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Eurygaster Integriceps Puton The Importance Of Biocontrol Agents In Limiting The Number Of Populations

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Abstract: In the study in the grain fields in the conditions of the Tashkent oasis Eurygaster integriceps Put. its natural neighbors - eggs and imago parasites, in limiting the number of populations, studied the importance of entomopathogenic fungi. In the conditions of Tashkent oasis in Eurygaster integriceps Put. 3 types of parasitic phase flies: Phasia subcoleoptrata (Linnaeus, 1767), Ectophasia crassipennis (Fabricius, 1794) and Helomiya lateralis Meig. prevalence and their biological efficacy were determined. Eurygaster integriceps the species composition of the egg parasites was studied and data were obtained that they were 100% harmful to hawthorn eggs by mid-May.

Keywords: Eurygaster integriceps Put., entomophages, endoparasite, bioagent, pathogenicity, biological Efficiency, phase flies, egg-eating parasites, entomopathogenic fungi.

Introduction. In the process of growing grain in the world, various pests are found, especially in grain crops Eurygaster integriceps Put. causing great damage to productivity Eurygaster integriceps Put. 90-100% of the crop was destroyed.

Sunn Pest (Eurygaster integriceps) In Central Asia it causes much greater damage by sucking the sap of wheat and barley stalks and ears; in which winter wheat is particularly severely damaged [3, 22].

Eurygaster integriceps several studies have been conducted on the study of phase flies from natural entomophages, Eurygaster integriceps has been found to cause serious damage to the composition of its population by damaging its imagos [2, 17, 19, 20].

Also Eurygaster integriceps Put. egg-eating parasites has been reported to have high biological Efficiency [2, 7, 17, 21]. egg-eating parasites Trissolcus grandis (Thomson, 1860) and Telenomus chloropus (Thomson, 1861) species Eurygaster integriceps parasitism in eggs has been reported in different countries [14, 16].

In irrigated arable lands and mountainous areas Eurygaster integriceps Put. with egg-eating parasites degree of damage 70% [8], 80% [4, 11, 13, 15, 16] and up to 90% [9].

In Eurygaster integriceps entomopathogenic fungi Bauveria, Spicaria, Fusarium, Penicillum and a type belonging to other generations is recorded [5]. Including, in Eurygaster integriceps Beauveria

bassiana (Bals.) Vuill. the pathogenicity of the fungus has been elucidated in the work of a number of scientists [1, 12, 18].

Materials and methods.

Eurygaster integriceps Put. In order to study entomopathogenic fungi, its eggs and imago parasites, research was conducted in 2017-2021 in several regions of the Tashkent oasis.

For this Eurygaster integriceps Put. in wintering areas, the pest is common in wheat fields of farms Eurygaster integriceps materials were collected at different stages of development. The collected materials were studied in the laboratory. Eurygaster integriceps Put. The work on determining the species composition of imago and egg-eating parasites was carried out mainly on G.A.Viktorov [2] Including, Eurygaster integriceps Put. on the separation of these species in the identification of species of phase flies and egg-eating parasites Eurygaster integriceps endoparasite detection table was used [2].

Eurygaster integriceps Put. eggs with egg-eating parasites it is not possible to visually determine exactly which type of parasite is infected. To determine the species composition of these parasites, the eggs they infected were collected, collected at the time the parasites flew imago, and the drug was prepared and studied under binoculars. Thus, the taxa of the species were studied by determining the specificity of their mustache joints and the number of hairs located on them, the specificity of the head, chest, abdomen. Biology of Eurygaster integriceps Put., research on ecology according to G.A.Viktorov [2], isolation of entomopathogenic fungi, their propagation in the laboratory and microscopic study by A.A.Evlakhova [6], work on the identification of fungal species by A.A. Evlakhova [6] and E.Z.Koval [10] was carried out.

Eurygaster integriceps Put. from grain fields and for the study of parasitic entomophagous and Eurygaster integriceps biological materials were collected from wintering grounds. The obtained materials were studied in the laboratory of the Institute of Zoology of the Academy of Sciences of the Republic of Uzbekistan.

