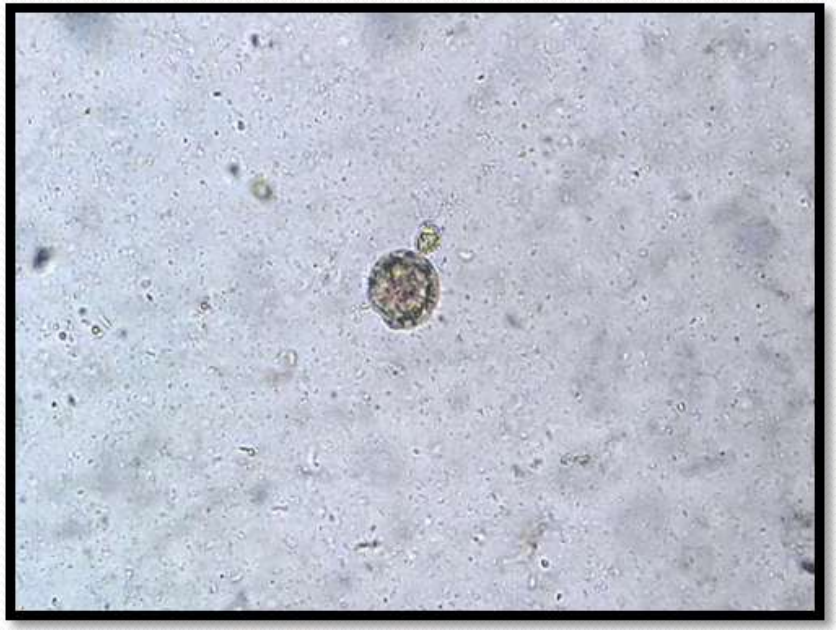


Oocysts of four species of bovine coccidian in cattle feces



Haemonchus spp. Egg in cattle feces

Strongyles Egg in cattle feces



Isospora cyst in cattle feces

Discussion

The goal behind this research is to find parasitic infections which is spread in the cows of Baquba city , from results there it is shown that there is different infections from digestive system infection parasites, from 50 sample, collected from different areas of Baquba city , the incidence of infection is (13) positive and (37) negative and even though this number is not easy and threats because the parasitic infections are fast to spread and infections through defecation of animals in different places and this is what spread the parasitic so fast to other health animals.

Recommendations

•We Recommend to aware the farmer of how dangerous is infection of parasitic on the animal and also on its production of milk and meat.
•Oral drink of farm animal periodically from the medicine that used against different warms and in a regular program.
•Periodical check from veterinarians randomly on cows and diagnosis the parasitic infection and heal it to get rid of parasitic forever .
•To get rid of average host this is the main cause to spread the parasitic among animals.
• Provide good health care by building healthy houses free of parasitic like *Giardia* and use periodical health care.

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