

## **Main Species Of Harmful Entomofauna Of Alfalfa In The Conditions Of The Republic Of Karakalpakstan**

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**Abstract:** We have identified 125 species from 29 families, 9 orders of insects. Of the species listed above, the most common and serious pests of alfalfa on the territory of the Republic of Karakalpakstan are: phytonomus, nodulating snout beetles, seed-eating bruchophagus, alfalfa and field bugs, as well as alfalfa aphid and exclamation leafworm.

**Key words:** Alfalfa, entomofauna, phytonomus, phytophages, entomophage, vegetation, harmfulness, seed-eating bruchophagus, bedbugs, buds, flowers, seeds, gnawing leafworm caterpillars.

Alfalfa is a perennial agricultural crop. Due to this and a number of specific features of its development, it is inhabited by many species of harmful and useful (for culture) arthropod animal organisms. Certain species of insects (monophages) are adapted to feeding on alfalfa, oligophages on legumes, as well as polyphages, polytrophic pests. The formation of entomofauna on alfalfa, as on any other crop, is determined primarily by the crop itself, its predecessor, and the surrounding stations. This largely explains the presence of a large number of random species of insects and specialized monophages or oligophages on alfalfa.

We studied the formation of the entomofauna of alfalfa agrobiocenosis in the 1st, 2nd and 3rd years of its cultivation in the same place. It was found that in the first year of alfalfa cultivation, a relatively small number of species (about 70) of phyto- and entomophages are found on it. The number of specialized pests of alfalfa (phytonomus, alfalfa bug, sitons, etc.) on the crops of the first growing season was 2-3 times lower than that of predatory coccinellids and nabius bed bugs.



In subsequent years, the formation of entomocenosis of alfalfa continues and by the third growing season this process stabilizes.



In quantitative terms, plant-eating bugs, nodulating snout beetles and phytonomus are predominated (Table 1.).

On alfalfa of the 2nd year of vegetation, 102 species of insects were identified, of which 54 are phytophages, 48 are entomophages.

Table 1.

Quantitative change in the composition of insects on alfalfa crops

1-3 years of vegetation in the Khojeyli region, the farm "Hatsha Mama" 2018-2020

№ in order	Types of controlled insects	Average number of insects per 100 net mowing, ind. on alfalfa:			HCP <sub>05</sub>
		1 <sup>st</sup> year	2 <sup>nd</sup> year	3 <sup>rd</sup> year	
1.	Fitonomus	12,8	32,8	51,2	5,9
2.	Sitona	21,2	115,2	153,2	10,4

3.	Alfalfa bug	16,0	274,0	287,2	16,1
4.	Field bug	27,2	61,2	72,8	8,6
5.	Coccinellids	39,2	41,2	45,2	6,7
6.	Nabiusbug	32,0	60,8	79,2	6,4
7.	Infection of the larvae of the phytonomus of bathyplecte, %	8,8	15,5	22,2	4,2

A significant increase in the number of alfalfa bugs (17 times compared with crops of the 1st year of vegetation) can be explained by their higher mobility and ability to migrate than phytonomus or nodulating snout beetles, the number of which on crops of the second year of vegetation increased by 2.5 and 3-4 times. Subsequently, on alfalfa of the third and subsequent years of vegetation, slight changes are noted both in the species composition and the number of the main species of harmful and beneficial arthropods.

Due to the relatively short growing season, fewer pests damage forage alfalfa. Often this damage is interrupted by cutting the alfalfa. The same cannot be said for alfalfa intended for seed. Due to the length of the growing season, such alfalfa is attacked by a significantly larger number of pests for a much longer period. Despite its purpose, seed alfalfa can be significantly damaged by phytonomus if it is left from the beginning of the growing season. Conversely, this harm can be canceled if alfalfa is left for seeds after the first cut. Accounts and observations have shown that both cases have their advantages and disadvantages. The advantageous side is that harm from the phytonomus is avoided, but at the same time, due to the postponement of the dates of the phenophases of alfalfa, the harmfulness of plant-eating bugs and the seed-eating bruchophagus is significantly increased. In this regard, our attention was focused on the study of the biological characteristics of development and harmfulness of the main types of pests, as well as the importance of entomophages in suppressing the number of pests.

