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Fauna of ectoparasites of farm animals

Qishloq xo‘jalik hayvonlari ektoparazitlarining faunasi

Фауна эктопаразитов сельскохозяйственных животных

Faxriddin Sayfiddinovich PULOTOV[1]

[1] *Scientific-Research Institute of Veterinary, Samarkand, Uzbekistan*

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CONTACT
ReFocusJournal@gmail.com

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ENGLISH

Faxriddin Sayfiddinovich PULOTOV[1]
[1] *Scientific-Research Institute of Veterinary, Samarkand, Uzbekistan*

Abstract. The article addresses the control of ectoparasites in goats, The article presents parasitological research on a total of 7,014 cattle, 39,594 sheep, 7,385 goats, 72 horses, 2 dogs and other animals belonging to various livestock farms and the population of our Republic in order to determine the fauna of ectoparasite species widespread among agricultural animals in recent ears. The endo- and ectoparasites found in them were collected, their morphology, species, genus, and systematics were studied, and 36 species of ecto- and endoparasites were identified among agricultural and laboratory animals belonging to 8 species, as well as information on the dominant species and the arachnoentomotic diseases they cause.

Keywords: arachnosis; bovicoliasis; dominant; ectoparasite; endoparasite; entomosis; fauna; stationary; mite; route; hyalommosis

O‘ZBEKCHA

PULOTOV Faxriddin Sayfiddinovich[1]
[1] *Veterinariya ilmiy-tadqiqot instituti, Samarqand, O‘zbekiston*

Annotatsiya. Maqolada keyingi yillarda qishloq xo‘jalik hayvonlari orasida keng tarqalgan ektoparazit turlarining faunasini aniqlash maqsadida Respublikamizning turli chorvachlik xo‘jaliklariga va aholiga qarashli bo‘lgan jami 7014 bosh qoramol, 39594 bosh qo‘y, 7385 bosh echki, 72 bosh ot, 2 bosh it va boshqa hayvonlar ustida parazitologik tadqiqot ishlari olib borilgan va ulardan topilgan endo- va ektoparazitlar terib olinib, ularning morfologiyasi, turlari, jinsi, sistematikasi o‘rganilgan va 8 turga mansub qishloq xo‘jalik va laboratoriya hayvonlari orasida 36 turga mansub ekto- va endoparazitlar aniqlanganligi hamda dominant turlar va ular keltirib chiqaradigan araxnoentomoz kasalliklar haqidagi ma’lumotlar keltirilgan.

Kalit so‘zlar: araxnoz; bovikolyoz; dominant; ektoparazit; endoparazit; entomoz; fauna; statsionar; kana; marshrut; xialommoz

РУССКИЙ

ПУЛОТОВ Фахриддин Сайфиддинович[1]
[1] *Научно-исследовательский институт ветеринарии, Самарканд, Узбекистан*

Аннотация. В статье представлены результаты паразитологических исследований 7014 голов крупного рогатого скота, 39594 овец, 7385 коз, 72 лошадей, 2 собак и других животных, принадлежащих к различным животноводческим хозяйствам и населению нашей Республики, с целью определения фауны видов эктопаразитов, широко распространенных среди сельскохозяйственных животных в последние годы. Были собраны обнаруженные у них эндо- и эктопаразиты, изучены их морфология, виды, роды и систематика, идентифицировано 36 видов эктопаразитов и эндопаразитов среди сельскохозяйственных и лабораторных животных, относящихся к 8 видам, а также представлена информация о доминирующих видах и вызываемых ими арахноэнтоматозных заболеваниях.

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Ключевые слова: арахноз; бовиколёз; доминант; эктопаразит; эндопаразит; энтомоз; фауна; стационар; клещ; маршрут; хиаломмоз

1. KIRISH
Introduction

KIRISH. Bugungi kunda qishloq xo‘jaligi hayvonlarining sog‘lig‘ini muhofaza qilish, ularning mahsuldorligini oshirish va yuqumli hamda parazitar kasalliklarning oldini olish veterinariya fanining dolzarb yo‘nalishlaridan biri hisoblanadi. Xususan, ektoparazitar kasalliklar chorvachilik tarmog‘iga katta iqtisodiy zarar etkazib, hayvonlarda turli infeksion va invazion kasalliklarning tarqalishida muhim epidemiologik omil sifatida namoyon bo‘lmoqda. Ektoparazitlar qishloq xo‘jaligi hayvonlarida bevosita qon so‘rish orqali anemiya, teri shikastlanishlari, stress holati va mahsuldorlikning keskin pasayishiga olib keladi. Bundan tashqari, ular ko‘plab transmissiv kasalliklarning asosiy tashuvchisi bo‘lib, epizootik jarayonlarning rivojlanishida etakchi rol o‘ynaydi. Ushbu kasalliklar hayvonlarning nobud bo‘lishiga, davolash xarajatlarining oshishiga va chorvachilik mahsulotlari sifatining pasayishiga sabab bo‘ladi.

