

ISSN1680-0761

М.УТЕМИСОВ АТЫНДАҒЫ БАТЫС ҚАЗАҚСТАН УНИВЕРСИТЕТІ

ЗАПАДНО-КАЗАХСТАНСКИЙ
УНИВЕРСИТЕТ
ИМ. М. УТЕМИСОВА



M.UTEMISSOV
WEST KAZAKHSTAN
UNIVERSITY



Ғылыми журнал

БҚУ ХАБАРШЫСЫ

Научный журнал

ВЕСТНИК ЗКУ

Scientific journal

BULLETIN WKU

Педагогика

Филология

Экология

Тарих

География

2021/**1**

<http://wksu.kz>

- [10] Dolgushin, I. A. (1960). Pticy Kazahstana [Birds of Kazakhstan] Alma-Ata: Izd-vo AN KazSSR, 1, 470 [in Russian].
- [11] Dolgushin, I.A. (1970). Pticy Kazahstana [Birds of Kazakhstan]. Alma-Ata, 3, 646 [in Russian].
- [12] Dolgushin, I.A. (1972). Pticy Kazahstana [Birds of Kazakhstan]. Alma-Ata, 4 [in Russian].
- [13] Korelov, M.N. (1974). Pticy Kazahstana [Birds of Kazakhstan] Alma-Ata, 5 [in Russian].
- [14] Kovshar', A.F. (2006). Ornitologicheskie nabljudeniya v Uralo-Jembinskom mezhdurech'e (Jemba, Temir, Sagiz, Uil, B. Hobda) v ijune 2006 g. [Ornithological observations in the Ural-Emba interfluvium (Emba, Temir, Sagiz, Uil, B. Khobda) in June 2006] Selevinia: Kazhastanskij zoologicheskij ezhegodnik. Almaty, 63-81 [in Russian].

Давыгора А.В., Шпигельман М.И.
СОЛТҮСТІК ҮСТІРТ ОРНИТОФАУНАСЫНА ҚОСЫМША

Аннотация. Фаунамен флораның түрлік құрамына мерзімдік тексеріс жұмыстарын жүргізу биоалуантүрлілікті сақтау шараларының ең басты тапсырмаларының бірі болып табылады. Батыс Қазақстанда әуефаунасының кеңістіктік-мерзімдік зерттелуі төмен табиғи аудандар аз емес. Атырау облысында бірінші кезекте, Үстірттің солтүстігіндегі таулы аймақтар – Желтау шатқалы мен Доңызтау таулары. Олар Батыс Қазақстанның үш облысының шекарасында орналасқан – Атырау, Ақтөбе және Маңғыстау облыстары.

Мақалада 2020 жылдың күзінде Солтүстік Үстіртте жүргізілген кешенді ғылыми-зерттеу экспедициясының есебі келтірілген. Қойылған тапсырмалардың бірі Доңызтау және Желтау тауларына кеш қоныс аударатын және көшіп-қонатын құстардың әуефаунасын зерттеу. Зерттеу жұмыстары нәтижесінде, жалпы есепте құстардың 33 түрі анықталды, және оның 7 түрі аталған аумақта бұрын тіркелмеген. Алынған мәліметтер Солтүстік Үстірттің әуефаунасының толық зерттелмегеніне және осы аумақта зерттеу жұмыстарын жалғастыру керектігіне дәлел, әсіресе күздің соңғы және қысқы мезгілдерде, себебі аталған аумақта осы уақыт аралығындағы орнитофаунаның құрамы туралы мәлімет жоқ.

Сонымен қатар мақалада, келешекте құстардың түрлік құрамының аумақтық мазмұнды тізімін құру мақсатына негізделген, осы аумақтың орнитофаунасына зерттеу бойынша жалпылама әдебиеттер тізімі көрсетілген.

Кілт сөздер: орнитофауна; Қазақстан; Батыс Қазақстан; солтүстік Үстірт; Атырау облысы; Желтау; Доңызтау.

Davygora Anatoly, Shpigelman Mikhail
ADDITIONS TO THE ORNITOFAUNA OF THE NORTHERN USTURT

Annotation. Periodic inventory of the species composition of fauna and flora is one of the primary tasks in the conservation of biodiversity. In Western Kazakhstan, there are many natural areas with poor spatial and temporal knowledge of the avifauna. In the Atyrau region, these are, first of all, the northern cliffs of the Ustyurt plateau - the Zheltau tract and the Donyztau mountains. They are located at the junction of three regions of Western Kazakhstan - Atyrau, Aktobe and Mangystau.

The article provides a report on a comprehensive research expedition to Northern Ustyurt conducted in the fall of 2020. One of the tasks of which was to study the avifauna of late migrating and nomadic birds on the slopes of the Donyztau and Zheltau mountains. According to its results, 7 bird species were identified, which had not been previously recorded in this area, a total of 33 species were encountered. The materials obtained indicate that the avifauna of the Northern Ustyurt is insufficiently studied and it is necessary to continue research here, especially in the late autumn and winter periods, for which there is practically no data on the avifauna composition for this natural area. The article also provides a summary list of literature on the study of the avifauna of this area, for the subsequent creation of a regional annotated list of the species composition of birds.

Keywords: Avifauna; Kazakhstan; Western Kazakhstan; northern Ustyurt; Atyrau region; Zheltau; Donyztau.

UDC 619:616.34-008.895.1:632.22/.28

IRSTI 68.41.55

DOI 10.37238/1680-0761.2020.79(3).47

Karmaliev Rashid*West Kazakhstan Agrarian and Technical University named after Zhangir Khan,
Uralsk, Kazakhstan***E-mail:** karmalyev@mail.ru**ECOLOGICAL - EPISOOTIC ANALYSIS OF BASIC HELMINTHOSIS OF CATTLE
IN NATURAL ZONES OF WEST KAZAKHSTAN REGION**

Annotation. The aim of the research is to determine the epizootology of the main helminthiasis of cattle in the steppe, semi-desert and desert zones of the West Kazakhstan region in different seasons of the year for different age groups.

For the first time, a comparative analysis of the invasion of cattle by the main types of helminths in the steppe, semi-desert and desert zones of the West Kazakhstan region, as well as the seasonal and age dynamics of the invasion of animals by helminths in these zones was carried out.

The infestation of cattle by helminths was determined according to Fülleborn. Identification of strongylates before genus was carried out according to P.F. Polyakov and helminthological autopsy according to K.I. Skryabin. The calves were washed out of the conjunctival sac with a boric acid solution. To detect cysts of larvaceous cestodosis, parenchymal organs were examined.

In the West Kazakhstan region, the extensiveness of invasion by the main types of helminths in cattle was: *Moniezia expansa* - 14.2 percent, *Echinococcus granulosus* (larvae) - 35.8 percent, *Nematodirus* spp. - 35 percent, *Ostertagia* spp. - 60.5 percent, *Cooperia* spp. - 55.1 percent, *Haemonchus* spp. - 22.4 percent, *Trichostrongylus* spp. 22.6 percent, *Thelazia rhodesi* 35.8 percent. In the region, the seasonal and age dynamics of the infestation of cattle by helminths is expressed. The maximum infection of animals with moniesia, strongylates of the digestive tract and telasia was noted in summer and autumn, and the minimum - in winter and spring. With age, the extensiveness of the invasion of animals by moniesia and strongylates of the digestive tract decreases, and by larval echinococcosis - it increases.

The extensiveness of the invasion of cattle by the most common types of helminths in the West Kazakhstan region was *Moniezia expansa* 14.2 percent, *E. granulosus* (larvae) 35.8 percent, *Strongylata* spp. 25.3 percent, *Thelazia rhodesi* 35.8 percent. In the West Kazakhstan region, seasonal and age dynamics of infestation by helminths in cattle is expressed. The maximum infection of animals was noted in summer and autumn, and the minimum in winter and spring.

Keywords: West Kazakhstan region; steppe; semi-desert and desert zones; cattle; helminths; invasion.

Introduction

Helminthiasis of cattle are widespread on the territory of the Republic of Kazakhstan and cause great economic damage.

In the West Kazakhstan region (WKR), in cattle, helminthiasis from the class of cestodes and nematodes have the main epizootic significance. Moniezioses belong to cestodes. Pathogens *Moniezia expansa* (Rudolphi, 1810) In Kazakhstan, the invasion of cattle with *M. expansa* was noted (K.I. Skryabin [1], Z.V. Wolf [2], V.I. Bondareva [3,4,5], Z.V. Shumilina [6]). *M. expansa* was registered in cattle in the Ural region in 1929 (K.I. Skryabin, R.S. Shultz [7]). In the southern regions of West Kazakhstan oblast, the extent of infestation by this species of moniesia in sheep was 4-25%. (K.M. Erbolatov, M.Sh. Shalmenov, T.T. Esengaliyev [8]). *Moniezia benedeni* (Moniez, 1879) is registered everywhere, including on the territory of Kazakhstan. The invasion of cattle by

M. benedeni was noted with an extensiveness of invasion of 28.3 - 46.6%. (K. I. Skryabin [1], L. G. Panova [9], Z. V. Wolf [2], V. I. Bondareva [10,11], Z. V. Shumilina [6], K. I. Scriabin, R.S. Shultz [7], GI Dikov [12].

