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THE ROLE OF SUGAR BEET PESTS AND ENTOMOPHAGES IN SUGAR BEET AGROCENOSES IN AZERBAIJAN

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РОЛЬ ВРЕДИТЕЛЕЙ САХАРНОЙ СВЕКЛЫ И ЭНТОМОФАГОВ В АГРОЦЕНОЗАХ САХАРНОЙ СВЕКЛЫ В АЗЕРБАЙДЖАНЕ

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Abstract. The studies have been taken in condition of laboratory and in suburbs in 2014–2018. The laboratory experiences have been carried out in the automatic-controlled specific thermostats and in room condition at the Applied Zoology Center of the Institute of Zoology of Azerbaijan NAS. The suburb practices were held in the specific stationary fields, in the agriculture of Imishli and Aghdash in which the sugar beets were planted. As a result of a comprehensive study carried out on stationary fields and adjacent territories, it was determined that 22 species, 18 genera, 4 families from the order Coleoptera, 5 species, 5 genera, 3 families from the order Hemiptera, 8 species, 7 genera, 3 families from the order Orthoptera, 1 species, 1 genus, 1 family from the order Diptera, 12 species, 8 genera, 4 families from the order Lepidoptera live in the beetroot agrocenosis at different times of the year and are subject to subsistence farming. Of the species found in agrocenoses, 33 are periodically observed and do not cause economic damage to farms, 11 are permanent and can cause serious damage during massive growth. Six species (*Bothynoderes punctiventris, Chaetocnema concinna, Ch. breviuscula, Aphis fabae, Gryllotalpa gryllotalpa, Agrotis segetum*) were permanent residents of the agrocenosis. Each year, they seriously reduce productivity. It is known that there are a part of pests having a place to diverse groups which harm plants and decrease performance in sugar beet agrocenosis. Entomophages regulate the number of pests and prevent their massive growth in sugar beet agrocenosis. Entomophages such as predator ground beetles, rove beetles, spiders and predator ticks, which are spread in sugar beet agrocenosis, are polyphages, therefore during the vegetation of plant they are nourished by pests and have important economic importance for the agrocenosis. As a result, almost all activities of the polyphage entomophages in the agrocenosis are practically valuable. Thus, they are closely involved in regulating the number of insect pests in the sugar beet fields and minimizing their harmful activities.

Аннотация. Исследования были проведены на стационарных участках и в лабораторных условиях в 2014–2018 гг. Лабораторные опыты проводились в автоматических термостатах и в комнатных условиях в Центре прикладной зоологии Института зоологии НАН Азербайджана. Полевые исследования проводились в сельских хозяйствах Имишлинского и Агдашского районов, в которых высаживалась сахарная свекла. Согласно комплексным исследованиям, проведенным на стационарных полях и в близлежащих районах, было выявлено из отряда Coleoptera 4 семейства, 18 родов и 22 вида; из отряда Hemiptera — 3 семейства, 5 родов, 5 видов; из отряда Orthoptera — 3 семейства, 8 видов,

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7 родов; из отряда Diptera — 1 семейство, 1 род, 1 вид; из отряда Lepidoptera — 4 семейства, 8 родов, 12 видов. Все эти виды обитают в свекольном агроценозе в разное время года и наносят значительный ущерб хозяйствам. Из видов, встречающихся в агроценозах, 33 периодически наблюдаются и не наносят ущерба хозяйствам, 11 являются постоянными и при массовом распространении могут нанести серьезный ущерб. Шесть видов (*Bothynoderes punctiventris, Chaetocnema concinna, Ch. breviuscula, Aphis fabae, Gryllotalpa gryllotalpa, Agrotis segetum*) были постоянными жителями агроценоза. Каждый год они серьезно снижают продуктивность. Известно, что в агроценозе сахарной свеклы часть вредителей имеет место в различных группах, которые наносят вред растениям и снижают урожайность. Энтомофаги регулируют численность вредителей и предотвращают их массовый рост в агроценозах сахарной свеклы. Энтомофаги, такие как хищные жужелицы, бродячие жуки, пауки и хищные клещи, которые распространены в агроценозах сахарной свеклы, являются полифагами, поэтому во время вегетации растений они питаются вредителями и имеют важное экономическое значение для агроценоза. В итоге, практически вся активность полифагов-энтомофагов в агроценозе имеет практическую ценность. Таким образом, они активно участвуют в регулировании численности насекомых-вредителей на полях сахарной свеклы и минимизации их вредной деятельности.