Veterinariya fani va mutaxassislari oldida turgan eng dolzarb muammolardan biri chorva mollari orasida uchraydigan va xo’jaliklarga sezilarli iqtisodiy zarar etkazadigan ektoparazitozlarga tashxis qo’yish, davolash, oldini olish va qarshi kurash chora-tadbirlarini ishlab chiqishni takomillashtirish hamda amaliyotga joriy etish sanaladi. Biroq, iqlim o‘zgarishi, chorvachilik texnologiyalarining takomillashuvi hamda hayvonlarni parvarishlash sharoitlarining o‘zgarishi sababli ektoparazitlarning tur tarkibi va epizootologik holatini muntazam ravishda o‘rganib borish shuningdek, turli mulk shaklidagi chorvachilik xo’jaliklarida ektoparazitlar migratsiyasini (fauna, fenologiyasi), ularning epizootologik xususiyatlarini o’rganish, ularga qarshi kurashning (dezinsektsiya, dezakarizatsiya) zamonaviy chora-tadbirlari va yuqori samarador vositalarini ishlab chiqish, takomillashtirish hamda amaliyotga joriy etish dolzarb masala hisoblanadi.

Tadqiqotning maqsadi: Qishloq xo‘jalik hayvonlari orasida ektoparazit turlarining faunasini o‘rganishdan iborat.

2. TADQIQOT MATERIALLARI VA USLUBLARI
Materials and methods

Tadqiqot materiallari va uslublari. Qishloq xo‘jalik hayvonlari orasida ektoparazit turlarining faunasi statsionar va marshrut tekshirishlar usulida bajarildi. Statsionar tekshirishlar maxsus tanlangan chorvachilik fermalarida yoki yaylovlarning malum statsiyalarida, marshrut tekshirishlar esa har xil chorvachilik xo‘jaliklarida oyiga bir marta o‘tkazildi.

Statsionar tekshirishlar yil mobaynida har 7-10 kunda bajarildi. Har otardan 10-15 bosh har xil yoshdagi hayvonlar yilning barcha dekadalarida, oy va fasllarida topilgan ektoparazitlar terib tekshirilib borildi. Ulardan terilgan ektoparazitlar sonini aniqlash uchun chetlari vazelin moyi bilan moylangan Petri idishchasi ichiga joylashtirilgan oq filtr qog‘ozi ustiga ektoparazitlar solinadi va ularning soni aniqlandi. Ularning turini aniqlash uchun esa Petri idishchasida 24 soat saqlangach, maxsus aniqlagich jadvallardan foydalanib, MBS-1, BMS-10 mikroskoplari yordamida amalga oshirildi. Har bir hayvonlardan olingan malumotlar alohida qayd etib borildi.