Moniesiasis of cattle is widespread and occurs in the form of enzootic with a severe clinical course and mortality of young animals (MI Kuznetsov [13]). The epizootology of moniesiasis is determined by the prevalence and degree of infection of intermediate hosts on pastures. MI Kuznetsov [14] found that with the age of animals, their invasion by moniesia decreases. The maximum number of moniesia parasitizing in cattle reaches several dozen specimens. The extensiveness of the invasion caused by *M. benedeni* in cattle was equal to 53% in the Orenburg region, 12.6% in the Samara region (MA Palimpsetov [15]), Kazakhstan 28.3-46.6% (V.I. . Bondareva [3,4,5]). Moniesiasis is most often noted in calves of the current year of birth. At the beginning of grazing of calves from mid-May, segments and eggs of moniesia were found in late June and early July, and in winter only in some calves. Young cattle of older age are infested with moniesia to a lesser extent (VA Potemkina [16], F.S. Butorin [17], Kh.V. Ayupov [18], Yu.G. Egorov [19], M. I. Kuznetsov [20], S. D. Durdusov [21, 22]). In Kazakhstan, moniesiasis is widespread throughout the republic. In the West Kazakhstan region, the segments of *M. expansa* in calves of the current year of birth are found in June. At the end of summer and autumn, animals release eggs of *Moniezia benedeni* (RSKarmaliev [23]). In young cattle of the last year of birth and adult animals, moniesia were recorded in all seasons of the year with the peak of invasion in the spring and summer period. The extent of invasion is 20-25%. Moniesiasis mainly affects young animals, and adult animals are more resistant to infection (GIDikov [12], KM Erbolatov [8]).

Echinococcosis larvaceous - cestodosis has epizootic significance for cattle. The causative agent is *Echinococcus granulosus* (larvae) (Batsch, 1786) In Kazakhstan, the invasion of cattle by *E. granulosus* (larvae) was noted. The extent of invasion was 13.7-30.3% (K. I. Skryabin [1], L. G. Panova [9], Z. V. Wolf [2], N. V. Badanin [24], V. I. Zakharov [25], V. I. Bondareva [10], P. P. Vibe [26], M. Sh. Shalmenov [27], Ya. M. Kereev, [28], R.S. Karmaliev and others [29,30]). According to the 70th CGE, (K. I. Skryabin [31] and A. M. Petrov [32]) in the Ural region per 371 head of cattle, echinococcosis was registered in 74% (K. I. Skryabin, R. S. .Schultz) [7]. Anthropogenic factor (VT Ramazanov) is essential in the epizootic process in echinococcosis in Kazakhstan [33].

Echinococcosis of cattle and sheep occurs throughout Kazakhstan in all seasons of the year. According to Suleimenov M.Zh. et al. [34] in the Almaty region the echinococcosis invasion of cattle averages 14.9-31.9%, and of sheep 7.08-32.4%. The main source of infestation is dogs. In the West Kazakhstan region, the extent of echinococcosis invasion of dogs averages 45.1%. Of these, priotary ones were affected by 28.7%; settlement by 13.0%, and urban by 3.4%. The extensiveness of the invasion of cattle by larvaceous echinococcosis in the West Kazakhstan region averaged 38.0 - 40.4%. With age, the intensity of the invasion increases. In fattening young animals aged 1.5-2 years, single petrified cysts were found in the organs, and in animals aged 5-10 years and older - from 1 to 12 larvocysts of echinococcus (GI Dikov et al. [12], M.Sh.Shalmenov [27], Abirova I.M. [35]).

Among the nematodes of the trichostrongylid family, parasitizing in cattle, representatives of the genera *Ostertagia*, *Nematodirus*, *Trichostrongylus*, *Haemonchus*, *Cooperia* are of the greatest interest. The diseases caused by these helminths usually occur in the form of mixed invasions. They cause significant economic damage, expressed in the death of animals and a decrease in productivity. The species *Nematodirus spathiger* (Railliet, 1896), *Ostertagia ostertagi* (Stiles, 1892), *Cooperia oncophora* (Railliet, 1898), *Haemonchus contortus* (Rud., 1803), *Trichostrongylus colubriformis* (Giles, 1892) are widespread in the region of Western Kazakhstan. They parasitize cattle in West Kazakhstan, Aktobe and Atyrau regions.

Nematodirus spatiger has been registered in cattle, sheep, goats and camels in Atyrau, Mangystau and West Kazakhstan regions. (K.I.Skryabin, R.S.Shultz [7], GI Dikov and others [12], K.M. Erbolatov and others [8], IN Ashetova [36]).

Ostertagia ostertagi were found in cattle and camels in Kazakhstan (ZV Wolf) [2], including in the regions of Western Kazakhstan (KI Skryabin, R.S. Shultz [7], GI Dikov et al. [12], K.M. Erbolatov et al. [8], AS Bessonov [37]).

Cooperia oncophora were found in cattle and camels in Kazakhstan (ZV Wolf) [2], including in the regions of Western Kazakhstan (KI Skryabin, R.S. Shultz [7]; G.I. Dikov et al. [12], K.M. Erbolatov et al. [8], IN Ashetova [36]).

Haemonchus contortus are registered in cattle and camels in Kazakhstan (ZV Wolf [2], VI Bondareva [11]), including in the regions of Western Kazakhstan. The extensiveness of invasion in cattle in the West Kazakhstan region was 44% (K.I.Skryabin, R.S.Shultz [7], G.I.Dikov et al. [12], A.S. Bessonov [37], K.M. Erbolatov and others [8], IN Ashetova, [36]).

Trichostrongylus colubriformis are ubiquitous, including in the regions of Western Kazakhstan. This is one of the most widespread species of trichostrongylids, which has an unusually wide range of hosts (KI Skryabin, R.S. Schultz [7]).

Trichostrongylidosis (genera *Trichostrongylus*, *Cooperia*, *Ostertagia*) cattle and sheep become infected from the first days of their stay in the pasture. The extent of invasion increases from the beginning of spring to autumn and is 25%, with an intensity of invasion of 110-120 specimens / head. By winter, the intensity of invasion decreases. Adult animals are less infected than young animals (KM Erbolatov et al. [8], GI Dikov et al. [12], EE Karibekov [38]).

Gemonkhoz is registered throughout the territory of the former Soviet Union, including Kazakhstan. Hemonkhoz infects cattle and sheep on wet pastures from the first days of their stay on them. Mostly young animals are ill. The extent of invasion is 25%. In the regions of Western Kazakhstan, the peak of hemonkхоз invasion occurs in April - May (GI Dikov et al. [12]).

Nematodiosis of cattle is observed in all regions of Kazakhstan and other countries. In Kazakhstan, cattle and sheep are infected with nematodiosis on pasture in the spring and summer. The greatest infection is noted in animals kept in summer near reservoirs with stagnant or slowly flowing water. The peak of nematodiosis invasion in young animals of the current year of birth is observed in autumn, and in young animals of the last year and adult animals - in summer. The extensiveness of the invasion of animals by *Nematodirus spatiger* in the West Kazakhstan region ranges from 23 to 39%. The intensity of invasion is on average 760 specimens / head (GI Dikov et al. [12]).

The purpose and objectives of the research. The purpose of our research is to determine the epizootology of the main helminthiasis of cattle in the steppe, semi-desert and desert zones of the West Kazakhstan region in different seasons of the year for different age groups.

In accordance with this goal, the following tasks are set:

- Study of the distribution of the most common cattle helminthiasis in the steppe, semi-desert and desert zones of the West Kazakhstan region.
- Determination of the seasonal and age dynamics of the infection of cattle by the most common types of helminths in the steppe, semi-desert and desert zones of the West Kazakhstan region.

Materials and research methods

The basis for these studies was the materials that were collected as a result of helminthological studies of cattle. The expeditionary routes covered peasant farms engaged in cattle breeding. All farms, according to the physical-geographical zoning and natural zoning of the territory of the West Kazakhstan region, are divided into three natural zones: steppe, semi-desert and desert.

Taking into account the natural and climatic zoning for the study, 29 farms were selected, located in different natural zones of the West Kazakhstan region (table 1). Eight farms were examined in the steppe zone, 12 in the semi-desert zone, and 9 in the desert zone. The results of helminthological research were compared with the climatic data of the branch of the RSE "Kazhydromet" in the West Kazakhstan region.

Helminthic ovoscopy of feces was carried out in the summer on farms, and in the winter - on the basis of the accredited Research Institute of Biotechnology and Nature Management WKATU named after Zhangir Khan. Microscopes, porcelain mortars, pestles, and plastic glasses were used for helminthic ovoscopy of faeces on the farms.