Keywords: sugar beet, pests, agrocenosis, Coleoptera, Hemiptera, Diptera, Orthoptera, Lepidoptera.

Ключевые слова: сахарная свекла, вредители, агроценоз, Coleoptera, Hemiptera, Diptera, Orthoptera, Lepidoptera.

Introduction

Since the first half of XX century the sugar beet pests and the preventive measures against them have been investigated thorough in the various areas of Former Soviet Union. The investigations of Y. V. Zverozomb-Zubovskiy take an important role in this field. The researcher investigated the insect fauna that harms the sugar beet comprehensively in Ukraine, enrolled the species of pests, and prepared the preventive measures for the dangerous species [12].

Y. M. Vasilyev investigated the pests spreading over the agroecosystem of sugar beet in different areas of Russia and the woodworms harming seriously that plant in Ukraine [11].

Y. N. Brunner gave extensive information about brassy flea beetles spreading over the sugar beet fields in Kirghizstan and harming mainly this plant and about the preventive measures against these pests [10].

A. A. Migulin and G. Y. Osmolovskiy indicated that the sugar beet was damaged by 300 species of pests during the period of vegetation and among the species, 130 of them included in Beetles, 60 of them included in Lepidoptera and 40–50 of them included in aphids [14].

Later S. M. Pospelov, N. G. Berim, Y. D. Vasilyeva and M. P. Persov have indicated that total 400 species of insects and others damage sugar beet and among them 40 species are more dangerous pests [16].

The fauna of harmful and useful insects of sugar beet plantations was studied in Van Centre, Ercish, Gevash, Gurpinar and Muradiye districts of Turkey in 1999–2000. As a result of investigation, 29 species of useful insects and 31 species of harmful insects belonging to different families were observed [1].

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In Bulgaria, Marinova Z., Raikov S., Arnaudov V. and Tanova K. learned the fauna of harmful insects of sugar beet plantations in 2012–2013. The researchers calculated the harm degree of 14 species of pests belonging to 6 families damaged the sugar beet. 17 species were observed in Kazakhstan as the sugar beet and its seeds pests [7].

Harry Lange V. showed that seeds, leaves and root of sugar beet "suffered from" more than 150 pests along with bacterial diseases, viral diseases such as decay and wriggle in California [3].

Hatem Fouad indicated the pests such as *Pegomyia mixta* Villeneuve, *Cassida vittata* Villiers and *Myzus persicae* species turned down the productivity of sugar beet in Egypt [2].

Mahsa Saghfi and Oruj Valizadegan showed *Spodoptera exigua* (Hübner). Species as a main sugar beet pest in Iran [9].

J. A. Hidayatov (1964) discovered that 9 species of beetles damaged sugar beet in Former Soviet Union. 8 species spread in Azerbaijan [5].

Although the fauna of sugar beet pest is not learned thorough in Azerbaijan, there is short information about it in different literatures [6, 8].

The mass of roots of sugar beet continues to grow in all periods of vegetation until the new harvest. The growth of leaf mass stops after it reaches to a certain extent. Usually, this case occurs near the end of the vegetation, so in early September [4]. At the beginning of vegetation, the mass of leaves prevails the mass of root fruit, but at the end of vegetation the opposite occurs (Table 1).

Table 1

VEGETATION PERIOD OF SUGAR BEET

Decade	*Month*																									
	March			*April*			*May*			*June*			*July*			*August*			*September*			*October*			*November*	
	(5 °C)			*(12 °C)*			*(15 °C)*			*(28 °C)*			*(30 °C)*			*(35 °C)*			*(20 °C)*			*(18 °C)*			*(15 °C)*	
	I	*II*	*III*	*I*	*II*	*III*	*I*	*II*	*III*	*I*	*II*	*III*	*I*	*II*	*III*	*I*	*II*	*III*	*I*	*II*	*III*	*I*	*II*	*III*	*I*	
Vegetation period of sugar beet	Seed			Spro-ut			Leaf						Root fruit						Maximal rate of sugar			Harvest				

For this reason, sugar beet is damaged by pests in all stages of vegetation. Every year, relating to the improvement of the sugar beet harvest in Azerbaijan, it is very important to study the components of the species of sugar beet pests in this agroecosystem. Thus, the study of pests in sugar beet plants is very important for the detection of agricultural species led to serious loss of harvest and spread in area and preventive measures for them.

