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Fauna of synovial flies and their control

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ABSTRACT

The article provide information about the fauna and ecology of sinbovil and zoophilous flies, the damage they cause to livestock farms and measures against them.

Keywords:

Sinbovil, zoophile, pest control, fauna, ecology, seasonal dynamics, taxonomy, pyrethroid, fly, insects, parasite.

Relevance of the topic. With the massive flight of synovial and zoophilic insects, the productivity of farm animals is sharply reduced, that is, milk yields are reduced by 10–20%, obesity is reduced by 100–120 g. The sanitary quality of dairy products is reduced. In addition, some synovial flies are intermediate hosts of helminths (thelaziosis, setaria, stephanofilaria and others) and spread pathogenic microorganisms in the environment - dysentery, cholera, anthrax, tuberculosis and many other dangerous diseases. Insect vectors can spread many vector-borne diseases among livestock, causing them to drastically reduce their productivity and even die.

The daily and seasonal activity of synovial and zoophilous flies, breeding sites, species abundance, activity, biology and ecology are directly related to temperature changes and determine their epizootological significance, which should be taken into account when organizing a comprehensive fight against them. The activity of these flies begins with their awakening in the second half of March and early April.

Therefore, timely and effective control of these extremely harmful insects is an urgent problem on all livestock farms and pastures.

Purpose of the study. Purpose - to study the fauna, ecology and seasonal dynamics of synovial and zoophilous insects on livestock farms and pastures, to determine the parasitic activity of new pyrethroid and phyto-based insecticides against them.

Research method. Species (systematics) of synovial and zoophilous insects collected on the farm in the laboratory of arachnoentomology "Synanthropic dipterous fauna of the USSR". Publishing House of the Academy of Sciences of the USSR. M. 1956 (A.A. Shtakelberg), "Determinant of arthropods harm to human health" Medgiz Moscow, 1958 (V.N. Beklemisheva), "Determinant of insects of the European part of the USSR", "Science" first part, Volume V, Leningrad, 1969 (G.Ya. Bei-Bienko), "Key to insects of the European part of the USSR", "Science" second part, Volume V, L., 1970 (G.Ya. Bei-Bienko), "Flies and Disease", Volume I., Princeton University Press,

Princeton, New Jersey, 1971 (By Bernard Greenberg), in books and manuals identified using identification tables and a microscope (MBS) (type, class, category, family, generation, species).

Unidentified insects were kept in dry tubes and burned.

Research results. Our research was also carried out in the livestock farms "Navbakhor Charos bogi" and "Chirkay" of the Kitab district of the Kashkadarya region (table 1). These farms have 100 heads of imported and local livestock in their farms, mainly based on dairy farming. The ecology, phenology and seasonal dynamics of synovial and zoophilic insects that disturb cattle and reduce its productivity have been studied. Synovial and zoophilous insects were less active in March due to cooler weather. Active since April. In May and June, the maximum abundance of synovial and zoophilic insects was observed.

Seasonal dynamics of synovial and zoophilous insects identified in personal livestock farms "Navbakhor Charos Bogi" and "Chirkay" of the Kitab district of Kashkadarya region

Table 1

№	Types of insects	January	February	March	April	May	June	July	August	September	October	November	December	Жам и	%
		number	number	number	number	number	number	number	number	number	number	number	number		
1	<i>L. titillans</i> Bezzi	-	-	-	-	9	30	53	70	67	42	14	-	285	9,67
2	<i>L. irritans</i>	-	-	-	-	7	26	47	60	51	28	12	-	231	7,84
3	<i>S. calcitrans</i> Linne	-	-	-	-	12	38	56	48	41	34	17	-	246	8,35
4	<i>F. scalaris</i> Fabr.	-	-	-	-	-	12	22	18	11	-	-	-	63	2,14
5	<i>F. incisurata</i> Zett	-	-	-	-	-	5	9	19	12	-	-	-	45	1,53
6	<i>F. leucosticta</i> Mg	-	-	-	-	-	4	7	16	9	-	-	-	36	1,22
7	<i>F. canicularis</i> L.	-	-	-	-	16	42	77	62	48	21	9	-	275	9,33
8	<i>C. vicina</i> R.-D.	-	-	-	-	-	18	27	32	21	13	-	-	111	3,77
9	<i>M. stabulans</i> Flln	-	-	-	-	-	8	17	29	12	4	-	-	70	2,37
10	<i>M. domestica</i>	-	-	-	-	17	55	69	51	43	35	17	-	287	9,74
11	<i>M. autumnalis</i>	-	-	-	-	16	55	72	63	54	41	22	-	323	10,96
12	<i>M. tempestiva</i>	-	-	-	-	18	50	64	47	32	21	9	-	241	8,18
13	<i>M. vitripennis</i>	-	-	-	-	-	5	29	41	33	24	7	-	139	4,72
14	<i>M.d. vicina</i>	-	-	-	-	22	46	63	71	52	33	19	-	306	10,38
15	<i>S. violacea</i> .	-	-	-	-	21	39	63	47	32	21	8	-	231	7,84
16	Muscidaees p.n.	-	-	-	-	2	5	7	20	11	8	4	-	57	1,93
														2946	100

In our study, representatives of synovial and zoophilous flies, which are of great veterinary and medical importance in ecological corners and zoo-biocenoses, were studied.

