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AGRICULTURAL IMPORTANCE OF Scarabaeidae (Coleoptera) DISTRIBUTED IN SUGAR BEET AGROECOSYSTEMS

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СЕЛЬСКОХОЗЯЙСТВЕННОЕ ЗНАЧЕНИЕ ПЛАСТИНЧАТОУСЫХ (Scarabaeidae, Coleoptera), РАСПРОСТРАНЕННЫХ В АГРОЭКОСИСТЕМАХ С САХАРНОЙ СВЕКЛОЙ

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Abstract. In 2013–2018, the spread of 11 species (*Anisoplia austriaca* (Herbst, 1783), *A. segetum* (Herbst, 1783) = *Chaetopteroplia segetum* (Herbst, 1783), *Amphimallon solstitiale* (L., 1758), *Cetonia aurata* (L., 1758), *Epicometis hirta* (Poda, 1761) = *Tropinota hirta* (Poda, 1761), *Melolontha melolontha* (L., 1758), *Miltotrogus aequinoctialis* (Herbst, 1790), *Oxythyrea funesta* (Poda, 1761), *Pentodon idiota* (Herbst, 1789), *Polyphylla olivieri* (Castelnau, 1840), *Rhizotrogus aestivus* (Olivier, 1789)) belonging to 10 genera (*Amphimallon* Latreille, 1825, *Anisoplia* Schönherr, 1817, *Cetonia* Fabricius, 1775, *Melolontha* Fabricius, 1775, *Miltotrogus* Reitter, 1902, *Oxythyrea* Mulsant, 1842, *Pentodon* Hope, 1837, *Polyphylla* Harris, 1841, *Rhizotrogus* Latreille, 1825, *Tropinota* Mulsant, 1842) of Scarabs (Scarabaeidae) family of Beetles group has been defined in the stationery fields during the studies in the agroecosystems of Aghdash and Imishli which are the main districts of Azerbaijan planting the sugar beet. During the research's, detailed information has been collected on the spread, growth dynamics and the damaging effect of 11 species in the agroecosystem. It has been defined that although there is no mass increase and sharp damage between the species during the research years, the monitoring about the number and growth of them should be regularly carried out. However, each species can cause serious damage to the farms during mass growth. Therefore, it is essential to carry out the monitoring constantly in the agroecosystem. The results obtained from the research can be used during the preventive measures for the pests.

Аннотация. Изучение распространения 11 видов (*Anisoplia austriaca* (Herbst, 1783), *A. segetum* (Herbst, 1783) = *Chaetopteroplia segetum* (Herbst, 1783), *Amphimallon solstitiale* (L., 1758), *Cetonia aurata* (L., 1758), *Epicometis hirta* (Poda, 1761) = *Tropinota hirta* (Poda, 1761), *Melolontha melolontha* (L., 1758), *Miltotrogus aequinoctialis* (Herbst, 1790), *Oxythyrea funesta* (Poda, 1761), *Pentodon idiota* (Herbst, 1789), *Polyphylla olivieri* (Castelnau, 1840), *Rhizotrogus aestivus* (Olivier, 1789)), относящихся к 10 родам (*Amphimallon* Latreille, 1825, *Anisoplia* Schönherr, 1817, *Cetonia* Fabricius, 1775, *Melolontha* Fabricius, 1775, *Miltotrogus* Reitter, 1902, *Oxythyrea* Mulsant, 1842, *Pentodon* Hope, 1837, *Polyphylla* Harris, 1841, *Rhizotrogus* Latreille, 1825, *Tropinota* Mulsant, 1842) из семейства Пластинчатоусые (Scarabaeidae) проводилось в 2013–2018 гг. Исследовались агроэкосистемы Агдаша и Имишли, которые являются основными районами Азербайджана по выращиванию сахарной свеклы. Была собрана подробная информация о распространении, динамике роста и повреждающем воздействии

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11 видов на агроэкосистему. Было определено, что, несмотря на отсутствие массового увеличения и конкуренции между видами в течение периода исследований, мониторинг количества и роста их следует проводить регулярно. Каждый вид может нанести серьезный ущерб хозяйствам во время массового роста. Поэтому очень важно постоянно проводить мониторинг агроэкосистемы. Результаты исследований могут быть использованы для профилактики вредителей.

Keywords: sugar beet, Scarabaeidae, Coleoptera, *Oxythyrea funesta*, ecosystem.