Table 1 - Peasant farms in West Kazakhstan region, where research was carried out

№	Zone	District	Peasant farm
1.	Steppe	Taskala	Aray
2.			Luch
3.			Bayan
4.			Shkanov
5.		Burlin	Yenbek
6.			Tugultayev
7.		Chingirlau	Zhailau
8.			Gainy
1.	Semi-desert	Zhanibek	Stepnoy
2.			Dauren
3.			Yerzhakay
4.		Zhalpaktal	Merey
5.			Kyzyltu
6.		Akzhaik	Irmekkali
7.			Aymeken
8.		Syrym	Nur
9.			Sebek
10.		Karatobe	Shugila
11.			Mukhanbetkali
12.			Sultanbek
1.	Desert	Bokeyorda	Ores
2.			Birzhan
3.		Zhangala	Alipkaly
4.			Aitkaliev
5.			Bekarys
6.			Kaisar
7.			Hamit
8.		Akzhaiyk	Shishir- Meshiti
9.			Zhubanysh

Study of the distribution of the most common helminthiases in cattle in the steppe, semi-desert and desert zones of the West Kazakhstan region.

To study the distribution of the most common helminthiases in cattle, ovo - and larvoscopic studies of fecal samples from 1231 head of cattle were carried out. Based on these studies, we

studied the structure and density of the population of helminths in cattle. In order to clarify the infestation of cattle by helminths, samples of feces from the steppe, semi-desert and desert zones of the West Kazakhstan region were examined. For this, the Fülleborn flotation method was used. The number of eggs and larvae of helminths in 1 year of feces was counted using a VIGIS counting chamber (LD Migacheva, GA Kotelnikov) [39]. To detect calves, a 3% solution of boric acid was injected with a strong stream into the conjunctival sac from a syringe. The outflowing liquid was collected in a cuvette, from which washed helminths were removed. On the basis of the morphological structure of the invasive larvae, the strongylates of the gastrointestinal tract were identified to genus according to PF Polyakov [40]. Strongylate larvae were cultivated according to N.A. Akulin [41]. For the cultivation of the larvae, the feces of animals taken rectally were used. They were kept in a thermostat at 25-30 ° C in Petri dishes for 7 days. The feces were moistened and aerated daily. Invasive larvae from feces were obtained according to Berman and Orlov and examined under a microscope. Using a VIGIS counting chamber, the number of larvae per gram of feces was determined by the flotation method. The dynamics of larval echinococcosis in cattle was studied in laboratories of veterinary and sanitary examination in city markets and at slaughtering sites of farms. For this purpose, parenchymal organs (liver, lungs) were examined for the detection of echinococcus cysts.

Determination of the seasonal dynamics of the infection of cattle with the most common types of helminths in the steppe, semi-desert and desert zones of the West Kazakhstan region.

To study the seasonal dynamics of the infection of cattle with the most common types of helminths, helminthic and larvoscopic methods were used to study feces from 1231 heads of cattle in the steppe, semi-desert and desert zones of the West Kazakhstan region. Studies were carried out quarterly (in winter, spring, summer and autumn). The number of helminth eggs in 1 g of feces was counted using a VIGIS counting chamber (L. D. Migacheva, G. A. Kotelnikov) [39].

Determination of the age dynamics of the infection of cattle by the most common types of helminths in the steppe, semi-desert and desert zones of the West Kazakhstan region.

The age dynamics of animal infestation by helminths was studied in all seasons of the year. Based on the results of quantitative helminthic and larvoscopic studies of fecal samples and helminthological dissection of parenchymal organs from cattle, the invasion of various age groups was studied - up to a year, 1-3 years, 4-5 years, 6-9 years, 10 years and older.

Research results

Studied the epizootic situation of the main helminthiasis of cattle in the steppe, semi-desert and desert zones of the West Kazakhstan region. *Moniezia expansa* was recorded in animals from all zones of the West Kazakhstan region. (table 2).

Table 2 - Extensiveness of invasion (EI) of cattle by the most common types of helminths in different zones of the West Kazakhstan region

Type of helminths	Regional average, EI, %	EI Zone, %		
		Steppe	Semi-desert	Desert
<i>Moniezia expansa</i>	14,2	16,2	14,3	12,3
<i>E. granulosus</i> (larvae)	35,8	40,3	35,6	31,6
<i>Strongylata</i> spp.	25,3	34,5	23,3	18,2
<i>Thelazia rhodesi</i>	35,8	40,3	35,6	31,6

The extent of the invasion caused by *M. expansa* was equal, on average, in the region to 14.2%, including 16.2% in the steppe zone, 14.3% semi-desert, 12.3% desert (Figure 1).

E. granulosus (larvae) was found in animals of all zones. The extent of the invasion caused by *E. granulosus* (larvae) was equal, on average in the region, 35.8%, including 40.3% in the steppe zone, 35.6% semi-desert, 31.6% desert.

Nematodes of the order Strongylata were found in animals of all zones of the West Kazakhstan region. The extent of invasion caused by strongylates of the digestive tract was equal, on average, in the region to 25.3%, including 34.5% in the steppe zone, 23.3% semi-desert, 18.2% desert. In particular, the infestation of animals with nematodes from the genus *Nematodirus* was equal, on average in the region, 35.01%, and the greatest infestation of animals was noted in the steppe zone (EI — 38.5%). *Ostertagia* spp, cattle were infested by an average of 60.5%, *Cooperia* spp. 55.1%, *Haemonchus* spp. 22.4%, *Trichostrongylus* spp. - 22.6%.

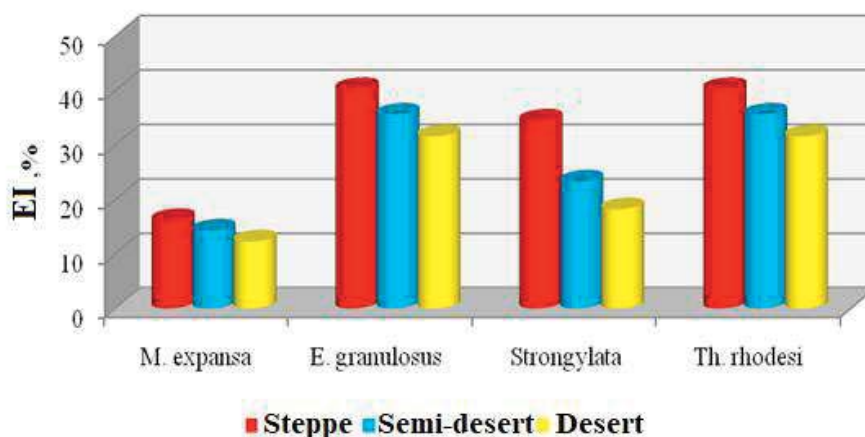


Figure 1 - Extensiveness of the invasion of cattle by the most common types of helminths

In the steppe and semi-desert zones, the invasion of cattle by strongylates of the digestive tract was higher than in the desert zone (Table 3, Figure 2).

Table 3 - Extensiveness of the invasion of cattle by strongylates of the digestive tract by birth in different zones of the West Kazakhstan region

Type of helminths	Regional average, EI,%	EI Zone,%		
		Steppe	Steppe	Steppe
<i>Nematodirus</i> spp.	35,01	38,5	35,05	31,5
<i>Ostertagia</i> spp.	60,5	67,1	61,7	52,8
<i>Cooperia</i> spp.	55,1	62,5	57,6	45,2
<i>Haemonchus</i> spp.	22,4	25,1	23,3	18,8
<i>Trichostrongylus</i> spp.	22,6	27,7	23,6	16,5

Thelazia rhodesi was recorded in animals from all zones of the West Kazakhstan region. The extensiveness of the invasion caused by *T. rhodesi* was equal, on average, in the region to 35.8%, including 40.3% in the steppe zone, 35.6% semi-desert, 31.6% desert.

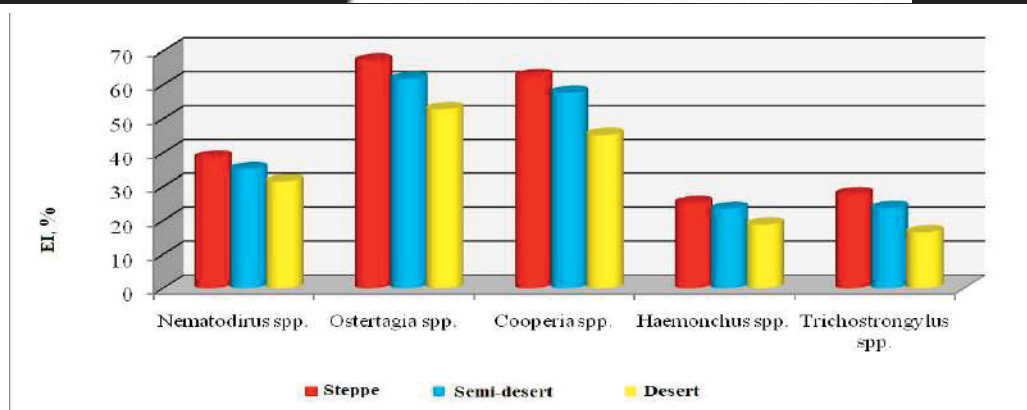


Figure 2 - Extensiveness of the invasion of cattle by strongylates of the digestive tract

The intensity of invasion of the most widespread species of cattle helminths in the steppe, semi-desert and desert zones of the West Kazakhstan region averaged (specimens / head) *M. expansa* 164.5 ± 13.7 ; *Nematodirus* spp. 117.9 ± 9.8 ; *Ostertagia* spp. 85.1 ± 7.0 ; *Cooperia* spp. 80.4 ± 6.7 ; *Haemonchus* spp. 129.5 ± 10.7 ; *Trichostrongylus* spp. 120.1 ± 10.0 ; *Th. rhodesi* 13.3 ± 1.1 (tables 4.5).