The total number of synovial and zoophilic insects identified in the personal livestock farms "Navbakhor Charos Bogi" and "Chirkay" of the Kitab district amounted to 2946 specimens. Our research on these farms

began in May. The activity of synovial and zoophilous insects begins in the spring months and is most active in the summer months, disturbing livestock and significantly affecting its productivity. As a result of observations in cattle, the following species were noted and dominances were observed: *Lyperosia titillans*, *Lyperosia irritans*, *Fannia canicularis*, *Stomoxys calcitrans*, *Musca domestica*, *M. autumnalis*, *M.d. vicina*, *M. tempestiva*.

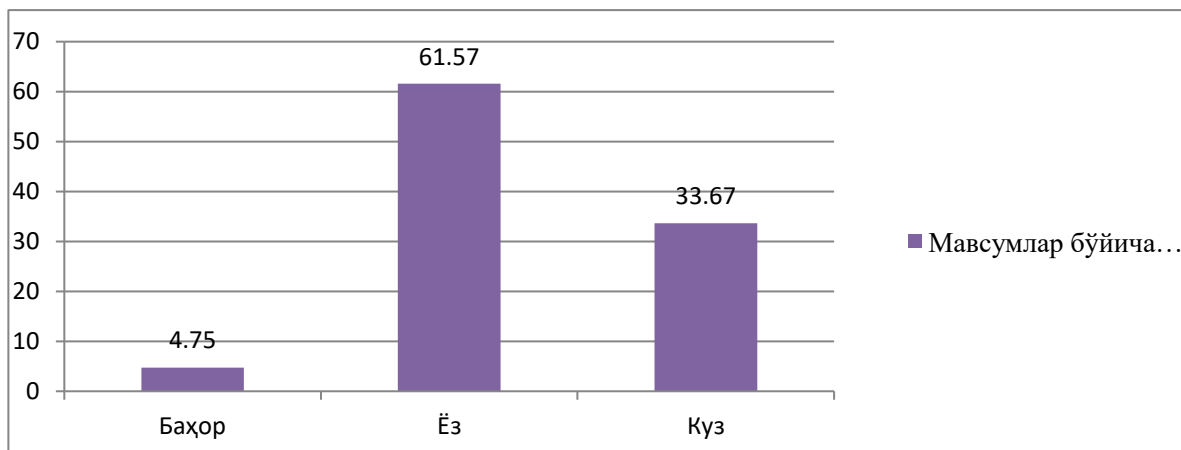


Figure 1. Seasonal dynamics of synovial and zoophilic insects identified in livestock farms

We studied the seasonal dynamics of synovial and zoophilic insects in private livestock farms "Navbakhor Charos Bogi" and "Chirkay". A total of 2946 flies were caught, their morphology and taxonomy were determined. Winter is not shown in the scheme, since synovial and zoophilic insects do not occur in winter. In spring, 140 specimens (4.75%), in summer 1814 specimens (61.57%), in autumn 992 specimens (33.67%), synovial and zoophilous insects were recorded.

Zoophilic and synovial insects were less active in March due to cooler weather. Active since April. In May, June, July, August and September, the maximum number of synovial and zoophilous insects was observed.

With the help of entomological traps (gauze traps), a large number of synovial and zoophilic flies were caught, which parasitize and greatly disturb livestock. Captured insects were identified under laboratory conditions using identification literature and tables and a microscope (MBS) (type, class, genus, family, generation, species).

Species identified include 8 species such as *Lyperosia titillans*, *Lyperosia irritans*, *Fannia canicularis*, *Stomoxys calcitrans*, *Musca domestica*, *M. autumnalis*, *M.d. vicina*, *M. tempestiva* - dominant species, veterinary-sanitary, epizootic value - 5 subdominant species and 3 rare species. Of these, 12 species have been scientifically identified as mechanical carriers of infectious and parasitic diseases.