Ключевые слова: сахарная свекла, Scarabaeidae, Coleoptera, *Oxythyrea funesta*, экосистема.

Azerbaijan is one of the largest sugar beet consumers, but the demand for sugar has been met by other countries. Considering this, in recent years, different farms and individual households have been created for planting the sugar beet that is the main raw material for the production of sugar in our republic and obtaining big harvest.

To have high productivity in these farms, the special action plan should be provided and carried out. The detection of insects harmed the plant, the damage rate, biological and ecological characters, agricultural importance of them and the preparation of effective preventive measures for them should be considered as the most essential issue in the plan of such complex measures.

For this purpose, the important issues such as growing an ecologically clean product with minimal use of chemicals that cause the environmental pollutions and damages accumulated in human and animal bodies should be given more attention.

The species of beetles or chafers (Coleoptera) group are one of the pests caused serious damage to the gardens, fields, as well as, the sugar beet plants in our republic every year. In our country, more researchers have conducted major studies by research of the beetles, and have investigated separate families, their species, systematics, zoo-geographical analysis, etc. [4].

It should be noted that the spread, arithmetic dynamics, biological and phenological characteristics of the species of this group in the agro-ecosystem of sugar beet are not almost investigated. Probably, the reason for this is lack of attention to the cultivation and harvest of this plant in our country in previous years.

After the independence of our country, the demand on the production of sugar, the operation of sugar factory built in Imishli district led to further expand the cultivation of this plant as a raw material. As we know, various factors affect the productivity of the sugar beet as every farming plant. One of these major factors is the protection of plant from the pests. Specially, for this reason, the study of beetles having impact on the productivity of the plant on agro-ecosystem, clarification of the economically important species, investigation of growth and arithmetic dynamics and damage rate of them are more important.

Material and Methods of Study

The studies have been conducted in outdoor and laboratory conditions in 2013–2018. The laboratory experiences were taken in the laboratory of the Institute of Zoology of Azerbaijan NAS for Ecology and Physiology of Insects and the specific automatic-controlled thermostats of Applied Zoological Center and the room conditions. The outdoor experiences were performed in the specific stationery and individual fields growing the sugar beet in Imishli and Aghdash districts.

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The certain methods accepted in entomology were used in the collection of materials, in performing the experiments and observations, as well as, in determining the taxonomic classification of species [11, 15, 19, 23].

PRK lamps were used to study the flight dynamics of nocturnal insects. The arithmetic operation of obtained results was based on G. F. Lakin and N. A. Plokhinskii methods [16, 18].

Results and Their Analysis

According to the literature, more than 30 thousand species of Scarabs are known in the world today [1–6, 10, 11, 17, 22]. This family is divided into 2 groups because of feeding with dung and plants. Phytophagous insects damage the farms feeding with seeds, buds, roots, and other organs of plants. According to Samadov, only 44 of 132 species of scarabs spread on our republic have been indicated as the pests of various plants [21].

White-spotted rose beetle (*Oxythyrea funesta* (Poda, 1761)).

It spreads in Central and Southern Europe, Center of Russia and Southern Europe, western territories of Kazakhstan, Crimea, Caucasus, North Africa, etc. [14]. A. A. Salmanov has defined that also these species are the intermediate host of parasites [20]. According to V. A. Alekperova, white-spotted rose beetle is one of the main pests spread in the north-eastern region of Azerbaijan and causes mass devastation of vines (mainly annual) [8].

N. N. Ismailzade has noted that the white-spotted rose beetles (*Oxythyrea funesta* (Poda, 1761)) are widespread in Ganja-Qazakh region and damage the plants in the sunflower fields [1].

Regarding the studies of V. S. Narimanova, the white-spotted rose beetles (*Oxythyrea funesta* P.) damage the plants feeding with the flowers of trees in the gardens and wild flowers in the meadows, in Zagatala, Quba, Absheron districts of our Republic. Also, their larvae lead to destroy the plants by gnawing their roots [3–5].

Until our studies, the development and activity of these species have not been followed in the sugar beet agro-ecosystem. Our studies in the stationery fields have indicated that the beetles finish the hibernation at the end of April and early May. In the second half of May, the female individuals launch to fertilize and lay eggs. Hatching of larvae from the eggs continues from the end of May to early June. The larvae feed and become pupas in the fields until the end of September. From October, the beetles emerging from the pupas go to the winter rest at a depth of 8–15 cm of soil (Table 1).