Table 4 - The intensity of the invasion of cattle by the most common types of helminths in different zones of the West Kazakhstan region

Helminths	Average number of eggs in 1 g of feces, specimens / head	Number of eggs in 1 g of feces, specimens / bird		
		Zones		
		Steppe	Semi-desert	Desert
<i>Moniezia expansa</i>	$164,5 \pm 13,7$	$180,7 \pm 15,0$	$160,2 \pm 13,3$	$152,8 \pm 12,7$
<i>Strongylata</i> spp.	$71,1 \pm 5,9$	$77,06 \pm 6,4$	$70,2 \pm 5,8$	$66,2 \pm 5,5$
<i>Thelazia rhodesi</i>	$13,3 \pm 1,1$	$14,5 \pm 1,2$	$13,5 \pm 1,1$	$12,1 \pm 1,0$

Table 5 - The intensity of the invasion of cattle by strongylates of the digestive tract by birth in different zones of the West Kazakhstan region

Helminths	Average number of eggs in 1 g of feces, specimens / head	Number of eggs in 1 g of feces, specimens / bird		
		Zones		
		Steppe	Semi-desert	Desert
<i>Nematodirus</i> spp.	$117,9 \pm 9,8$	$122,0 \pm 10,1$	$118,9 \pm 9,9$	$112,8 \pm 9,4$
<i>Ostertagia</i> spp.	$85,1 \pm 7,0$	$88,6 \pm 7,3$	$85,8 \pm 7,15$	$81,0 \pm 6,7$
<i>Cooperia</i> spp.	$80,4 \pm 6,7$	$86,6 \pm 7,2$	$79,5 \pm 6,6$	$75,2 \pm 6,2$
<i>Haemonchus</i> spp.	$129,5 \pm 10,7$	$136,5 \pm 11,3$	$130,7 \pm 10,8$	$121,5 \pm 10,1$
<i>Trichostrongylus</i> spp.	$120,1 \pm 10,0$	$126,7 \pm 10,5$	$121,5 \pm 10,1$	$112,1 \pm 9,3$

We studied the seasonal dynamics of the invasion of cattle by the main types of helminths. For this purpose, helminthic and larvoscopic methods were used to study fecal samples from cattle

in the steppe, semi-desert and desert zones of the West Kazakhstan region. Studies were carried out quarterly (in winter, spring, summer and autumn).

Moniezioz. The extensiveness of the invasion of cattle by *M. expansa* in different seasons of the year was as follows: in autumn and winter, the greatest invasion of cattle was noted 17.5% 16.2%, respectively (Table 6). In the spring, the invasion of cattle decreased to 10.9%. Due to the self-liberation of animals, since *M. expansa* do not live long. In summer, the invasion rate of cattle increased to 12.4%. The extent of the invasion varied throughout the year and averaged 14.9%. The greatest extensiveness of invasion was noted in the steppe zone (16.2%), and the lowest in the desert zone (12.3%). The animals were infested with *M. expansa* throughout the year.

Table 6 - Seasonal dynamics of the extensiveness of the invasion of cattle by *M. expansa* in different zones of the West Kazakhstan region

Season of the year	Regional average, EI, %	EI, %		
		Zones		
		Steppe	Semi-desert	Desert
Winter	16,2	17,9	15,8	14,9
Spring	10,9	13,2	10,7	8,9
Summer	12,4	14,6	12,6	10,1
Autumn	17,5	19,1	18,2	15,3
On average	14,2	16,2	14,3	12,3

The intensity of *M. expansa* invasion increased in summer and autumn and decreased in winter. The number of *M. expansa* eggs in 1 g of feces was 181.3 ± 15.1 in autumn, and 148.7 ± 12.3 in winter. The average number of *M. expansa* eggs in 1 g of cattle feces for the year was 164.6 ± 13.7 ind./chol. (table 7). Based on the results of seasonal helminthic studies of feces, it can be concluded that cattle are infested with *M. expansa* throughout the year. *M. expansa* eggs can be found in animal feces at any time of the year.

Table 7 - Seasonal dynamics of the intensity of the invasion of cattle by *M. expansa* in different zones of the West Kazakhstan region

Season of the year	Average number of eggs in 1 g of feces, specimens / head	Number of eggs in 1 g of feces, specimens / bird		
		Zone		
		Steppe	Semi-desert	Desert
Winter	$148,7 \pm 12,3$	$159,8 \pm 13,3$	$146,5 \pm 12,2$	$139,8 \pm 11,6$
Spring	$154,3 \pm 12,8$	$163,8 \pm 11,7$	$150,4 \pm 12,5$	$148,8 \pm 12,3$
Summer	$174,1 \pm 14,5$	$197,1 \pm 16,4$	$167,8 \pm 13,9$	$157,6 \pm 13,1$
Autumn	$181,3 \pm 15,1$	$202,4 \pm 16,9$	$176,1 \pm 14,6$	$165,1 \pm 13,7$
On average	$164,6 \pm 13,7$	$180,7 \pm 15,0$	$160,2 \pm 13,3$	$152,8 \pm 12,7$

Strongylatosis of the digestive tract. Quantitative helminthic studies of faeces from cattle were carried out four times a year in three zones of the West Kazakhstan region. They showed that the invasion of animals by strongylates of the digestive tract changes significantly during the year. The extensiveness of the invasion of cattle in different seasons of the year was as follows: in the spring, before the start of grazing, the lowest invasion rate was noted - 22.4%. In the autumn period, at the end of the grazing season, the highest infestation rate of cattle was noted - 35.1%. In winter, the

extent of invasion decreased - 17.6%. On average for the year, the extensiveness of the invasion was 25.2% (Table 8.). The greatest extensiveness of invasion was noted in the steppe zone, 34.5%, and the lowest in the desert zone, 18.2%.

Table 8 - Seasonal dynamics of the extensiveness of the invasion of cattle by strongylates of the digestive tract in different zones of the West Kazakhstan region

Season of the year	Regional average, EI, %	EI, %		
		Zone		
		Steppe	Semi-desert	Desert
Winter	17,6	27,6	14,9	11,6
Spring	22,4	31,8	19,9	15,6
Summer	26,0	34,6	24,9	18,7
Autumn	35,1	44,3	33,8	27,2
On average	25,2	34,5	23,3	18,2

The intensity of the invasion of cattle by strongylates of the digestive tract increased in the summer-autumn period with a decrease in winter. The number of strongylate eggs in 1 g of feces was 107.5 ± 8.95 in autumn, and 21.3 ± 1.9 specimens / bird in winter. The average number of strongylate eggs in 1 g of cattle feces per year was 71.0 ± 5.9 specimens / head. (table 9). From the results obtained, it can be concluded that cattle are infested with strongylates of the digestive tract throughout the year. Strongylat eggs can be found in animal feces at any time of the year. The highest intensity of invasion was noted in the steppe zone - $76.5 \pm 6.3\%$, and the lowest - in the desert zone - $66.2 \pm 5.5\%$.

Table 9 - Seasonal dynamics of the intensity of the invasion of cattle by strongylates of the digestive tract in different zones of the West Kazakhstan region

Season of the year	Average number of eggs in 1 g of feces, specimens / head	Number of eggs in 1 g of feces, specimens / bird		
		Zone		
		Steppe	Semi-desert	Desert
Winter	$21,3 \pm 1,9$	$25,9 \pm 2,6$	$21,3 \pm 1,7$	$16,8 \pm 1,4$
Spring	$56,9 \pm 5,1$	$63,4 \pm 5,7$	$60,05 \pm 5,4$	$47,3 \pm 4,3$
Summer	$98,3 \pm 8,1$	$102,7 \pm 8,5$	$98,1 \pm 8,1$	$94,1 \pm 7,6$
Autumn	$107,5 \pm 8,95$	$114,1 \pm 9,5$	$101,7 \pm 8,4$	$106,9 \pm 8,9$
On average	$71,0 \pm 5,9$	$76,5 \pm 6,3$	$70,2 \pm 5,8$	$66,2 \pm 5,5$

Telyaziosis. According to the data of helminthological studies of cattle, carried out in three zones of the West Kazakhstan region, it was established that the invasion of animals by *Th. rhodesi* changes significantly throughout the year. The extensiveness of the invasion of cattle in different seasons of the year was as follows: in the winter and spring periods, the least invasion was noted - 2.4% and 6.9%, respectively. In the summer and autumn periods, the greatest invasion of cattle was noted - 50.7% and 81.4%, respectively. On average for the year, the extensiveness of the invasion was 35.3%. The greatest extensiveness of invasion was noted in the steppe zone, 38.6%, and the lowest in the desert zone - 33.2% (Table 10).