3. TADQIQOTLARNING NATIJALARI
Results and discussion

Tadqiqotlarning natijalari. Qishloq xo‘jalik hayvonlari ektoparazitlarining faunasi bo‘yicha ilmiy tadqiqotlar Samarqand viloyati Toyloq tumani “Chorvador O‘roqov Sh.”fermer xo‘jaligidagi 27 bosh mayda va 72 bosh yirik shoxli hayvonlarda, “Akmal Toshpo‘latovich” fermer xo‘jaligidagi 423 bosh qoramol, “Chorvador O‘roqov Sh.” fermer xo‘jaligidagi 21 bosh qo‘y va 67 bosh qoramollarda, Payariq tumanidagi “Plem chorvadori” xususiy fermer xo‘jaligidagi 44 bosh qoramol, 32 bosh qo‘y va 21 bosh echkilarda, Nurobod tumani “Chavandoz” fermer xo‘jaligida 80 bosh qaromol, 35 bosh qo‘y, 90 bosh echkilar, “Xudoyqulov F.I.” chorvachilik fermer xo‘jaligida 60 bosh qaromol, 50 bosh qo‘y, 230 bosh echkilar, “Jamshid” fermer xo‘jaligida 28 bosh qoramol, 60 bosh qo‘y, 30 bosh echkilar, “Boshquduq” qishloq fuqarosi U.Boboevga qarashli 31 bosh mayda shoxli va 7 bosh shaxsiy qoramollarda, “Nurobod qorako‘l naslchilik” MChJ ga qarashli 52 bosh qoramol, 585 bosh qo‘y va 327 bosh echki, Jizzax viloyati Forish tumanidagi “Boris orzulari” fermer xo‘jaligidagi 17 bosh qoramol, 2000 bosh qo‘y, 32 bosh echkilar, Qashqadaryo viloyati Kitob tumanidagi “Navbahor Charos bog‘i” chorvachilik fermer xo‘jaligiga qarashli 45 bosh va “Chirkay” chorvachilik fermer xo‘jaligidgia 50 bosh qoramollarda, Navoiy viloyatining Nurota tuman “Nurota qorako‘l naslchilik” ma’suliyati cheklangan jamiyatiga qarashli 33 bosh qoramol, 752 boshdan ortiq qorakul zotli qo‘ylarda xamda 645 boshdan ortiq tivit yo‘nalishidagi Orenburgning Angor zotli oq echkilarda, Andijon viloyati Oltinko’l tumanining “Andijon naslli echkilari” MCHJ dagi 810 bosh echkilar, Andijon tumani "lnmarka lyuks" chorvachilik xo‘jaligidagi 250 bosh qoramol, 210 bosh qo‘y va 470 bosh echkilar; “Pahtakor-tamorqa-xizmati" fermer xo‘jaligida 20 bosh qoramol, 30 bosh qo‘y, 40 bosh echkilar, Oltinko‘l tumani "Baxt imkon rivoj chorvasi" chorvachilik fermer xo‘jaligida 1220 bosh qaromol, 110 bosh qo‘y, 450 bosh echkilarda, Surxandaryo viloyati Termiz shahridagi “Qorabayir otlari” va “Chavandozlar sport maktabi” otchilik xo‘jaliklaridagi 72 bosh otlarda, Qoraqalpog‘iston Respublikasi Nukus tumani “Dami-ata” femer xo‘jaligiga qarashli 22 bosh qoramol, 612 bosh qo‘y va 375 bosh echkilarda, “Qoniratbay-Mexri” fermer xo‘jaligiga qarashli 400 bosh qoramol, 120 bosh qo‘y va 80 bosh echkilarda, Shumanay tumanidagi “Sultan bereketli sharva” fermer xo‘jaligiga qarashli 55 bosh qoramollarda, Veterinariya ilmiy-tadqiqot instituti vivariylarida mavjud 11 bosh qoramol va 43 bosh qo‘ylarda, jami bo‘lib 703 bosh qoramol, 2195 bosh qo‘y, 1697 bosh echki, 2 bosh it va boshqa hayvonlarda, jami bo‘lib 7014 bosh qoramol, 39594 bosh qo‘y, 7385 bosh echki, 72 bosh otlarda, 2 bosh it va boshqa hayvonlar ustida parazitologik tadqiqot ishlari olib borilib ulardan topilgan endo- va ektoparazitlar terib olindi va ulardan topilgan endo- va ektoparazitlar terib olindi va ularning morfologiyasi o‘rganilib, turlari, jinsi, sistematikasi aniqlandi (1-jadval, 1-8-rasmlar).

1-jadval

Qishloq xo‘jalik hayvonlarida ektoparazitlar faunasi bo‘yicha monitoring natijalari / **Table 1.** Results of monitoring the ectoparasite fauna of farm animals

T/r	Hayvon turlari	Topilgan parazitlar turi	Araxnoentomoz nomi	Guruhi
1	Qoramollarda	Hyalomma anatolicum	Xialommoz	akaroz
2	Qoramollarda	Hyalomma plumbeum	Xialommoz	akaroz