As indicated from phenogram, the larvae of white-spotted rose beetles inhabit for a long term in agro-ecosystem and cause some damages to the plants from the end of May to the end of September.

However, the beetles feed with the flowers of trees. In the studies, we have observed repeatedly that beetles feed with flowers of various fruit trees. It should be mentioned that these species are not observed in agro-ecosystem. It is observed only in the individual farms of Imishli district (0,1–0,3 larvae in $1m^2$) and the observations have been conducted on those individuals. The larvae of these species can make mass damage for sugar beet farms during the mass increase.

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Table 1

PHENOLOGICAL CALENDAR OF WHITE-SPOTTED ROSE BEETLE
(*Oxythyrea funesta*) (Imishli, 2016–2017)

Months	*March*			*April*			*May*			*June*			*July*			*August*			*September*			*October*			*November –February*
Decade	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	
Imago	(i)	(i)	(i)	(i)	(i)	i	i	i	i	i	i														
Egg								y	y	y	y	y	y												
Larvae										s	s	s	s	s	s	s	s	s	s	s	s				
Pupa																p	p	p	p	p	p	p			
Imago																					i	i	i	(i)	

Note: (i) — hibernated beetles; p — pupa; y — egg; i — active beetles; s — larvae

Hard back beetle (*Pentodon idiota* (Herbst, 1789))

In the studies, these species are almost observed in the different cropping fields such as plantations and gardens.

Both imagoes and larvae of these species are encountered in the stationery fields at the end of March. After the winter rest in late March, the beetles fertilize in early May and start to lay an egg in the second ten-day of May. Embryonic development leads in 16–18 days. The first larvae are seen at the end of May. The first year of the larvae is long, lasting until early October. The second year of larvae is observed in October. Those larvae continue to grow and go to hibernation until the spring of the next year. In the spring of the following year, in the second year of the larval growth, the larvae enter the third age stage and sustain to develop until mid-September. The larvae begin to become pupas in the second half of August. The pupal stage continues up to two weeks. The beetles exited from the pupas go to hibernation in 10–15 cm depth of soil without fertilization. The total development of these species continues up to two years.

As indicated in the phenological calendar, both the larvae and beetles of these species can be seen in the hibernation areas. The flight of the beetles in the sugar beet agro-ecosystem coincide in May-June. The larvae damages both the root system and fruit roots during the entire vegetation stage of the plants at different ages. It should be noted that these species are observed more in the gardens, vineyards, and fruit-gardens rather than the sugar beet farms. Therefore, considering these species as the main pest of the sugar beet cannot be right. It is related to their lifestyle, especially, to their widespread trophic connection. They prefer the perennial bushes and trees.

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Table 2.

PHENOLOGICAL CALENDAR OF THE HARD BACK BEETLE
(Imishli, 2014–2015)

months	March			April			May			June			July			August			September			October			November -February
Decad	I	I	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	
2014	(i)	I	i	I	i	i	i	iy	I y s	i y s	i y s	i y s	y s	s	s	s	s	s	s	s	s	s	s	(s)	HIBERNATION
2015	(s)	ss	s s	ss s	s	s	s	s	s	s	s	s	s	s	s	s	s p	s p	s p	s p i	s p i	s p i	s p (i)	s p (i)	

Note: (i) — hibernated beetles; y — egg; s — larvae; p — pupa; i — active beetles; (s) — hibernated larvae

April chafer (*Miltotrogus aequinoctialis* (Herbst, 1790)).

Referring to N. H. Samadov, these species are observed in the southern slopes of the Greater Caucasus, in the sunflower fields of Shamakhi, Oghuz and Zagatala districts of Azerbaijan [6].

It should be indicated that according to the research of author, it is possible to observe both the imago and larval stage in the spring.