Results.

Eurygaster integriceps Put. the species composition of phase flies, which are parasites of the imagination, was studied in the conditions of the Tashkent oasis in Eurygaster integriceps Put. 3 types of parasitic phase flies: Phasia subcoleoptrata Linnaeus, 1767, Ectophasia crassipennis (Fabricius, 1794) and Helomiya lateralis Meig. spread. The systematic status of these species is as follows:

Class Insects - Insecta

Category Bivalves - Diptera

Family Taxina flies - Tachinidae

Small family Faziins - Phasiinae

I. Generation Phasia

1. Phasia subcoleoptrata (Linnaeus, 1767)

II. Generation Ectophasia

III. Generation Helomyia

3. Helomyia lateralis Meig.

For the first time, the distribution, bioecological features and parasite-host relationships of these species in the Tashkent region were studied in detail.

1. Phasia subcoleoptrata (Linnaeus, 1767)

Location: Ortachirchik, Akhangaron, Piskent districts of Tashkent region.

Meeting date: During the study, 2017-2021 was held from 19 April to 25 May.

Features: Regularly occurring species.

Average amount of damage: 2,1-2,4%.

Separate morphological features of the image: The size of the fly is 5-7 mm. The body is yellow-gray in the form of a dark coating. The upper transverse vascular lines of the wing, R_5 (wing vascular cell) longer than the branch. m (medial) the curvature of the vessel is angular (Fig. 1).

External signs of the egg: The egg is long - oval in shape, measuring 0.7 x 0.15 mm. Flies to lay eggs Eurygaster integriceps Injuring the scleritis of the abdominal part, thereby directing the egg Eurygaster integriceps the body puts it in the abdominal cavity.

A **B**

Figure 1. Phasia subcoleoptrata (Linnaeus, 1767) fly mushroom (A) and imago (B) (orig.)

Bioecology: Gray phase phase moss imago in grain fields during April and May 2017-2021 Eurygaster integriceps encountered as an imago parasite. This phase phase fly only matured and, in turn, had a physiologically valuable development. Eurygaster integriceps puts individuals in the body.

The larvae that hatch from the eggs have reached their developmental stage during the gibbernage period Eurygaster integriceps on the inside of the body.

Phasia subcoleoptrata the fly reproduces twice a season in grain agrobiocenosis and overwinters in the larval stage. The summer generation of this parasite is a new generation of flies that fly out of the fungus Eurygaster integriceps corresponds to a period of mass feeding.

A gray phase fly relative to other phase flies Eurygaster integriceps relatively less harmful to the summer generation. The new generation Eurygaster integriceps having gone through developmental stages by damaging their imagos Phasia subcoleoptrata the larvae emerge from the body of the host, enter the diapause in a mushroom-like state in the soil, overwinter, and fly out in early spring. Its opaque phase lasts longer than the opaque phase of other phases. In early spring, this species flies much earlier than other species. Phasia subcoleoptrata (Linnaeus, 1767) phase flies under natural conditions Helomiya lateralis Meig. relatively late to the phase, i.e. on average 6-7 days later it forms a fungus. Gumbagi Helomiya lateralis Meig. the phase mosquito is larger than the fungus, the characteristics characteristic of the fungal morphology are common to all 3 species.

2. Ectophasia crassipennis (Fabricius, 1794)

Location: Ortachirchik, Akhangaron, Pskent districts of Tashkent region.

Meeting date: During the study, 2017-2021 met from April 05 to June 05.

Features: Regularly occurring species.

Average damage rate: 3.9-4.2%.

Individual morphological features of the image: Size 6-12 mm. The head is light, the forehead is reddish-yellow with a ribbon. The base of the wings is yellow-red. The abdomen is yellow, with a long transverse band in the middle forming a black color (Fig. 2).