Table 10 - Seasonal dynamics of the extensiveness of the invasion of cattle *Thelazia rhodesi* in different zones of the West Kazakhstan region

Season of the year	Regional average, EI, %	EI, %		
		Zone		
		Steppe	Semi-desert	Desert
Winter	2,4	3,2	2,2	2,0
Spring	6,9	8,1	7,2	5,6
Summer	50,7	56,3	48,7	47,2
Autumn	81,4	86,9	79,3	78,2
On average	35,3	38,6	34,3	33,2

Intensity of invasion by *Th. rhodesi* increased in summer and autumn with a decrease in winter and spring. Average *Th. rhodesi* in cattle varied during the year in winter - 2.3 ± 0.19 , and in autumn 45.6 ± 3.8 specimens / head. In spring and summer, the amount of *Th. rhodesi* significantly decreased - 1.28 ± 0.13 and 4.4 ± 0.36 specimens / head, respectively. Average amount of *Th. rhodesi* in cattle for the year was 16.3 ± 1.3 ind./head. The highest intensity of invasion was noted in the steppe zone, 14.5 ± 1.2 specimens, and the lowest in the desert zone, 12.1 ± 1.0 (Table 11).

The age dynamics of the invasion of animals was studied in all seasons of the year. Based on the results of quantitative helminthic and larvoscopic studies of fecal samples and helminthological dissection of parenchymal organs from cattle. We studied the invasiveness of different age groups - up to a year, 1-3 years, 4-5 years, 6-9 years, 10 years and older.

Table 11 - Seasonal dynamics of the intensity of the invasion of cattle by *Thelazia rhodesi* in different zones of the West Kazakhstan region

Season of the year	The average number of helminths specimens / head	Number of helminths, specimens/head		
		Zone		
		Steppe	Semi-deser	Desert
Winter	$2,3 \pm 0,19$	$3,5 \pm 0,29$	$1,5 \pm 0,12$	$2,0 \pm 0,16$
Spring	$1,28 \pm 0,13$	$1,3 \pm 1,2$	$1,25 \pm 0,13$	$1,3 \pm 0,12$
Summer	$4,4 \pm 0,36$	$4,5 \pm 0,37$	$4,4 \pm 0,36$	$4,3 \pm 0,35$
Autumn	$45,6 \pm 3,8$	$48,9 \pm 4,1$	$46,9 \pm 3,9$	$41,1 \pm 3,4$
On average	$16,3 \pm 1,3$	$14,5 \pm 1,2$	$13,5 \pm 1,1$	$12,1 \pm 1,0$

Moniezioz. Helminthoscopic studies of feces from cattle showed that the extent of *M. expansa* invasion decreases with the age of animals. In young cattle under the age of one year, it was 28.1%, at the age of 1-3 years, 24.0%, in cattle at the age of 4-5 years - 21.3%, in animals aged 6- 9 years old - 4.3%, 10 years and older 0%. (table 12).

Table 12 - Seasonal dynamics of the intensity of the invasion of cattle by *Thelazia rhodesi* in different zones of the West Kazakhstan region

Age of animals	Zone					
	Steppe		Semi-desert		Desert	
	Examined heads	EI, %	Examined heads	EI, %	Examined heads	EI, %
Less than a year old	70	33,8	87	26,9	90	23,7
1-3 years old	71	28,9	88	23,6	87	19,5
4-5 years old	69	25,3	88	20,5	80	18,3
6-9 years old	71	5,2	93	4,4	82	3,3
More than 10 years old	75	0	96	0	84	0
Total	356		452		423	
On average		18,6		15,1		12,9
Total heads examined 1231						
Average EI 15.3%						

On average, the extensiveness of the invasion was 15.3% (Figure 3).

Strongylates of the digestive tract. Helminthological studies of feces from cattle showed that the extensiveness of the invasion of the digestive tract by strongylates decreases with age.

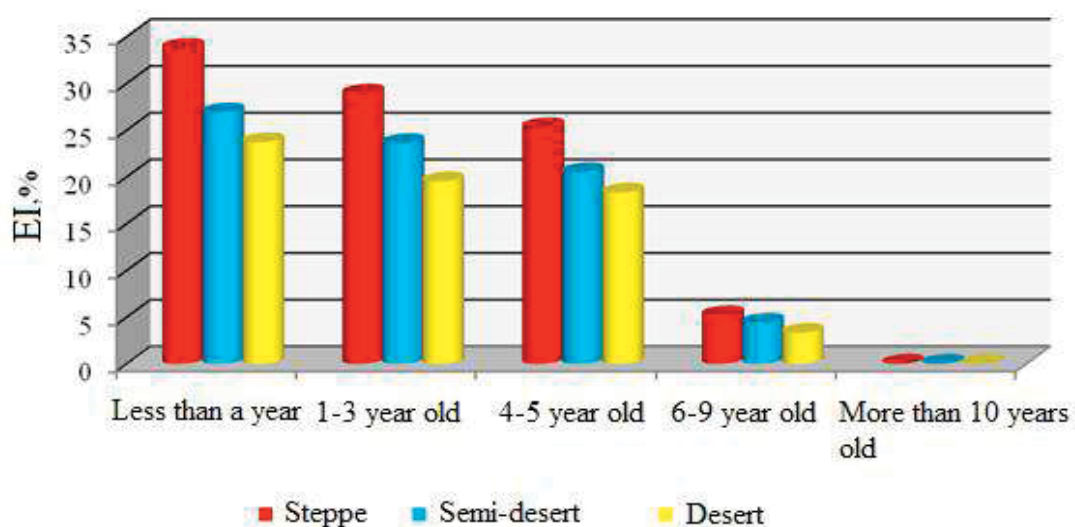


Figure 3 - Age dynamics of the invasion of cattle by moniesia

In young cattle under the age of one year, it was 28.8%, at the age of 1-3 years 35.8%, in cattle at the age of 4-5 years 30.9%, in animals aged 6-9 years 26.2%, 10 years and over 21.1% (table 13).

Table 13 - Age dynamics of the invasion of cattle by strongylates of the digestive tract in the West Kazakhstan region

Age of animals	Zone					
	Steppe		Semi-desert		Desert	
	Examined heads	EI, %	Examined heads	EI, %	Examined heads	EI, %
Less than a year old	70	34,9	87	27,2	90	24,3
1-3 years old	71	45,8	88	31,5	87	30,1
4-5 years old	69	38,9	88	28,7	80	25,1
6-9 years old	71	34,0	93	23,4	82	21,3
More than 10 years old	75	31,0	96	20,3	84	12,2
Total	356		452		423	
On average		36,9		26,2		22,6
Total heads examined 1231						
Total average 28.5%						

On average, the extensiveness of the invasion was 28.5% (Figure 4).

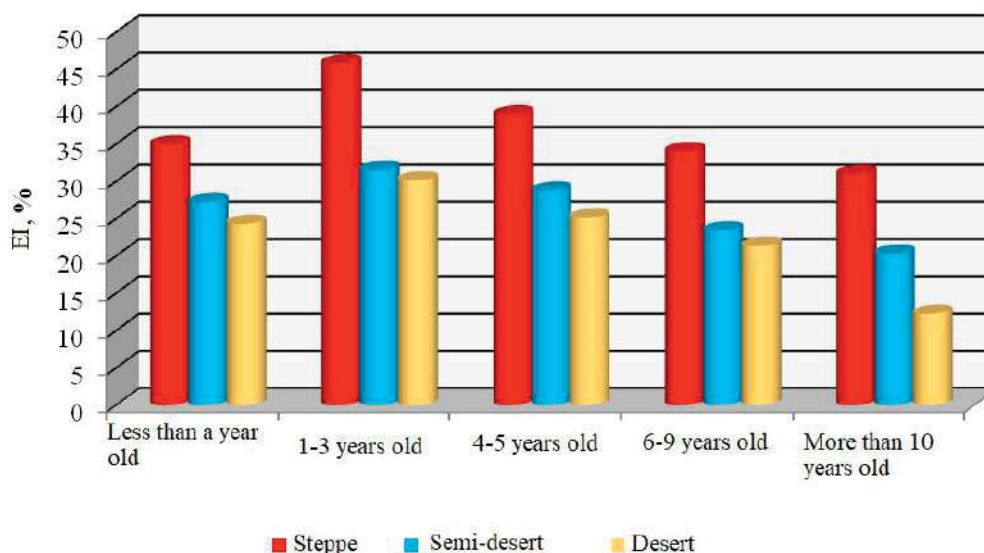


Figure 4 - Age dynamics of the invasion of cattle by strongylates of the digestive tract

Larval echinococcosis. A total of 1019 heads of cattle were examined (Table 14). The extensiveness of invasion by larval echinococcosis averaged 33.2%. Young cattle were free of invasion for up to a year. In cattle aged 1-3 years the invasion rate averaged 27.8%, in cattle aged 4-5 years 34.2%, in animals aged 6-9 years 44.5%, 10 years and over 58.8%.