Just for this reason, in 2014–2018, the expeditions were carried out periodically and real materials were collected along with the route experiences in farms of Imishli and Aghdash region of Republic where the sugar beet was planted, as well as, in individual plant areas of people from the beginning of March.

Material and Methods

The studies have been taken in condition of laboratory and in suburbs in 2014–2018. The laboratory experiences have been carried out in the automatic-controlled specific thermostats and in room condition at the Applied Zoology Center of the Institute of Zoology of Azerbaijan NAS. The suburb practices were held in the specific stationary fields, in the agriculture of Imishli and Aghdash in which the sugar beets were planted.

Specific entomological nets were used in the collection of fast-moving insects. For this purpose, specific areas were selected and insects were quickly collected by means of mowing over

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all plants in diagonal areas, were placed into test tube and into the specific jars from there, and were carried to laboratory for next experiences and appointment.

In order to define the species-component of low moving insects, the plants were overviewed in diagonal areas; the encountered insects were collected into specific vessels and were directed for the further operations. During the collection of the insects, the encountered eggs, larvae and caterpillars were fed in laboratory condition up to the stage of imago and species relations were defined.

Bioecological characteristics, phenological calendars, damage degrees etc. characteristics of overspread and agricultural pests were investigated in both stationary areas and in laboratory condition. The damage of plants is calculated as following:

$$P=\frac{n*100}{N},$$

here, P — percentage of damage of plants in area; N — total number of reviewed samples; n — number of damaged plants; 100 — converting rate into percentage. Some methods received in entomology were used in the studies [13, 15, 17, 18].

Results and discussion

In the route experiments, species damaged the plant in the areas of sugar beet, were studied, species-component of the pests spread in agroecosystem and serious agricultural species were defined. 48 species of pests belonging to 5 order, 15 families and 42 genera were discovered in agroecosystem during the experiment and studies carried in agriculture (Table 2).

Table 2

SPECIES-COMPONENT OF PESTS SPREAD IN BEET AGROECOSYSTEM

s/s	*Order*	*Family*	*Genus*	*Species*	*Role and importance*
I	Coleoptera (Beetle)	Scarabaeidae (Scarab beetle)	*Oxythyrea* Mulsant, 1842	*O. funesta* (Poda, 1761) (Flower scarab)	+
			Pentodon Hope,1837	*P. idiota* (Herbst, 1789) (Hard-back beetle)	+
			Holochelus Reitter, 1889	*H. aequinoctialis* (Herbst, 1790) (April beetle)	+ +
			Epicometis Burmeister, 1842	*E. hirta* (Poda, 1761) (Green rose chafer)	+
			Cetonia Fabricius, 1775	*C. aurata* (Linnaeus, 1758) (Rose chafer)	+
			Polyphylla Harris, 1841	*P. olivieri* (Castelnau, 1840) (White chafer)	+
			Amphimallon Berthold, 1827	*A. solstitialis* (Linnaeus, 1758) (June chafer)	+ +
			Rhizotrogus Latreille, 1825	*Rh. aestivus* (Olivier, 1789) (Summer chafer)	+
			Melolontha Fabricius, 1775	*M. melolontha* (Linnaeus, 1758) (May chafer)	+ +
			Anisoplia Fischer Von Waldheim, 1824	*A. austriaca* Herbst,1783 (Wheat grain beetle)	+
				A. segetum (Herbst, 1783)	+