In total, we identified 125 species from 29 families, 9 orders of insects and one order of ticks trophically associated with alfalfa as the main or additional habitat and food (Table 2.).

The territory of Karakalpakstan, stretched from northwest to southeast, can be subdivided into 3 zones according to the harmfulness and distribution of the main pests of alfalfa.

1. Zone of high harmfulness and distribution. These are the southeastern regions: Turtkul, Amudarya, Beruniy and Ellikkala.

2. Zone of moderate damage and distribution (north-western group of districts: Takhtakupir, Karauzyak, Chimbay, Kegeyli, Nukus, Kanlykuland Shumanay).

3. Zone of low damage and distribution (most northern areas: Muynak and Kungrad).

Alfalfa suffers from pests at all stages of its development. Alfalfa seedlings, especially in the first year of their germination, are severely damaged by nodulating snout beetles. Eight species of them are known in the literature (Polevshchikova, 1962; Adilov, 1995). We managed to identify 4 of them: *Sitona cylindricollis* Fabr., developing two generations a year, and also: *S. humeralis* Steph., *S. crinitus* Hbst. *S. longulus* Gull. - one generation a year. Seedlings can be significantly damaged by gnawing leafworms: - *Agrotis segetum* Den. et Schiff., exclamation -

A. exclamationis L. and wild - A. conspicua Hb. Five types of aphids. Among them, the most active are: alfalfa - Aphis craccivora Koch. and pea – Acyrthosiphon pisum Harr, which also commonly inhabit alfalfa seedlings.

The leaves and tops of alfalfa buds are damaged: leafy alfalfa elephant phytonomus (Phytonomus variabilis Hbst.), Nodulating snout beetles, caradrin - Spodoptera (Laphygma), exugua Hbn., Gamma leafworm (Autographa gamma L.), alfalfa leafworm (Heliothis virescens (dipsaceae) Hutn.), cotton leafworm (H. armigera Hb.) and metalworm (Syngrapha circumflexa G.).

Alfalfa buds, flowers, ovaries and seeds are damaged by the following main species. Plant-eating bugs: alfalfa (Adelphocoris lineolatus Goeze), field bugs (Lygus pratensis L.), L. gemellatus H-S and Camtobrochis punctulatus Fall; seed-eating bruchophagus (Bruchophagus roddi Gyss.), seed-eating tychius (Tychius aureoles Briss), thrips (Thrips tabaci Lind.) and flower kamarik.

Alfalfa roots can be damaged by gnawing leafworm caterpillars, darkling beetle larvae, beetle and nodulating snout beetles.

Of the species listed above, the most common and serious pests of alfalfa in the territory of Karakalpakstan are: phytonomus, nodulating snout beetles, seed-eating bruchophagus, alfalfa and field bugs, as well as alfalfa aphid and exclamation leafworm.

Table 2.

List of harmful and beneficial insect species of alfalfa agrobiocenosis on the territory of the Republic of Karakalpakstan

№ in order	Systematic name of species, families and orders	Russian name	Occurrence *)
<b><i>Insecta Class</i></b>		<b><i>Insects</i></b>	
<b><i>Orthoptera Squad</i></b>		<b><i>Orthoptera</i></b>	
<b><i>I. fam. Tettigoniidae</i></b>		<b><i>Grasshoppers</i></b>	
1.	Tettigonia viri dissima L.,	Green grasshopper	+
2.	Dryllus campestris L.,	Gray grasshopper	+
<b><i>II. fam. Gryllotalpidae</i></b>		<b><i>Mole cricket</i></b>	
3.	Gryllotalpa offricanapolis.,	Eastern Mole cricket	+
4.	Gryllotalpa gryllotalpa l.,	Mole cricket ordinary	++
<b><i>III. fam. Acrididae</i></b>		<b><i>Acrididae</i></b>	