Table 14 - Age dynamics of the invasion of cattle by echinococcosis in the West Kazakhstan region

Age of animals	Zone					
	Steppe		Semi-desert		Desert	
	Examined heads	EI, %	Examined heads	EI, %	Examined heads	EI, %
Less than a year old	48	0	56	0	51	0
1-3 years old	63	34,0	78	26,8	61	22,6
4-5 years old	72	42,1	79	32,0	71	28,7
6-9 years old	65	50,0	75	49,4	72	34,0
More than 10 years old	69	62,9	86	58,7	73	54,8
Total	317		374		328	
On average		37,8		33,8		28,0
Total heads investigated 1019						
Average EI 33.2%						

The extensiveness of the invasion increased with the age of the animals. In cattle aged 1-3 years, parenchymal organs (liver, lungs) were affected by single petrified cysts, and in animals aged 4-10 years and older - by cephalocysts of echinococcus from 1 to 10 specimens. (Figure 5). Dogs are the main source of larval echinococcosis in cattle.

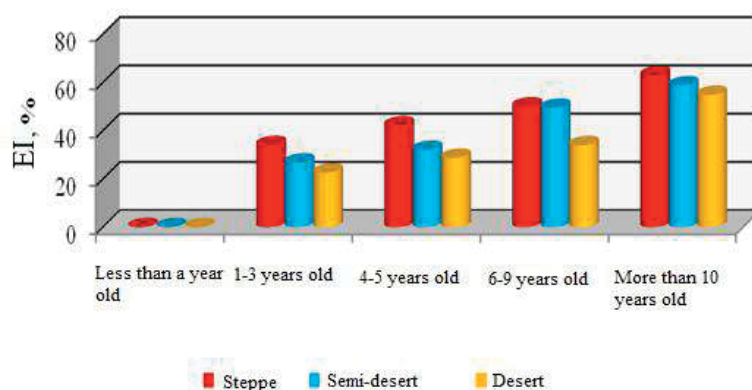


Figure 5 - Age dynamics of echinococcosis invasion of cattle in West Kazakhstan region

Discussion

According to G.I.Dikov and K.M. Erbolatov, moniesia were recorded in young cattle of the last year of birth and adult animals in all seasons of the year with the peak of invasion in the spring and summer period. The extent of invasion is 20-25%. Moniesiasis mainly affects young animals, and adult animals are more resistant to infection [8,12]. KM Erbolatov et al., GI Dikov et al., EE Karibekov noted that cattle and sheep are infected with trichostrongylidosis (genera *Trichostrongylus*, *Cooperia*, *Ostertagia*) from the first days of their stay in the pasture. The extent of invasion increases from the beginning of spring to autumn and is 25%, with an intensity of invasion of 110-120 specimens / head. By winter, the intensity of invasion decreases. Adult animals are less infected than young animals [8,12,38]. According to our research in the West Kazakhstan region, seasonal and age dynamics of the extensiveness and intensity of infestation of cattle by helminths is expressed. The maximum infection of animals with moniesia, strongylates of the digestive tract and telasia was noted in summer and autumn, and minimum - in winter and spring. The extent of invasion of moniesia and strongylates of the digestive tract decreases with age of animals, and that of larval echinococcosis increases. We determined that the greatest extensiveness of the invasion of cattle with moniesia and strongylates of the digestive tract is observed in the autumn period - 17.5 and 35.1%, and the lowest in spring and winter - 10.9% and 17.6%, respectively.

According to G.I.Dikov et al., M.Sh. Shalmenov and Abirova I.M. the extensiveness of the invasion of cattle by larvaceous echinococcosis in the West Kazakhstan region averaged 38.0 - 40.4%. With age, the intensity of the invasion increases. In fattening young animals aged 1.5–2 years, single petrified cysts were found in the organs, and in animals aged 5–10 years and older - from 1 to 12 larvocysts of *Echinococcus* [12, 27, 35]. According to our data, the extent of the invasion of larval echinococcosis increases with the age of animals. The least extensiveness of invasion was noted at the age of 0%, and the highest - 10 years and older, 58.8%.

As noted by K.I.Skriabin, R.S. Shultz and G.I.Dikov and others, thelaziosis is widespread throughout Kazakhstan. Infection with calves in cattle is recorded throughout the year. The peak of invasion is observed from June to October. The extensiveness of the invasion of cattle is 100%. By winter, the extensiveness of the invasion of animals decreases and amounts to 7-10%. Animals of all age groups are ill with Telyaziosis [7, 12]. According to our results, the greatest extensiveness of the invasion of cattle with calves was noted in the autumn period by 81.4%, and the lowest in winter - 2.4%.

Conclusion

In the West Kazakhstan region, the extensiveness and intensity of the invasion of cattle by helminths was - *M. expansa* (EI-14.2%, II-164.5 ± 13.7 specimens / head), *E. granulosus* (larvae) (EI –35.8%), *Nematodirus* spp. (EI — 35.01%, II — 117.9 ± 9.8 specimens / head), *Ostertagia* spp. (EI - 60.5%, II - 85.1 ± 7.0 specimens / head), *Cooperia* spp. (EI-55.1%, II-80.4 ± 6.7 specimens / head), *Haemonchus* spp. (EI - 22.4%, II - 129.5 ± 10.7 specimens / head), *Trichostrongylus* spp. (EI - 22.6%, II - 120.1 ± 10.0 specimens / head), *Thelazia rhodesi* (EI - 35.8%, II - 13.3 ± 1.1 specimens / head)

In the West Kazakhstan region, the seasonal dynamics of the infestation of cattle by helminths is expressed. The maximum infection of animals was noted in summer and autumn, and the minimum in winter and spring.

The greatest extensiveness of the invasion of cattle by moniesia and strongylates of the digestive tract was noted in the autumn period - 17.5 and 35.1%, and the lowest in spring and winter - 10.9% and 17.6%, respectively.

The greatest extensiveness of the invasion of cattle with calves was noted in the autumn period by 81.4%, and the least in winter - 2.4%.

In the West Kazakhstan region, the age-related dynamics of infection with helminths in cattle is expressed. The extent of invasion by *M. expansa* and *Strongylata* spp. decreases with age of animals.

The greatest extensiveness of the invasion of the digestive tract by moniesia and strongylates of animals was noted at the age of up to one year and 1-3 years - 28.1 and 35.8%, and the smallest - 10 years and older 0 and 21.1%, respectively. The extent of the invasion of larval echinococcosis increases with the age of animals. The least extensiveness of invasion was noted at the age of 0%, and the highest - 10 years and older, 58.8%.

Acknowledgments

The work was carried out within the framework of the grant project AP05136002 on the topic "Development of measures to combat the main helminthiasis of cattle in the steppe, semi-desert and desert zones of the West Kazakhstan region, depending on meteorological conditions".

REFERENCES

- [1] Skryabin, K.I. (1916). K kharakteristike gel'mintofauny domashnikh zhivotnykh Turkestana (Dissertatsiya na stepen' magistra veterinarnykh nauk) [On the characterization of the helminth fauna of domestic animals in Turkestan (Dissertation for a Master's degree in veterinary sciences) Yur'yev: Tipolit. Bergman [in Russian].
- [2] Vol'f, Z.V. (1936). K kharakteristike gel'mintofauny krupnogo rogatogo skota v Kazakhstane [To the characteristics of the helminth fauna of cattle in Kazakhstan] Sb. Nauchn. st. Komiteta nauki pri Prezid. - Coll. scientific, art. Science Committee under the Presid. - TSIK Kazakh. SSR. 1,73-76 [in Russian].
- [3] Bondareva, V.I. (1946). Fauna i sezonnaya dinamika tsestod kishechnika ovets na yugo-vostoke Kazakhstana [Fauna and seasonal dynamics of sheep intestine cestodes in the south-east of Kazakhstan]. Rukopis' diss....kand. nauk - Manuscript of thesis. ... Cand. Sciences, Library. Lenin [in Russian].
- [4] Bondareva, V.I. (1958). O vidovoy samostoyatel'nosti moniyezia al'ba tsestody krupnogo rogatogo skota [On the species independence of cattle moniesia alba cestode] Tez. dokl. nauchn. konf. Vses. o-va gel'mintol - Tez. report scientific. conf. Vses. islands helmintol., 23-24 [in Russian].
- [5] Bondareva, V.I. (1958). Dop. mat. k vopr. o vid. sam. razl. tsenurov. V kn.: «Sb. po gel'mintologii. K 60-letiyu so dnya rozhdeniya prof. R.S.Shul'tsa» [Add. mat. to the questions oh kind. myself. decomp. prices. In the book: "Sat. on helminthology. On the occasion of the 60th anniversary of the birth of prof. R.S. Shultz]. - Alma-Ata: Izd. Kazakh. Fil. VASKHNIL, 100-107 [in Russian].
- [6] Shumilina, Z.V. (1950). Sezonnaya dinamika tsestodozov kishechnika ovets i krup. rog. skota Zap. - Kaz. obl. [Seasonal dynamics of cestodoses in the intestines of sheep and cereals. horn. livestock Zap. - Kaz. region.]. Tr. NIVI, kaz. fil. VASKHNIL - Tr. NIVI, kaz. Phil. VASKHNIL, 5, 306-318 [in Russian].
- [7] Skryabin, K.I., Shul'ts R.S. (1937). Gel'minty krupnogo rogatogo skota i yego molodnyaka [Helminths of cattle and their young animals]. M.: Sel'khozgiz [in Russian].
- [8] Yerbolatov, K.M., Shal'mnov, M.SH., Yesengaliyev, T.T. (1988). Rekomendatsii po profilaktike osnovnykh gel'mintozov sel'skokhozyaystvennykh zhivotnykh v Ural'skoy oblasti [Recommendations for the prevention of the main helminthiasis of farm animals in the Ural region]. Ural'sk: Zap. - Kaz. NIVS [in Russian].
- [9] Panova, L.G. (1927). Gel'mintologiya v Kazakhstane [Helminthology in Kazakhstan] Sb. rabot po gel'mintologii posvyashch. K.I. Skryabinu - Sat. works on helminthology dedicated. K.I. Scriabin. M. - 122-137 [in Russian].
- [10] Bondareva, V.I. (1940). K voprosu o rasprostraneni glavneyshikh gel'mintozov s.-kh. zhivotnykh v YUKO [To the question of the distribution of the main helminthiasis of the agricultural sector. animals in South Kazakhstan region]. Tr. Kaz. NIVI, 3, 143-159 [in Russian].
- [11] Bondareva, V.I. (1949). Rasprostraneniye pochvennykh kleshchey – oribatid na pastbishchakh yugo-vostoka Kazakhstana [Distribution of soil mites - oribatids on pastures in the southeast of Kazakhstan]. Izv. AN Kaz. SSR. Seriya parazitologiya - Izv. AN Kaz. SSR. Parasitology series, 74, 7, 95-98 [in Russian].