T/r	Hayvon turlari	Topilgan parazitlar turi	Araxnoentomoz nomi	Guruhi
3	Qoramollarda	Rhipicephalus bursa	Ripitsefaloz	akaroz
4	Qoramollarda	Dermacentor marginatus	Dermasentoroz	akaroz
5	Qoramollarda	Rhipicephalus ricinus	Ripitsefaloz	akaroz
6	Qoramollarda	H.euristernus	Gematopinoz	entomoz
7	Qoramollarda	Bovicola bovis	Bovikolyoz	entomoz
8	Qoramollarda	Hypoderma bovis	Gipodermatoz	entomoz
9	Qoramollarda	Simulium ornatum		entomoz
10	Qoramollarda	Musca domestica		entomoz
11	Qoramollarda	Stomoxys calcitrans		entomoz
12	Qo'ylarda	Bovicola ovis	Bovikolyoz	entomoz
13	Qo'ylarda	Psoroptes ovis	Psoroptoz	akaroz
14	Qo'ylarda	Sarcoptes ovis	Sarkoptoz	akaroz
15	Qo'ylarda	Rhipicephalus bursa	Ripitsefaloz	akaroz
16	Qo'ylarda	Alveonasus lahorensis	Alveonasoz	akaroz
17	Qo'ylarda	Oestrus ovis	Estroz	entomoz
18	Qo'ylarda	Ctenocephalides ovis	Ktenotsefalidoz	entomoz
19	Qo'ylarda	Linognathus ovis	Linognatoz	entomoz
20	Echkilarda	Rhipicephalus bursa	Ripitsefaloz	akaroz
21	Echkilarda	Bovicola caprae	Bovikolyoz	entomoz
22	Echkilarda	Ctenocephalides caprae	Ktenotsefalidoz	entomoz
23	Echkilarda	Linognathidae caprae	Linognatoz	entomoz
24	Otlarda	Trichodectes pilosus	Trixodektoz	entomoz
25	Otlarda	Hyalomma marginatum	Xialommoz	akaroz
26	Otlarda	Gastrophilus intestinalis	Gastrofilyoz	entomoz
27	Otlarda	G.nasalis	Gastrofilyoz	entomoz
28	Otlarda	G.pecorum	Gastrofilyoz	entomoz
29	Baliqlarda	Lernea cyprinacea	Lerneoz	akaroz
30	Baliqlarda	Lernea elegans	Lerneoz	akaroz
31	Asalarilarda	Varroa yakobsoni	Varroatoz	akaroz
32	Asalarilarda	Tropilaelaps	Tropilaelapsoz	akaroz
33	Quyonlarda	Rhipicephalus bursa	Ripitsefaloz	akaroz
34	Parrandalarda	Argas persicus	Argasoz	akaroz
35	Parrandalarda	Menacanthus stramineus	Menakantoz	entomoz
36	Parrandalarda	Goniodes hologaster	Goniokotoz	entomoz

Olib borilgan ilmiy tadqiqotlar mobaynida qishloq xo‘jalik hayvonlari orasida asosan bovikolyoz, ripitsefaloz, xialommoz, lerneoz kabi araxnoentomoz kasalliklarni tarqatuvchi ektoparzitlar juda keng tarqalganligi kuzatildi.

1-rasm. Parazitologik tekshirish jarayoni / **Fig. 1.** The process of parasitological examination

2-rasm. B. caprae va L. caprae / **Fig. 2.** B. caprae and L. caprae

3-rasm. Bovicola bovis / **Fig. 3.** Bovicola bovis

4-rasm. Ctenocephalides caprae / **Fig. 4.** Ctenocephalides caprae

5-rasm. Dermacentor marginatus / **Fig. 5.** Dermacentor marginatus

6-rasm. Rhipicephalus bursa / **Fig. 6.** Rhipicephalus bursa

7-rasm. Rhipicephalus ricinus / **Fig. 7.** Rhipicephalus ricinus

8-rasm. Simulium ornatum zoofil pashshasi / **Fig. 8.** The zoophilous fly Simulium ornatum

Shunday qilib, qishloq xo‘jalik hayvonlari orasida Bovicola, Rhipicephalus, Hyalomma, Ctenocephalidae avlodiga mansub ektoparazitlar hamda Hypoderma, Psoroptes va Oestrus avlodiga mansub endoparazitlar dominant tur sifatida keng tarqalganligi aniqlandi.

4. XULOSALAR

Conclusions

1. Ilk bor Samarqand, Qashqalaryo, Jizzax, Surxondaryo, Andijon viloyatlari va Qoraqalpog‘iston Respublikasi chorvachilik xo‘jaliklari, shaxsiy va boshqa fermer xo‘jaliklardagi qishloq xo‘jalik hayvonlari orasida tarqalgan ektoparazitlar faunasi o‘rganilgan va 8 turga mansub qishloq xo‘jalik va laboratoriya hayvonlari orasida 36 turga mansub ekto- va endoparazitlar aniqlandi.

2. Qishloq xo‘jalik hayvonlarida entomoz kasallik qo‘zg‘atuvchilar - Bovicola bovis, B. ovis, B.caprae, Ctenocefalides caprae, Linognathus caprae, Linognathus ovis va akaroz kasallik qo‘zg‘atuvchi – Rhipicephalus ricinus va Alveonasus lahorensis turlari keng tarqalganligi hamda bovikolyoz, ktenosefalidoz, linognatoz, rhipicefalioz va alveonasoz kasalliklari bilan kasallanganligi aniqlandi.

DECLARATIONS

Declarations

Author contributions *CRediT*

Conceptualization; Methodology; Investigation; Data curation; Writing – original draft; Writing – review & editing. All authors have read and agreed to the published version of the manuscript.