In the stationery fields, the flight of *Miltotrogus aequinoctialis* beetles have been observed from early April to mid-May. The beetles are seen in the different areas- cropping fields, gardens, and orchards. The female individuals lay 20–28 eggs into soil after the fertilization. Embryonic development last until 3–4 weeks. The larvae start to emerge at the end of May and at the beginning of June. They gnaw the roots of different plants, as well as the sugar beet in some cm depth of soil. In the first year of development, they shed skin and pass to the second age stage. The larvae being in the second age stage and some imagoes usually go to hibernation. In the following year's spring, along with the imagoes in the second age stage, the larvae become active and begin to feed. The nutrition last until the end of July. The pupation period starts from the beginning of August. The pupation period lasts from the first half of September. 12–15% of the individuals going to the pupation hibernate in this period, the rest hibernate at the stage of young beetles emerging from pupas. As indicated, these pests go to hibernation at the different stages, so various stages of them can also be observed in the spring. During the studies on the individuals collected from the sugar beet fields, it has been defined that the entire development of one generation of these species conclude in 24–26 months. Thus, the embryonic development lasts from 28 days, the larval development lasts from 20–22 months, pupation period lasts from 18–22 days, imago period lasts from 60–65 days.

The mass spread of these species is not observed in the stationery fields during the research. During the excavations in the fields, especially in the uncultivated parts of the fields, some larvae and imagoes are discovered, and they are used in the experiments. It is the usual species for the agro-ecosystem, undoubtedly if the mass development occurs, it can harm the farms seriously. Thus, the information on the arithmetic dynamics of it in the fields should be regularly collected and controlled.

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Blossom feeder (*Epicometis hirta* (Poda, 1761) = *Tropinota hirta* (Poda, 1761))

This pest belonging to the Epicometis species of the Scarabs family becomes widespread in France, Italy, Hungary, Greece, Ukraine, the southern Russia, Kazakhstan, Turkmenistan, Suria, Iran, Caucasus, etc., and makes immense damage to the farms during mass growth [7].

Referring to N. Samadov, these species can be even observed at height 2150 m above sea level (Nakhchivan AR, Bichanak). It is noted that these species are serious pests and widespread in the Greater Caucasus region of Azerbaijan [14].

During research in Aghdash district, it is noted that the beetles of this pest feed on the wild plants (dandelion, white poplar, buttercup, etc.) at the beginning of March.

It should be indicated that the flight of the beetles can coincide from the beginning of August.

The beetles waking from the hibernation start to fertilize and lay eggs in the second half of March after the nutrition. When the weather is hot, sometimes the larvae of the pests can be explored in the fields on 8–10 April. Both the imago and larvae harm the plants. Therefore, the beetles firstly gnaw and destroy the buds, flowers, and leaf-buds, then continue their activities by passing to the fruits and bushes.

However, the larvae of the pests gnaw and destroy the roots of the sprouts and underground parts. The mass flight of the beetles in the nature is observed in the second half of May and at the beginning of June.

The larval development is followed from the second ten-day of April to the end of July. At the end of July, most of the pupal individuals go to hibernation at that stage. Although the less of the individuals emerge from pupa, they inhabit those cocoons until the spring of following year.

It should be noticed that the beetles usually lay their eggs on the open, uncultivated fields with a lot of grass and bushes, so they don’t have food problem when the larvae emerge.

Even if these species are found in the agro-ecosystem individually during the studies, any serious damage to the sugar beet is not indicated.

Rose chafer (*Cetonia aurata* (L., 1758))

These species belonging to the Scarabs family spread in Sheki-Zagatala, Shamakhi-Gobustan, Quba-Khachmaz, Ganja-Dahskesan, Nagorno Karabakh, Lachin-Kalabajar and Shirvan regions of Azerbaijan [10].

Several researchers noted that these species are the serious pest of the various cropping plants and they inhabit the different agro-ecosystem [13].

However, any information on its activity in the sugar beet agro-ecosystem is not given. The first study of growth dynamics and damage rate of these species was made by us in the individual farms in Aghdash district. However, no information on its activity in the beet agrocenosis has been provided.

Regarding the observations, these species go to hibernation at 2 stages: both at the stage of adult larvae and at the stage of adult beetles. As the hibernation is at 2 stages, different adult larvae of them, as well as the adult beetles can be observed in the fields with trees and bushes and in the nature during the entire vegetation period.

The individuals going to the hibernation in the imago period become active from the second half of March. They fertilize after feeding with the flower and nectars of the different wild plants.

The female individuals lay their eggs on the fields with more humus at the end of April, at the beginning of May. The process of laying eggs continues until the end of June. The first larvae exit from the eggs at the end of May. The growth of the larvae proceeds in 30–60 days. In July, the single pupas are observed. The pupation period lasts mainly until mid-September. Although the

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beetles exit from the pupas at the end of August and in September, they go to hibernation without reproducing until the spring of the following year.