- [12] Dikov, G.I., Dement'yev, I.S. (1978). Spravochnik po gel'mintozam sel'skokhozyaystvennykh zhivotnykh (diagnostika i profilaktika) [Handbook on helminthiasis of farm animals (diagnostics and prevention)]. – Alma-Ata: Kaynar [in Russian].
- [13] Kuznetsov, M.I. (1958). K voprosu o rasprostraneniі ekhinokokkoza i finnoza u zhivotnykh, zabitykh na Armavirskom myasokombinate [To the question of the spread of echinococcosis and finnosis in animals slaughtered at the Armavir meat-packing plant]. Byul. n.- tekhn. inf. Vses. in-ta gel'mintol. - Byul. n.- tech. inf. Vses. in-that helmintol., 4, Gel'mintozy, 47-48 [in Russian].
- [14] Kuznetsov, M.I. Vyyavleniye promezhutochnykh khozyayev monieziy v usloviyakh stepey Nizhnego Povolzh'ya [Identification of intermediate hosts of moniesia in the steppes of the Lower Volga region]. Tr. Vses. in-ta gel'mintol. - Tr. Vses. in-that helmintol, VI, 42-46 [in Russian].
- [15] Palimpsestov, M.A. (1937). K kharakteristike gel'mintofauny domashnykh zhivotnykh v Mordovskoy avtonomnoy, Kuybyshevskoy i Orenburgskoy oblastiakh [On the characteristics of the helminth fauna of domestic animals in the Mordovian Autonomous, Kuibyshev and Orenburg regions]. Rab. po gel'mintol. - Rab. by helmintol., 454-458 [in Russian].
- [16] Potemkina, V.A. (1949). Monieziyoz telyat (biologiya vzbuditeley, epizootologiya i profilaktika zabolevaniya) [Moniesiosis of calves (biology of pathogens, epizootology and disease prevention)]. Avtoref. dis. ... dokt. vet. Nauk - Abstract of the thesis. dis. ... doct. vet. sciences [in Russian].
- [17] Butorin, F.S. (1950). Dinamika glavneyshikh gel'mintozov i analiz provodimykh meropriyatiy v bor'be s nimi u sel'skokhozyaystvennykh zhivotnykh v Yaroslavskoy oblasti [The dynamics of the main helminthiasis and the analysis of measures taken to combat them in farm animals in the Yaroslavl region]. Avtoref. dis. ... kand. vet. Nauk - Abstract of the thesis. dis. ... Cand. vet. Sciences [in Russian].
- [18] Ayupov, KH.V. (1954). Gel'mintozy sel'skokhozyaystvennykh zhivotnykh v Bashkirskoy ASSR i opyt ozdorovleniya zhivotnykh odnogo rayona ot osnovnykh gel'mintozov [Helminthiasis of farm animals in the Bashkir Autonomous Soviet Socialist Republic and the experience of improving animals in one region from the main helminthiasis]. Avtoref. dis. ... kand. vet. Nauk - Author's abstract. dis. ... Cand. vet. sciences. -M. [in Russian].
- [19] Yegorov, YU.G. (1995). Fauna gel'mintov kopytnykh Goskompleksa «Zavidovo» i puti regulirovaniya chislennosti naiboleye patogennykh parazitov [Fauna of ungulate helminths of the State Complex "Zavidovo" and ways of regulating the number of the most pathogenic parasites]. Avtoref. dis.... kand. biol. Nauk - Author's abstract. dis cand. biol. sciences.. - M. [in Russian].
- [20] Kuznetsov, M.I. (1972). Anoplotsefalyatozy zhvachnykh zhivotnykh [Anoplocephalatoses of ruminants]. M.: Kolos [in Russian].
- [21] Durdusov, S.D. (1994). Epizootologiya i profilaktika osnovnykh gel'mintozov myasnogo krupnogo rogatogo skota v Kalmykii Dis. ... kand. vet. nauk. [Epizootology and prevention of the main helminthiasis of beef cattle in Kalmykia Dis. ... Cand. vet. sciences] – Moskva [in Russian].
- [22] Durdusov, S.D. (1999). Ekologo-epizooticheskaya kharakteristika osnovnykh gel'mintozov i koktsidiozov krupnogo rogatogo skota i mery bor'by s nimi v aridnoy zone yuga Rossii. Dis. ... dok. vet. nauk [Ecological and epizootic characteristics of the main helminthiasis and coccidiosis of cattle and measures to combat them in the arid zone of southern Russia. Dis. ... doc. vet. sciences].- Moskva [in Russian].
- [23] Karmaliyev, R.S. (2010). Dinamika populyatsii monieziy v organizme krupnogo rogatogo skota v raznoye vremya goda [Dynamics of the moniesia population in the body of cattle at different times of the year]. Materialy nauchnoy konferentsii Vserossiyskogo obshchestva gel'mintologov RAN «Teoriya i praktika bor'by s parazitarnymi boleznyami» - Materials of the scientific conference of the All-Russian Society of Helminthologists of the Russian Academy of Sciences "Theory and practice of combating parasitic diseases", 11, 229-231 [in Russian].
- [24] Badanin, N.V. (1936). Opyt vyyavleniya gel'mintozonozov sredi uboynykh zhivotnykh Alma-Atinskogo okruga [Experience of detecting helminthic zoonoses among slaughter animals of the Alma-Ata district] Tr. Za 10 let Kazakh. NIVI. - Tr. For 10 years, 1, 287-288 [in Russian].
- [25] Zakharov, V.I. (1939). Gel'mintologicheskaya ekspeditsiya Kazakhskoy respub. tropicheskoy stantsii (na sev. poberezh'ye oz. Balkhash) [Helminthological expedition of the Kazakh Republic. tropical station (on the northern coast of Lake Balkhash)] Med par. i parazit. Bolezni - Honey steam. and a parasite. Diseases, 8, 1, 155-156 [in Russian].