5.	Schingonotus satrapes Sauss	Hermit satrap	+
6.	Dociostaurus kraussi Ing.,	Atbasarka	++
7.	Oxya fuscovittata Marsh.	Turanian rice caelifera	+
8.	Calliptamus turanicus Tarb.	Dry Prus or Turanian	+
9.	Calliptamus italicus L.	Locust Italian or oasis	+++
10.	Calliptamus barbarus (Costa).		
11.	Ramburiella turcomana F.W.	Turkmen caelifera	+
12.	Locusta migratoria migratoria L.	Migratory or Asian locust	+++
13.	Conophyma Jacobsoni Uv.	Conophyma Jacobsoni	+
14.	Conophyma Sokolowi Zub.,	Conophyma Sokolowi	+
15.	Dericorys albidula Serv.,	Great saksaul treehopper	+
16.	Oedaleus decorus (Germ)	Black-striped caelifera	+
<b>IV. fam. Gryllidae</b>		Crickets	
17.	Gryllus melanogryllus desertus Pall.	Steppe cricket	+
18.	Gryllus deconthus L.,	Stem cricket	+
19.	Gryllus campestris L.,	Field cricket	++
<b>Homoptera Squad</b>		<b>Homoptera</b>	
<b>V. fam. Cicadellidae</b>		<b>Cicadas</b>	
20.	Caligypona striateela Fall.,	Dark cicada	+
21.	Cicadidae tibigina L.,	Cicadidae	+
22.	Psammotettix L.,	Rose cicada	+
<b>VI. fam. Aleyrodidae</b>		Aleurodids (whiteflies)	
23.	Bemisia tabaci Genn.	Tobacco or cotton whitefly	+++
24.	Trialeurodes vaporariorum	Greenhouse or	++

	Westw.	conservatory whitefly	
25.	Aleyrodes proletella Wik.,	Cabbage whitefly	+
<b>VII. fam. Aphidinae</b>		<b>Aphids</b>	
26.	Acyrtosiphon pisum Harris	Pea aphid	++
27.	Acyrtosiphon gossypii Mordv.,	Large cotton aphid	+
28.	Aphis gossypii Glov.,	Melon or cotton aphid	+++
29.	Aphis craccivora Koch	Alfalfa or acacia aphid	+++
30.	Aphis fabae Scop.,	Beet aphid	+
<b>Hemiptera Squad</b>		<b>Hemiptera or bugs</b>	
<b>VIII. fam. Miridae</b>		<b>Miridae</b>	
31.	Adelphocoris lineolatus Gz.,	Alfalfa bug	+++
32.	Lygus pratensis L.,	Meadow bug	+++
33.	L. gemellatus H.-S.		
34.	Camtobrochis punctulatus Fall.		
35.	Compylomma verbasci Mey.D	Compiloma bug	+
36.	Deraeocoris punctulatus Fall.	Predatory bug	+
<b>IX. fam. Nabidae</b>			
37.	Nabis palifer Seid.	Bedbug nabis	+
38.	Nabis feriodes Rem.		++
<b>X. fam. Pentatomidae</b>		<b>Pentatomidae</b>	
39.	Aelia acuminata. L.,	Sharp-headed bug	+
40.	Eurydema oleracea L.,	Rape bug	+
41.	Eurydema. ventralis Kol.,	Cabbage bug	+
<b>XI. fam. Anthocoridae</b>		<b>Flower bugs</b>	