s/s	*Order*	*Family*	*Genus*	*Species*	*Role and importance*
				(Grain beetle)	
		Elateridae (Click-beetles)	*Agriotes* Eschscholtz, 1829	*A. sputator* (Linnaeus, 1758) (Cropping click-beetle)	+ +
				A. lineatus (Linnaeus, 1767) (Lined click beetle)	+
			Athous Eschscholtz, 1829	*A. hirtus* (Herbst, 1784) (Chaetiferous click-beetle)	+
				A. niger (Linnaeus, 1758) (Black click-beetle)	+
		Curculionidae (Weevil beetles)	*Tanymecus* Germar, 1817	*T. palliatus* (Fabricius, 1787) (Gray beet weevil)	+ +
			Psalidium Illiger, 1802	*P. maxillosum* Schoenherr, 1826 (Black beet weevil)	+
			Bothynoderes C. J. Schoenherr, 1823	*B. punctiventris* Schoenherr, 1834 (Common beet weevil)	+ + +
		Chrysomelidae (Leaf beetles)	*Chaetocnema* Stephens, 1831	*Ch. concinna* (Marsham, 1802) (Brassy flea beetle)	+ + +
				Ch. breviuscula (Faldermann, 1837) (South beetle)	+ + +
			Phyllotreta Chevrolat, 1836	*Ph. atra* (Fabricius, 1775) (Black beetle)	+
			Cassida Linnaeus, 1758	*C. cuprea* Fabricius, 1787 (Root beetle)	+
II	Hemiptera (True bugs)	Miridae (Jumping tree bugs)	*Polymerus* Hahn, 1831	*P. cognatus* (Fieber, 1858) (Rove beetle)	+
			Orthotylus Fieber, 1858	*O. flavosparsus* (C. Sahlberg, 1841) (Plant bug)	+
		Piesmatidae (Ash grey leaf bug)	*Piesma* Lepelitier & Serville, 1825	*P. quadratum* (Fieber, 1844) (Beet bug)	+
		Aphididae (Aphid)	*Aphis* Linnaeus, 1758	*A. fabae* Scopoli, 1763 (Black bean aphid)	+ + +
			Pemphigus Hartig, 1839	*P. fuscicornis* (Koch, 1857) (Sugar beet aphid)	+
III	Orthoptera (Orthopterans)	Gryllotalpidae (Mole cricket)	*Gryllotalpa* Latreille, 1802	*G. gryllotalpa* (Linnaeus, 1758) (European mole cricket)	+ + +
			Gryllus Linnaeus, 1758	*Gryllus desertus* Pallas, 1771 (Field cricket)	+
		Tettigoniidae (Bushcrickets)	*Tettigonia* Linnaeus, 1758	*T. caudata* (Charpentier, 1845) (Caudates grasshopper)	+
				T. viridissima L, 1758 (Great Green Bush-cricket)	+
		Acrididae (Grasshop-pers)	*Heteracris* Walker, 1870	*Heteracris pterosticha* (Fischer von Waldheim, 1833) (Grasshopper)	+ +

s/s	*Order*	*Family*	*Genus*	*Species*	*Role and importance*
			Calliptamus Serville, 1831	*C. italicus* (Linnaeus, 1758) (Italian grasshopper)	+
			Locusta Linnaeus, 1758	*L. migratoria* (Linnaeus, 1758) (Migratory locust)	+
			Dociostaurus Fieber, 1853	*D. maroccanus* (Thunberg, 1815) (Moroccan Locust)	+
IV	Diptera (Fly)	Anthomyiidae (Leaf-mining insects)	*Pegomya* Robineau-Desvoidy, 1830	*P. betae* Curtis, 1847 (Parasitic fly)	+
V	Lepidoptera (Butterflies)	Noctuidae (Cutworms)	*Phytometra* Haworth, 1809	*Ph. gamma* (Linnaeus, 1758) 1758 (Gamma moth)	+
			Chloridea Westwood, 1841	*Ch. armigera* (Hübner, 1808) (Cotton moth)	+ +
			Lacanobia Billberg, 1820	*L. oleracea* (Linnaeus, 1758) (Bright-line Brown-eye)	+
			Mamestra Ochsenheimer, 1816	*M. brassicae* (Linnaeus, 1758) (Cabbage Moth)	+ +
			Agrotis Ochsenheimer, 1816	*A. exclamationis* (Linnaeus, 1758) (Heart and Dart)	+
				A. segetum (Denis & Schiffermüller, 1775) (Turnip Moth)	+ + +
			Xestia Hübner, 1818	*X. c-nigrum* (Linnaeus, 1758) (Cutworm moth)	+
			Noctua Linnaeus, 1758	*N. pronuba* (Linnaeus, 1758) (European yellow underwing moth)	+
		Pieridae (Sulphurs)	*Pieris* Schrank, 1801	*P. brassicae* (Linnaeus, 1758*)* (Large Cabbage White)	+ +
		Crambidae (Grass moth)	*Syllepte* Hübner, 1823	*Syllepte derogata* Fabricius, 1775 (Cotton-leaf moth)	+ +
		Gelechiidae	*Scrobipalpa* Janse, 1951	*S. ocellatella* (Boyd, 1858) (Beet Moth)	+ +

Note: + — separately encountered species. ++ — common species. +++ — the most common and serious pest species.