During the studies, this pest is often observed in the uncultivated fields, but they are found rarely in the sugar beet agro-ecosystem, mass growth and damage rate are not noted.

Polyphylla olivieri (chafer) (*Polyphylla olivieri* (Castelnau, 1840))

There is information on the observation and the damage rate of this pest in the different regions of our country in the works of several authors [10].

According to N. Ismailzade, the flight of the beetles of these species lasts from second half of May to mid-August in the sunflower fields of Ganja-Qazakh region depending on the climate. The mass flights are observed from the second half of June to the end of July. The female adults lay their eggs in depth of 10-15 cm of soil. The embryonic development continues in 3–4 weeks [1].

During the research, the beetles of these species are seen individually in the first ten-day of May (8.05.17) in the agro-ecosystem. The larvae are also observed at the end of July, at the beginning of July. The entire development of one generation ends in 2,5–3,0 years. Considering that they coincide rarely in the sugar beet fields, they inhabit mainly in the sandbanks and the development of the generation lasts several years, it can be realized that these species is not dangerous for the agro-ecosystem. Certainly, if mass growth doesn't occur.

Summer chafer (*Amphimallon solstitiale* (L., 1758))

The depth in soil is about 14–15 cm for the larvae. In this depth, sometimes 1–2 larvae can be seen in 1 m^2 of field. The number of the larvae are mostly observed in the fields with bushes and trees and in biotopes next to them. It is related to the abundance of food resources as a polyphagous species.

Their hibernation happens mainly at the larval stage. In early spring, the larvae begin to feed and activate in the second half of March, 10–15 days after feeding, they turn into pupas in the first half of April. The flying of first beetles from the pupas happen in the first ten-day of May and lasts from the second ten-day of June. The mass flight of the beetles occurs in late May and early June.

The upper wings (elytron) of the beetles exiting newly from the pupas are fragile, soft and whitish, and 4–5 hours later these wings become darker and turn into their color.

In early June, the first eggs of the beetles can be seen in the agro-ecosystem. The eggs were laid individually in 5-8 cm depth of soil. The development of the eggs ends in 14–18 days. The first larvae begin to emerge from 15-16 June, and this process lasts from the second half of July. The larvae shed their skin, feed in the second age stage and go to hibernation at the end of August and in early September. In the spring of following year, the larvae wake from the hibernation and begin to feed. In June, the larvae shed their skin again and go to hibernation from late September, at the third age stage. The larvae waking from hibernation feed actively the next year and enter to the pupation period from the beginning of April. The pupation occurs in 8–15 cm depth of soil and lasts until 3–4 weeks. The beetles emerging from the pupas can live only for 5–6 weeks (Table 3).

As indicated in the phenological calendar, the total growth of one generation of summer chafer concludes in two years. The larvae in the III and II age stage go to hibernation. As the growth period of the larvae is long (20–22 months), if mass growth of these pest occurs, it can cause serious damage to the farms in all periods of vegetation.

Brown colored beetle (*Rhizotrogus aestivus* (Olivier, 1789))

It is mesophilic species; the flight of the beetles is observed from early April to mid-June. The total growth of one generation is about 2,0–2,5 years. The eggs laid from the spring of 2014 turn into beetles in the autumn of 2016.

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The hatched larvae in the first year turn into pupas at the end of the second year. The beetles hatching from pupas go to hibernation until the spring of the following year in that area.

The beetles mainly fly after the sunset. They hide under any substrate or soil in the daytime. They can be mainly observed over the flowers in the fruit gardens.

They lay their eggs on the fields with full of humus and next to the roots of trees and bushes. The growth of the larvae lasts until 2 years. They are seen rarely in the sugar beet fields. Therefore, it is not considered as the serious pest. In case they don't have food resources during mass growth, they can cause serious damage to the sugar beet fields.

Table 3

PHENOLOGICAL CALENDAR OF SUMMER CHAFER
(Aghdash 2014–2016)

Months	*March*			*April*			*May*			*June*			*July*			*August*			*September*			*October*			*November -February*
Decades	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	HIBERNATION
2014	(s)	(s)	S	s p	s p	p	p i	p i	i y	i y	i y s	y s	s	s	s	s	s	s	s	(s)	(s)	(s)	(s)	(s)	II age larvae
2015	(s)	s	S	s	S	s	s	s	s	s	s	s	s	s	s	s	s	s	s	(s)	(s)	(s)	(s)	(s)	III age larvae
2016	(s)	s	S	s p	s p	p	p i	i	i	i	i														HIBERNATION

Note: (i) — hibernated beetles; y — egg; s — larvae; p — pupa; i — active beetles; (s) — hibernated larvae

Cockchafer (*Melolontha melolontha* (L., 1758))

This pest is widespread in the areas of Southern and Central European countries [6–12].