42.	Anthocoris hemorum. L.,	Anthocoris bug	++
43.	Orius albidipennis Reut.	Orius bug	+++
44.	Orius niger Wolff.		+++
<b><i>Thysonoptera Squad</i></b>		<b><i>Thrips</i></b>	
<b><i>XII. fam. Phloeothripidae</i></b>			
45.	Hoplothrips tritici kurd.,	Wheat thrips	+
46.	Thrips tabaci Lind.	Tobacco thrip	+++
<b><i>Coleoptera Squad</i></b>		<b><i>Coleoptera or beetles</i></b>	
<b><i>XIII. fam. Carabidae</i></b>		<b><i>Ground beetles</i></b>	
47.	Colosoma sycophunta. L.,	Forest caterpillar hunter	+
48.	C. denticolle Gebl.,	Colosoma denticolle	+
49.	Pterostichus cupreus L.,		
<b><i>XIV. fam. Scarabaidae</i></b>		<b><i>Scarab beetles</i></b>	
50.	Polyphilla tridentata Reitt	Three-toothed chafer	+
51.	Melolontha afflicta Ball.	March chafer	++
52.	Melolontha melolontha L.,	May chafer	+
53.	Polyphylla fullo. L.,	Marble chafer	+
<b><i>XV. fam. Elateridae</i></b>		<b><i>Click beetles</i></b>	
54.	Agriotes obscurus. L.,	Dark click beetle	+
55.	A. nadari Buyss	Rainfed click beetle	++
<b><i>XVI. fam. Coccinellidae</i></b>		<b><i>Coccinellidae or Lady beetles</i></b>	
56.	Coccinella septempunctata.L.,	Seven-spot ladybird	+++
57.	C. undecimpunctata L.,		+++

58.	<i>C. sinuatomarginata</i> Fald.		+
59.	<i>Adalia bipunctata</i> L.		+++
60.	<i>Adonia variegata</i> Goeze.		++
61.	<i>Propylaea quatuor – decimpunctata</i> L.		++
62.	<i>Pullus subvillosus</i> Goeze.		+
63.	<i>Scymnus frontalis</i> F.		+
64.	<i>Bulaea lichatshovi</i> Hum.	19-spot beet ladybird Likhachev	+
<b><i>XVII. fam. Tenebrionidae</i></b>		<b><i>Darkling beetles</i></b>	
65.	<i>Blaps halophila</i> .F.W.,	Steppe slow	+
66.	<i>Opatrum sabulosum</i> L.,	Sandy slow	+
<b><i>XVIII. fam. Buprestidae</i></b>		<b><i>Jewel beetles</i></b>	
67.	<i>Sphenoptera montana</i> B. fak.	Alfalfa jewel beetle	+
<b><i>XIX. fam. Curculionidae</i></b>		<b><i>Snout beetles</i></b>	
68.	<i>Phytonomus variabilis</i> Hbs.	Alfalfa elephant or phytonomus	+++
69.	<i>Sitona humeralis</i> Steph.	Light-faced snout beetle	+
70.	<i>Sitona crinitus</i> Hbst	Gray corymb snout beetle	+
71.	<i>Sitona longulus</i> Gull.	Large root elephant	++
72.	<i>Sitona cylindricollis</i> Fabr.,	Sprouting alfalfa elephant	+++
73.	<i>Tychius aureolus</i> Briss.	Red-haired tychius	++
74.	<i>T. moroistri</i> Beer.	Yellow Tychius	+
<b><i>Neuroptera Squad</i></b>		<b><i>Neuroptera</i></b>	
<b><i>XX. fam. Chrysopidae</i></b>		<b><i>Green lacewings</i></b>	
75.	<i>Chrysopa carnea</i> Steph.,	Common lacewing	+++