According to the comprehensive studies taken in the stationary fields and nearby areas, it has been defined that 22 species of 18 genera of 4 families of Coleoptera (Beetle) order, 5 genera of 5 species of 3 families of Hemiptera order (or true bugs), 8 genus of 7 genera of 3 species of Orthoptera order, 1 species of 1 genus of 1 family of Diptera order, 12 species of 11 genera of 4 families of Lepidoptera order harm the agriculture in some extent settling in agroecosystem of sugar beet in different periods.

As indicated in the table, there are pests belonging to beetles (Coleoptera), hemipterans (Hemiptera), orthopterans (Orthoptera), dipterans (Diptera), lepidopterans (Lepidoptera) order in agroecosystem of sugar beet. Among these species, *Oxythyrea funesta*, *Pentodon idiota*, *Epicometis*

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hirta, *Cetonia aurata*, *Polyphylla olivieri*, *Rhizotrogus aestivus*, *Anisoplia austriaca* and *Anisoplia segetum* species of Scarabaeidae family are rare, but their larvae gnaw the sprouting roots and decelerate their growth or cease this process completely.

Holochelus aequinoctialis (April chafer), *Amphimallon solstitialis* (June chafer) and *Melolontha melolontha* (May chafer) species of this family are observed almost in sugar beet agroecosystem and along with their larvae, the imagoes harm various organs of plants seriously in the mass growth. Among the members of Click-beetles (Elateridae) family such as *Agriotes lineatus* (Lined click beetle), *Athous hirtus* (chaetiferous click-beetles) and *Athous niger* (black click-beetles) species are rare, but *Agriotes sputator* (cropping click-beetles) species are seen in both sugar beet plants, also in suburb areas, in other areas, and these species harm the plant in all phases from the seeding process to the root formation.

Bothynoderes punctiventris (common beet weevil) species belonging to Weevil beetles (Curculionidae) family are one of the most common pests in the cropping areas and damage the plants considerably. The second member of this family — *Tanymecus palliatus* (gray beet weevil) species are observed in agroecosystem and they harm mainly the roots of plant. It should be mentioned that a number of this pest are not more than common beet weevil. Also, there is black beet weevil (*Psalidium maxillosum*) in the areas very rarely.

Beginning from the first leafing period of beet, leaf-beetles, especially brassy flea beetle (*Chaetocnema concinna*), south beetle (*Ch. breviuscula*), black beetle (*Phyllotreta atra*) and root beetles (*Cassida cuprea*) begin to operate actively in agroecosystem. Among these species, common beetle and south beetle overspread more, and they devastate the leaves of the plant, as a result, the process of photosynthesis is disrupted, and the plant is destroyed.

There are members of three families of hemipterans (Hemiptera) order in the beet plants. The rove beetle (*P. cognatus*) belonging to *Polymerus* species of Miridae family, plant bug (*O. flavosparsus) of Orthotylus* species and beet bug (*P. quadratum*) belonging to *Piesma* species of Piesmatidae family are rare in agroecosystem, but they are seen over the plants. One of the known species is black bean aphid (*A. fabae* Scopoli, 1763) belonging to Aphididae (aphid) family, so it acts in areas from the first sprouts of the plant until time the leaves become hard and harms the plants significantly. At the same time, sugar beet aphids (*Pemphigus fuscicornis* Koch.) can be observed in the areas rarely.