Under laboratory conditions, experiments were carried out on insects caught from cattle. For this, new aqueous mixtures of Alpha Shakti (10% EC Mumbai Hindiston HE 19077 May 2019) were prepared and tested at various concentrations (0.006, 0.005, 0.004, 0.003, 0.01, 0.01%). For this, 120 specimens of synovial and zoophilic flies were placed 20 in 6 containers. Each container was shaken and dried with a solution of the drug of the lowest concentration. These containers were filled with flies for 10-15 minutes and contact was maintained between them. After 10-15 minutes, the flies were transferred to clean and dry containers.

To study the effect of the pyrethroid drug Alpha Shakti 10% on flies belonging to the genus Musca in laboratory conditions.

Table 2.

Groups №	Name of the drug	Aqueous emulsions of the drug	Таъсир этиш вақти							
			After 30 minutes		After 24 hours		After 48 hours		After 72 hours	
			alive	dead	alive	dead	alive	dead	alive	dead
I Group	Alpha Shakti	0,01	14	6	0	20				
II Group	Alpha Shakti	0,006	16	4	1	19	0	20		
III Group	Alpha Shakti	0,005	18	2	6	14	4	16	0	20
IV Group	Alpha Shakti	0,004	18	2	8	12	6	14	2	18
V Group	Alpha Shakti	0,003	19	1	10	10	5	15	3	17
VI Control group	plain water	plain water	20		20		20	0	19	1

I group: Flies in contact with a 0.01% aqueous emulsion of Alpha Shakti, 6 specimens died 30 minutes after the experiment, 100% died after 1 day.

II group: Flies exposed to Alpha Shakti 0.006% aqueous emulsion died in 4 copies 30 minutes after the experiment. After 1 day, 1 survivor remained, 19 specimens died. 100% died after 2 days.

III group: Flies exposed to Alpha Shakti 0.005% aqueous emulsion died in duplicate 30 minutes after the experiment. After 1 day 6 live and 14 dead specimens. After 2 days, 4 alive and 16 died. After 3 days, 100% died.

IV group: Flies in contact with 0.004% aqueous emulsion of Alpha Shakti died in the amount of 30 copies 30 minutes after the experiment. After 1 day, 8 were alive and 12 died. After 2 days 6 survivors, 14 died. After 3

days, 2 survivors 18 died. By the fourth day, they were 100 percent dead.

V group: Flies in contact with a 0.003% aqueous emulsion of Alpha Shakti died in the amount of 1 copy 30 minutes after the experiment. After 1 day, 10 were alive and 10 died. After 2 days, 5 survived and 15 died. After 3 days, 3 were alive, 17 died. By the fourth day they were 100% dead.

VI control group: There was no contact with the alpha-shakti preparation. The flies did not die 30 minutes after the experiment, they did not die even after 1 day, and even after 2 days, after 3 days 1 died, and the rest were alive.

Alpha Shakti 0.01% aqueous emulsion was 30% effective after 30 minutes and 100% after one day. The effect of a 0.006% aqueous emulsion of this drug was 20% after 30

minutes, 95% after a day and 100% after 2 days. The effect of a 0.005% aqueous emulsion of this preparation was 10% after 30 minutes, 70% after 24 hours, 80% after 2 days and 100% after 3 days. The effectiveness of 0.004 and 0.003% aqueous emulsions of Alpha Shakti by day 4 was 100%.

Alpha Shakti has also been tested in the lab to make a 0.01% aqueous emulsion which has given good results in lab experiments. For this, the livestock farm "Navbakhor Charos Bogi" of the Kitab district of the Kashkadarya region was chosen.

When examining 40 heads of cattle in this farm, *L. titillans*, *L. irritans*, *S. calcitrans*, *F. canicularis*, *M. domestica*, *M.d. vicina*, *M. autumnalis* and other ectoparasites and against them, a 0.01% aqueous emulsion of Alpha Shakti (10% EC Mumbai Hindiston HE 19077, May 2019) was prepared, which gave good results in laboratory experiments and was disinfected by spraying using special equipment "Automax" 2-4 liters per head 2 times with an interval of 12 days. As a result, infected cattle were 95 percent free of ectoparasites after 2 treatments.

Conclusions

1. In total, 2946 insect specimens, 16 species belonging to 3 families of Diptera and 7 genera, were seized from livestock farms. Of these, 12 species have been scientifically identified as mechanical carriers of infectious and parasitic diseases.

2. The study showed that 100 percent of farm livestock were infested with synovial and zoophilic insects. When studying their seasonal dynamics, 4.75% were observed in spring, 61.57% in summer, 33.67% in autumn, and the maximum incidence of synovial and zoophilous insects was observed in May, June, July, August and September.

3. Alpha Shakti 0.01% aqueous emulsion has been found to be 90-95% effective when used against synovial and zoophilous flies in the laboratory and in production.

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