76.	Ch. septempunctata Wesm.,	Seven-spotted lacewing	++
77.	Ch. phyllochroma Wesm.		+
78.	Ch. dubitans M.		+
<b><i>Lepidoptera Squad</i></b>		<b><i>Lepidoptera or butterflies</i></b>	
<b><i>XXI. fam. Pyralidae</i></b>		<b><i>Moths</i></b>	
79.	Pyrausta stictcalis L.,	Meadow moth	+
<b><i>XXII. fam. Noctuidae</i></b>		<b><i>Owlet moths</i></b>	
80.	Autographa gamma L.,	Cutworm-gamma	++
81.	Heliothis armigera Hbn.,	Cotton cutworm	+
82.	Agrotis segetum Den. et Schiff	Winter cutworm	+++
83.	A.exclamationis L.,	Exclamation cutworm	+++
84.	A. conspicua Hb.	Wild cutworm	+
85.	Heliothis viriplaca (dipsaceae) Hufn.	Alfalfa cutworm	+
86.	Spodoptera exigua Hbn.	Small ground cutworm or caradrina	+
87.	Syngrapha circumflexa G.	Circumflex cutworm	+
<b><i>Hymenoptera Squad</i></b>		<b><i>Hymenoptera</i></b>	
<b><i>XXIII. fam. Ichneumonidae</i></b>		<b><i>Ichneumon Riders</i></b>	
88.	Bathyleptes (Canidia) exigua Gzav	Bathyleptes	+++
89.	Barylypa humeralis Brauns	Barilipa	+++
90.	Eutanyacra picta Schrank		+
91.	Enicospilus rossicus Kok.		+
92.	E. ramidulus L.		+
93.	Ichneumon sarcitorius L.		+

94.	Hyposoter notatus Grav		+
95.	Ophion luteus L.		+
<b>XXIV. cem. Braconidae</b>			
96.	Apanteles telengai Tobias		+++
97.	A. conqestus Nees		+++
98.	Macrocentrus collaris Spin.		+
99.	Microplitis spectabilis Hal.		++
100.	Rogas dimidiatus Spin.		++
101.	R. pellucens Tel.		+
<b>Subfam. Chalcidoidea</b>		<b>Chalcidoidea</b>	
102.	Bruchophagus roddi Guss.	Alfalfa thickfoot	+++
103.	Tetrastichus bruchophaga Gah.	Chalcidus thickfoot	++
<b>XXV. fam. Aphidiidae</b>		<b>Aphidiids (aphid riders)</b>	
104.	Aphidius ervi Hal.	Aphidius ervi	+++
105.	Praon dorsale Hal.	Aphidius-praon	++
106.	Lysiphlebus fabarum Marah.	Aphidius-lisiflebus	+
<b>XXVI. fam. Trichoqrammatidae</b>		<b>Trichoqrammatidae</b>	
107.	Trichogramma evanescens Westw.	Trichogrammaevanescens	+++
108.	Tr. pintoi Voedebe.	Tr.pint	++
109.	Tr. sp.		+
<b>XXVII. fam. Formicidae</b>		<b>Ants</b>	
110.	Messor structor Latr.	Groundant	+++
111.	Solenopsis fugax L.,	Carnivorousant	++
112.	Formica subpilosa Ruzs.		++
113.	Formica cunicularia Latr.		++
<b>subfam. Apoidea</b>		<b>Bees</b>	

114.	род. Andrena F.		++
115.	род. Halictus Latr.		++
116.	род. Osmia Latr.		+
117.	род. Melitturga Latr.		+
<b><i>Diptera Squad</i></b>		<b><i>Diptera or flies</i></b>	
<b><i>XXVIII. fam. Tachinidae</i></b>		<b><i>Tahinas</i></b>	
118.	Gonia cilipeda Rond.	Tahinagonia	+++
119.	Peletieria niqricornis Meig.	Tahinapeletheria	+
120.	Tachina rohdendorfi Zim.	Tahina Rodendorova	++
121.	Spallanzania hebes Fall.	Tahinaspalanzania	+
<b><i>XXIX. fam. Syrphidae</i></b>		<b><i>Sirphids</i></b>	
122.	Syrphus corollae F.	Sirphid king	++
123.	S. ribesil L.		+
124.	S. Vitripennis Mg.		+
125.	Scaeva pyrastril L.		+
<b><i>Arachnida Class</i></b>		<b><i>Spidermites</i></b>	
<b><i>Acari Squad</i></b>			
126.	Tetranychus urticae Koch.	Commonspidermite	++

\*) \*\*\*) - the species is usually numerous,

\*\*\*) - occurs often,

\*) - is rare, few in number.

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