2 species of (*Gryllotalpa gryllotalpa* — European mole cricket and *Gryllus desertus* — field cricket) of two genera (*Gryllotalpa* and *Gryllus*) of mole crickets (Gryllotalpidae) family of orthopteran (Orthoptera) order, two species (caudates grasshopper and Great Green Bush-cricket) of Tettigonia genus belonging to bushcrickets (Tettigoniidae) family, 4 species (*H. pterosticha* — grasshopper; *C. italicus* — Italian grasshopper; *L. migratoria* — migratory locust; *D. maroccanus* — Moroccan Locust) of four genera (*Heteracris*; *Calliptamus*; *Locusta* and *Dociostaurus*) belonging to the grasshoppers are observed in the fresh and juicy period of leaves especially in May. Among these species, meadow grasshoppers prevail mostly in agroecosystem. However, other species are observed as casual pests indicated in those areas and not damaged the agriculture seriously. If there is a food shortage in the suburb areas, the damage done by these species can be excessive.

In case of flies (Diptera) order, it should be mentioned that one species of *Pegomya* genus belonging to only one family of this order — parasitic fly (*P. betae*) is observed. Although its spreading over agroecosystem is not mentioned, there are its larvae and pups in the roots rarely.

The members of butterflies (Lepidoptera) order were the most common pests after the beetles in the area and had large numbers for their species. Thus, 12 species of 11 genera belonging to this

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order are activated in different times in agroecosystem, leading to serious damage to both overland and underground organs of the plants. Turnip Moth (*A. segetum*) belonging to *Agrotis* genus of the order takes a special place for its damage degree among these species. Thus, the caterpillars of this species become active from the seed germination and early germination process and devastate the underground organs of the plant.

Syllepte derogata (cotton leaf moths) type belonging to Syllepte genus of Crambidae (grass moths) family were recorded in both cotton fields and in sugar beet plants for the first time in Azerbaijan. These species were polyphage, fed with different plants. Its bio ecological specifications are not investigated widely, but the fact that plants are growing in the field, means that the leaves of plants will turn into a dangerous pest in the future.

Large Cabbage White (*P. brassicae*) and Beet Moth (*S. ocellatella*) were the common species and can damage the agriculture in some extent.

Thus, according to the results of the studies, it was defined that 48 species belonging to 42 genera, 15 families, 5 order spread in sugar beet agroecosystem.

31 of these species are seen separately and do not lead to economic harm in farms.

11 species are species that are constantly encountered in agroecosystem and can cause significant damage during mass growth.

6 species are permanent participants of agroecosystem and harm seriously each year.