It is mesophilic species, it inhabits in plains, foothills and mountainous forests. It refers to the areas with humidity and full of trees.

In the research areas, the first flight of the beetles is observed in the second ten-day of April (15–17.IV). The flight of the beetles continues until the first half of July. The mass flight is observed in the second and third ten-day of May. The number of the beetles decrease from the second half of June. In July, the individuals are observed separately. It should be mentioned that these observed species are almost female. The beetles become active at night, after the sunset. They go to hibernation at the large older larval stage. In early spring, the larvae activated from the beginning of March turn into pupas after the nutrition. The pupation period lasts until mid-April. 5–7 days after hatching from pupas, the beetle's pair and start to lay eggs. The first eggs are observed in the third ten-day of April. The embryonic development lasts in 5–7 days. The hatched larvae shed their skin once and feed until the end of autumn and go to hibernation at the second age stage

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until the spring of the following year. After the winter rest, the larvae continue their growth in the vegetation period and go to hibernation again at the second older (III year) larvae stage. Thus, it is possible to see the larvae of this pest in the agro-ecosystem for two years. During the research, both the beetles and the larval stage of this pest are observed in the agro-ecosystem and around it, in the fields with abundance of bushes and trees. Probably, if mass growth occurs, it can cause damage to the agro-ecosystems.

Cereal chafer (*Anisoplia austriaca* (Herbst, 1783)).

It is widespread in Germany, Austria, Bulgaria, Czech Republic, Croatia, Northern part of Iran, Switzerland, Kazakhstan, Lithuania, Hungary, Macedonia, Moldavia, Russia, Slovakia, Turkey, former Yugoslavia, Greece, Ukraine and in Ganja-Qazakh region of Azerbaijan [8]. It belongs to the group of polyphagous pests. The adult beetles become more active in the daytime, they hide under the stones of soil and plant residues. It is hot-tolerant species. The development of the generation ends in two years. During the research, the adult individuals of the species are observed from the beginning of first ten-day of May. In this period, they feed with wheat, timothy, wild barley, weeds, etc. The mass flight of the imagoes is observed from the end of May to the second ten-day of June. The paired female individuals lay eggs from the second ten-day of May. The eggs are laid into 8–15 cm depth, in soft and intermediate moist soil partly and immethodically. After laying eggs, they come to the surface and feed, then continue to lay eggs. About 15–20 days later, the larvae hatched from the eggs. The larvae inhabit 5–20 cm depth of soil and periodically feed on the top of soil. The larvae feed with the plant residues on soil and tiny roots of the different types of plants in the first year of the development, but they feed with the roots of the cereals and sugar beet in the second year of the development. The larval stage lasts about 20–22 months. The larvae pass to the pupation period in 10–15 cm depth of soil in April. This stage lasts 2-3 weeks depending on the temperature. It is indicated as contingent species in the agro-ecosystem. In the research years, mass growth and the serious damages are not recorded.

Cereal chafer (*Anisoplia segetum* (Herbst, 1783) = *Chaetopteroplia segetum* (Herbst, 1783)).

It is widespread in Albania, Germany, Austria, Belarus, Belgium, Bulgaria, Russia, Croatia, Czech Republic, Turkey, France, Greece, Hungary, Moldova, Poland, Slovakia, Slovenia, Switzerland, Nederland, Yugoslavia and Ukraine [6–12, 22, 23]. It is observed in Absheron, Aran regions and Lankaran district, Azerbaijan [8]. It is polyphagous species. It harms the various cultivated and wild plants belonging to the cereal's family, the sunflower, the autumn wheat and sugar beet. The growth is ended in one year. It lays eggs on soil. The hatched larvae inhabit the soil and feed with the sugar beet along with other plants. In the research years, mass growth is not recorded.

As it is indicated, among the species in the agro-ecosystem, both the serious pests and usual species are found. However, each species can cause serious damage to the farms during mass growth. Therefore, it is essential to carry out the monitoring constantly in the agro-ecosystem. The results obtained from the research can be used during the preventive measures for the pests.

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