- [26] Vibe, P.P. (1958). Ekonomicheskiy ushcherb ot ekhinokokkoza v Semipalatinskoy obl. [Economic damage from echinococcosis in Semipalatinsk region] Tez. Dokl. godich. sessii VOG AN SSSR 8-12 dekabrya Abstracts. Dokl. year sessions of the FOG of the Academy of Sciences of the USSR December 8-12, 28-30 [in Russian].
- [27] Shal'menov, M.SH. (1987). Biologiya Echinococcus granulosus (Batsch, 1786), osobennosti epizootologii i profilaktiki ekhinokokkoza v Zapadnom Kazakhstane [Biology of Echinococcus granulosus (Batsch, 1786), features of epizootology and prevention of echinococcosis in Western Kazakhstan] Diss.... kand. vet. Nauk - Diss.... Cand. vet. Sciences, M. [in Russian].
- [28] Kereyev, YA.M. (1999). Khimioprofilaktika larval'nykh tsetodozov zhivotnykh: Avtoref. dis. ... dok. vet. nauk. [Chemoprophylaxis of larval cestodosis in animals: Author's abstract. dis. ... doc. vet. sciences]. – Almaty [in Russian].
- [29] Karmaliyev, R.S., Fedyanina, O.I., Karabalin, M.K. (2003). Gel'mintozy pishchevaritel'nogo trakta s.-kh. zhivotnykh v Zap.-Kaz. obl., epizootologiya i lecheniye [Helminthiasis of the digestive tract S.-x. animals in West-Kaz. region, epizootology and treatment] Inform. Listok Kazgos INTI DRGP Zap-Kaz TSNTI - Inform. Leaflet Kazgos INTI DRGP Zap-Kaz TsNTI, 14, 6 [in Russian].
- [30] Karmaliyev, R.S. (2003). Dinamika epizooticheskoy situatsii i effektivnost' antgel'mintnykh preparatov pri ekhinokokkoze sel'skokhozyaystvennykh zhivotnykh v usloviyakh Zapadnogo Kazakhstana [The dynamics of the epizootic situation and the effectiveness of anthelmintic drugs for echinococcosis of farm animals in the conditions of Western Kazakhstan]. Mat. dokl. nauchn. konf. Vseros. o-va gel'mintol. «Teoriya i praktika bor'by s parazitarnymi boleznyami» - Mat. report scientific. conf. Vseros. islands helmintol. "Theory and practice of combating parasitic diseases.", 4, 180-183 [in Russian].
- [31] Skryabin, K.I. (1950). K utochneniyu ponyatiya devastatsii [To clarify the concept of devastation]. Tr. Moskovskoy veterinarnoy akademii - Tr. Moscow Veterinary Academy, 7, 33-38 [in Russian].
- [32] Petrov, A.M., Skvortsova, A.A., Filosofov, V.N. (1929). Opyty po degel'mintizatsii ovets pri anoplotsefalidoze - lentочно-глистной болезни [Experiments on deworming sheep with anoplocephalidosis - tapeworm disease]. Vestn. sovr. vet. - Vestn. modern vet., 7-8, 187-191 [in Russian].
- [33] Ramazanov, V.T. (1995). Izyskaniye sposobov immunizatsii ovets protiv ekhinokokkoza [Finding ways to immunize sheep against echinococcosis]. Epizootologiya i profilaktika parazitov sel'skokhozyaystvennykh zhivotnykh. Sb. nauch.tr. Kaz.NIVI. – Epizootology and prevention of parasitosis of farm animals. - Sat. scientific tr. Kaz.NIVI. Almaty: NITS Bastau, 82-96 [in Russian].
- [34] Suleymenov, M.ZH., Kikbayev, M.K., Yerbolat, K.M. (2003). Fastsiolozы s.-kh. zhivotnykh i ikh profilaktika v Atyrauskoy oblasti [Fascioliasis s.-kh. animals and their prevention in the Atyrau region]. Vestn. s.-kh. nauki Kazakhstana - Vestn. s.-kh. science of Kazakhstan, 8, 61-63 [in Russian].
- [35] Abirova, I.M. (2008). K epizootologii ekhinokokkoza krupnogo rogatogo skota v Zapadno-Kazakhstanskoy oblasti [Epizootology of cattle echinococcosis in the West Kazakhstan region]. Vestn. Nauki Kaz. GATU - Vestn. Science Kaz. GATU, 1, 108-110 [in Russian].
- [36] Asetova, I.N. (2003). Sovremennyye mery bor'by s parazitami verbl'yudov. Analiticheskiy obzor [Modern measures to combat camel parasitosis. Analytical review]. -Ural'sk: Zapadno-Kazakhstanskiy TSNTI [in Russian].
- [37] Bessonov, A.S. (1958). Izucheniye razvitiya lichinok O.ostertagi i sokhraneniya imi zhiznesposobnosti v polevykh usloviyakh Zapadno-Kazakhstanskoy oblasti [Study of the development of O.ostertagi larvae and their preservation of viability in the field conditions of the West Kazakhstan region]. Byul. nauchn. - tekhn. inf. Vses. in-ta gel'mintol - Byul. scientific. - tech. inf. Vses. in-that helmintol., 4, 20-24 [in Russian].
- [38] Karibekov, Ye.Ye. (2002). K epizootologii zheludочно-kishechnykh strongilyatozov na yugo-vostoke Respubliki Kazakhstan [Epizootology of gastrointestinal strongylatosis in the south-east of the Republic of Kazakhstan]. Vestn. nauki Kaz. Agrar. un-ta im.S. Seyfullina. - Vestn. science Kaz. Agrar. University named after S. Seifullin, 5, 114-117 [in Russian].
- [39] Migacheva, L.D., Kotelnikov, G.A. (1987). Metodicheskiye rekomendatsii po ispol'zovaniyu ustroystva dlya podscheta yaits gel'mintov [Guidelines for using a device for counting helminth eggs], 48, 81-83 [in Russian].

[40] Polyakov, P.A. (1953). Prizhiznennaya differentsial'naya diagnostika strongilyatozov pishchevaritel'nogo trakta zhvachnykh po invazionnym lichinkam [Intravital differential diagnosis of strongylatoses of the digestive tract of ruminants by invasive larvae] Avtoref. dis. ... kand. vet. Nauk - Abstract of the thesis. dis. ... Cand. vet. sciences. [in Russian].

[41] Kotelnikov, G.A. (1984). Gel'mintologicheskiye issledovaniya zhivotnykh i okruzhayushchey sredy: Spravochnik [Helminthological studies of animals and the environment: A Handbook]. – M.: Kolos [in Russian].

Кармалиев Р.С.

БАТЫС ҚАЗАҚСТАН ОБЛЫСЫНЫҢ ТАБИҒИ ЗОНАЛАРЫНДАҒЫ МАЛДЫҢ НЕГІЗГІ ГЕЛМИНТОЗЫНЫҢ ЭКОЛОГИЯЛЫҚ - ЭПИЗООТИКАЛЫҚ ТАЛДАУЫ

Андатпа. Зерттеудің мақсаты - Батыс Қазақстан облысының дала, жартылай шөл және шөл зоналарында ірі қара малдарының негізгі гельминтозаларының жылдың әр мезгілінде әртүрлі жас топтары бойынша эпизоотологиясын анықтау.

Алғаш рет Батыс Қазақстан облысының дала, жартылай шөл және шөл зоналарында гельминттердің негізгі түрлері бойынша ірі қара малдың шапқыншылығына, сондай-ақ көрсетілген зоналарда жануарлардың гельминттерге шабуылының маусымдық және жастық динамикасына салыстырмалы талдау жасалды.

Ірі қара малдың гельминттермен зақымдануы Фюллеборн бойынша анықталды. Френфиляттарды тұқымға дейін анықтау П.Ф.Поляков бойынша және К.И.Скрябин бойынша гельминтологиялық аутопсия жүргізілді. Балтырларды конъюнктивалық қапшықтан бор қышқылының ерітіндісімен шайып шығарды. Дернасіл цестодозының кисталарын анықтау үшін паренхиматозды мүшелер зерттелді.

Батыс Қазақстан облысында гельминттердің негізгі түрлеріне шабуылдың экстенсивтілігі мыналар болды: *Moniezia expansa* - 14,2 пайыз, *Echinococcus granulosus* (личинкалар) - 35,8 пайыз, *Nematodirus* spp. - 35 пайыз, *Ostertagia* spp. - 60,5 пайыз, *Cooperia* spp. - 55,1 пайыз, *Haemonchus* spp. - 22,4 пайыз, *Trichostrongylus* spp. 22,6 пайыз, *Thelazia rhodesi* 35,8 пайыз. Өңірде ірі қара малдың гельминттермен зақымдануының маусымдық және жастық динамикасы көрсетілген. Маниезиямен, ас қорыту жолдарының стрентилаттарымен және телазиямен жануарлардың максималды инфекциясы жазда және күзде, ал минимум - қыста және көктемде байқалды. Жасы ұлғайған сайын ас қорыту жолының монезия және стронгиляттары арқылы жануарларға шабуылдың кеңеюі төмендейді, ал дернасіл эхинококкозымен - ол күшейеді.

Батыс Қазақстан облысында гельминттердің кең таралған түрлеріне ірі қара малының шабуылының кеңдігі *Moniezia expansa* 14,2%, *E. granulosus* (личинкалар) 35,8%, *Strongylata* spp. 25,3 пайыз, *Thelazia rhodesi* 35,8 пайыз. Батыс Қазақстан облысында ірі қара малға гельминттердің жұғуының маусымдық және жастық динамикасы көрсетілген. Жануарлардың инфекциясының максимумы жазда және күзде, ал минимум қыста және көктемде байқалды.

Кілт сөздер: Батыс Қазақстан облысы; дала; жартылай шөл және шөл зоналары; мал; гельминттер; басып кіру.

Кармалиев Р. С.

ЭКОЛОГО-ЭПИЗООТИЧЕСКИЙ АНАЛИЗ ОСНОВНОГО ГЕЛМИНТОЗА ЖИВОТНЫХ В ПРИРОДНЫХ ЗОНАХ ЗАПАДНО-КАЗАХСТАНСКОЙ ОБЛАСТИ

Аннотация. Цель исследования-выявление эпизоотологии основных гельминтозов крупного рогатого скота в степной, полупустынной и пустынной зонах Западно-Казахстанской области по различным возрастным группам в разное время года.

Впервые проведен сравнительный анализ вторжения крупного рогатого скота по основным видам гельминтов в степной, полупустынной и пустынной зонах Западно-Казахстанской области, а также сезонной и возрастной динамики нападения животных на гельминтов в указанных зонах.

Поражение крупного рогатого скота гельминтами было выявлено по Фюллеборну. Определение френфилятов до породы проводили гельминтологическое вскрытие по П. Ф. Полякову и