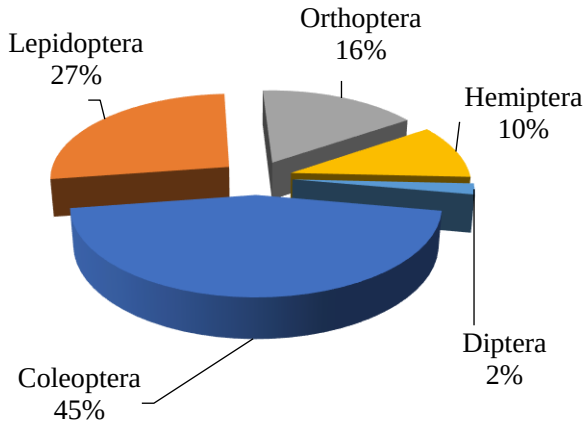

Figure 1. Proportion of groups according to the number of species

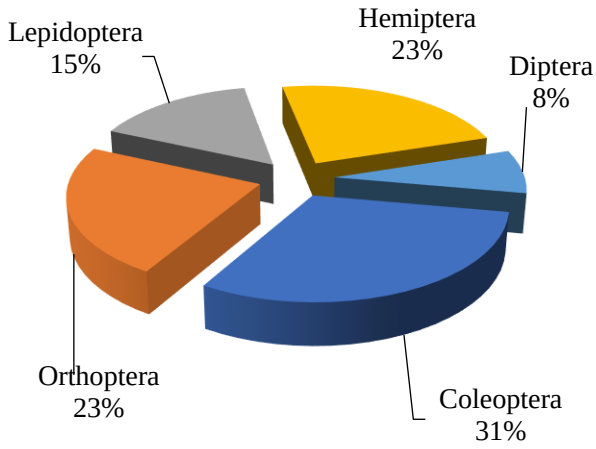

Figure 2. Proportion of groups according to seasons

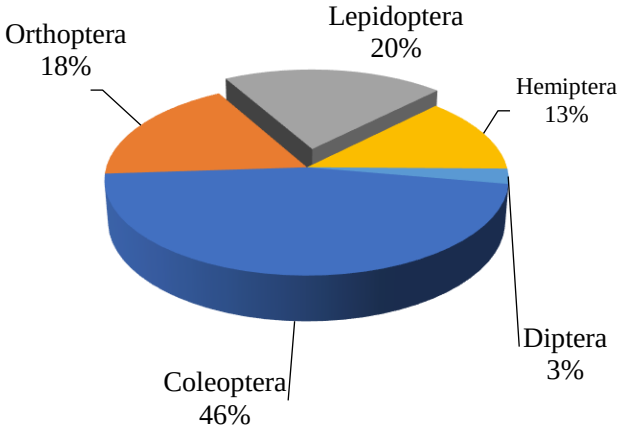

Figure 3. Number of groups according to species

It is known that there are a lot of pests belonging to different groups which harm plants and

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reduce productivity in sugar beet agrocenosis. At the same time, there are other living organisms which regulate the number of these pests and prevent their massive growth in sugar beet agrocenosis. The study of these species is, theoretically and practically, very useful. In spring these entomophages are mainly fed by pest insects living in the soil, but in summer, various life stages of insects (larvae, pupae, etc.), which live in the soil according to their biology, are main food.

Complex entomophages play a major role in reducing the number of turnip moth (*Agrotis segetum*) which is the main pest of sugar beet. Thus, 35–45% of the pest population per year is destroyed by entomophages (Ichneumonidae and Braconidae — 5–10%, Trichogramma — 0–15%, tachinid flies — 5–7%, predator beetles — 18–20%).

Diadegma fenestrale (Holmgren, 1860) parasite is closely involved in the regulation of the number of beet moth (*Scrobipalpa ocellatella*) which is the second dangerous pest of sugar beet. Thus, every year 55–60% of beet moth's caterpillars is destroyed by this parasite. This parasite plays an important role not only in the regulation of the number of sugar moths, but also in the regulation of other pests' caterpillars.

Aphidius ervi Haliday, 1834 and *Diaeretiella rapae* (McIntosh, 1855) have a great role in the reduction of the number of black bean aphid (*Aphis fabae* Scopoli, 1763) which is the serious leaf pest in the sugar beet agrocenosis. Thus, in spring and autumn these parasites infest 70–80% of aphids (sometimes 90–95%) and reduce their damage almost to zero.

Orius niger (Wolff, 1811) is one of the effective predators and spread in all of sugar beet agrocenosis. This species is nourished with first larval instars and eggs of aphids and thrips. Sometimes the number of these predators reaches to 25–30 individuals per plant and it shows that *Orius niger* is an effective entomophage. Predators such as *Calosoma auropunctatum* (Herbst, 1784) (Coleoptera: Carabidae), *Harpalus distinguendus* (Duftschmid, 1812) (Coleoptera: Carabidae), *H. affinis* (Schrank, 1781) (Coleoptera: Carabidae) and *Pterostichus crenuliger* Chaudoir, 1876 (Coleoptera: Carabidae) play an important role in reduction of number of larvae of click beetles, snout beetles and owlet moths by destroying them.

In the sugar agrocenosis *Coccinella septempunctata* Linnaeus, 1758, *Adalia bipunctata* (Linnaeus, 1758), and *Hippodamia variegata* (Goeze, 1777), belonging to family Coccinellidae, are sometimes found massively. These predators are also closely involved in the destruction of aphids, thrips, owlet moths and small caterpillars.

It should be noted that the dynamics of entomophages in sugar beet agrocenosis changes depending on the species diversity, spreading of insect pests and the vegetation period of the plant.

Thus, according to the results of the studies, it was defined that 48 species belonging to 42 genera, 15 families, 5 order spread in sugar beet agroecosystem.

31 of these species are seen separately and do not lead to economic harm in farms.

11 species are species that are constantly encountered in agroecosystem and can cause significant damage during mass growth. 6 species are permanent participants of agroecosystem and harm seriously each year. Almost all activities of the polyphage entomophages in the agrocenosis are practically valuable. Thus, they are closely involved in regulating the number of insect pests in the sugar beet fields and minimizing their harmful activities.

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