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Ethics approval

Not applicable. This study did not involve humans, animals or other regulated materials.

Informed consent

All authors have read and approved the final version of the manuscript and have given their consent to its submission and publication. The study involved no human participants and no personal data.

Data availability statement

All data supporting the findings of this study are presented in the article and are available from the corresponding author upon reasonable request.

Conflict of interest

The authors declare no conflict of interest.

Generative AI disclosure

Generative AI was used only partially. The authors used Claude (Anthropic, Opus 5) for language editing, formatting of the reference list and preparation of the English and Russian metadata. No text, data, figures or conclusions were generated by AI. The authors reviewed and verified all output and take full responsibility for the content of the publication.

EXTENDED SUMMARY IN ENGLISH

Kengaytirilgan inglizcha xulosa / Расширенный реферат на английском языке

Mandatory for all articles whose full text is not in English. Length 600–1000 words. It must be independently readable: a reader who does not know the language of the full text should understand the problem, the method, the numerical results and the contribution without consulting the main text. Do not copy the 250-word abstract.

Purpose and research problem

Protecting the health of farm animals, raising their productivity and ensuring the biological safety of livestock products are among the central tasks of veterinary science and practice in Uzbekistan, and the arachno-entomoses caused by ectoparasites are one of the most pressing problems in this field: they weaken the animals, reduce meat, milk and wool output, damage hides and act as vectors for a range of other pathogens. Effective control, however, presupposes exact knowledge of which species are actually present in the country’s herds and which of them are dominant. The aim of the study was to determine the fauna of ectoparasite species occurring among farm animals of Uzbekistan, together with the morphology, species composition, sex and systematic position of the parasites found, and to identify the dominant species and the arachno-entomoses they cause.

Materials and methods

The fauna of ectoparasites among farm animals was studied by stationary and route methods. Stationary examinations were carried out throughout the year at intervals of 7–10 days, and from each flock 10–15 animals of different ages were examined at every season of the year. Parasitological investigations covered a total of 7014 head of cattle, 39 594 sheep, 7385 goats, 72 horses, 2 dogs and other animals belonging to livestock farms and to the population in Samarkand, Kashkadarya, Jizzakh, Surkhandarya and Andijan regions and in the Republic of Karakalpakstan. The endo- and ectoparasites found on the examined animals were collected, and their morphology, species, sex and systematics were studied. The full monitoring results are given in Table 1.

Results and discussion

Among eight species of farm and laboratory animals, 36 species of ecto- and endoparasites were identified. The stationary and route examinations showed that the ectoparasites transmitting arachno-entomoses such as bovicolosis, rhipicephalosis and hyalommosis are very widely distributed among farm animals. In cattle the ixodid ticks Hyalomma anatolicum, Hyalomma plumbeum and Rhipicephalus bursa were recorded as agents of hyalommosis and rhipicephalosis, which belong to the acaroses; the complete list of host species, parasite species and the corresponding arachno-entomoses is presented in Table 1. Analysed by genus, the ectoparasites of the genera Bovicola, Rhipicephalus, Hyalomma and the family Ctenocephalidae, together with the endoparasites of the genera Hypoderma, Psoroptes and Oestrus, were established as dominant and widely distributed. The practical significance of this ranking is that control programmes in the surveyed regions can be directed at a small number of dominant genera rather than at the parasite fauna as a whole.

Conclusion and contribution

For the first time, the fauna of ectoparasites of farm animals was studied in the livestock holdings of Samarkand, Kashkadarya, Jizzakh, Surkhandarya and Andijan regions and of the Republic of Karakalpakstan, and 36 species of ecto- and endoparasites belonging to eight host species were identified. Among farm animals the agents of entomoses — Bovicola bovis, B. ovis, B. caprae and Ctenocephalides canis — and the agents of acaroses of the genera Rhipicephalus and Hyalomma were established as dominant species, alongside the endoparasitic genera Hypoderma, Psoroptes and Oestrus. The contribution of the work is a systematic, multi-region baseline of the ectoparasite fauna of Uzbek livestock, which provides the factual basis for planning targeted acaricidal and insecticidal treatments and for monitoring changes in the parasite community over time.

ADABIYOTLAR RO‘YXATI

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Adabiyotlar matnda birinchi keltirilish tartibida raqamlanadi. Oltitagacha muallif to‘liq ko‘rsatiladi; DOI mavjud bo‘lsa, albatta beriladi.

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Transliterated list — required by Scopus and Web of Science

Mandatory whenever any reference is in a non-Latin script. Transliterate the author names and the original title, then give the English translation of the title in square brackets, followed by the language tag.

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