External signs of ovulation: Shape elongated, without oval shape. Size 0.8-0.9 mm. He lays his eggs under a shield of hatred.

A **B**

Figure 2. Phasia crassipennis mosquito net (A)
and imago (B) (orig.)

Bioecology: Phasia crassipennis was found in Tashkent region in Ortachirchik, Akhangaron, Pskent districts. This type of phase has been developing in Uzbekistan for two generations. This species, like other phase species, infects only in the imago state of the Sun Pest. His second generation flies Eurygaster integriceps the new generation imago begins to fly during the period of intensive feeding and damages it.

Eurygaster integriceps Put. the two-year-old developing in the abdomen enter a state of diapause and overwinter inside the host's body. Eurygaster integriceps The females of the larvae during the development of phase flies in the body Eurygaster integriceps in the ovary, causing the eggs to stop developing. Not sexually complete Eurygaster integriceps Put. female individuals become completely infertile during damage under the influence of phase flies.

3. Helomyia lateralis Meig.

Location: Ortachirchik, Akhangaron, Pskent districts of Tashkent region.

Meeting date: During the study, 2017-2021 met from April 05 to June 05.

Features: Regularly occurring species.

Average damage rate: 1.8-2.1%.

Specific morphological features of the image: Variable in appearance and size. Body size is 4.5-8.0 mm. The female's body is glossy black. The wings are discolored, yellow-based, glossy (Fig. 3). Males have relatively white, yellow spots on the sides of the abdomen.

External signs of the egg: Size 0.2 mm. The eggs, unlike other phase mosquito eggs, have a rod rod with a handle. Pests lay their eggs on the front shoulder area of the body.

A **B**

Figure 4.3. Helomiya lateralis Meig. mosquito net (A)
and imago (B) (orig.)

Bioecology: The parasitic larvae that hatch from the egg enter the body through a thin layer of chitin in the host's body, during which time most of the larvae die during movement in the host's body. The parasitic mosquito overwintered Eurygaster integriceps imagosi was found to be in a larval state in the body. The larvae are at different stages of development Eurygaster integriceps develops in the abdomen and is nourished by its hemolymph fluid. Larvae that develop in research are common Eurygaster integriceps from the tip of the abdomen of the body, in some cases from the part of the breast which is attached to the abdomen, and soon turned into a mushroom. Damaged Eurygaster integriceps imagosi parasite larvae are completely killed in all cases after tearing its body.

In the conditions of Tashkent oasis Eurygaster integriceps in the body Helomiya lateralis Meig. the fungal rotation of the phase fly begins in the first ten days of April and lasts until the tenth day of June. Helomiya lateralis Meig. the dome of the phase fly Phasia subcoleoptrata (Linnaeus, 1767) the phase fly is small and brown in color relative to the dome, the anterior part is blunt, the posterior side is relatively elongated, and has two brown bulges. The fungal period of this phase fly lasts 16-18 days. When the flying phase flies were treated with a solution of honey and sugar, they were found to live an average of 9 days.

Helomiya lateralis The mosquito lives from the first ten days of April to the third ten days of May and lays its first eggs Eurygaster integriceps begins to put on the body in the first ten days of April.

The mass flight of all types of phase flies occurred in late April and early May. The flight of phase flies from the fungi takes place after an average of 10-12 days, and this naturally occurred in late April.

Identified phase mosquito species Eurygaster integriceps as a parasite can be considered as important as a bioagent in managing their pest population numbers. In the Tashkent region, phase flies Eurygaster integriceps the total infestation rate of imago was found to be 7.8–8.6%. In Eurygaster integriceps in terms of parasitism Ectophasia crassipennis (Fabricius, 1794) - the natural biological efficiency of the phase mosquito was the highest, i.e., 3.9-4.2%. Influenced by the parasitic activity of the natural population of the dark phase mosquito Eurygaster integriceps while 1.8-2.1% of imagoes were killed, while the natural biological damage efficiency of gray phase mosquitoes was 2.1-2.4% (Fig. 4).

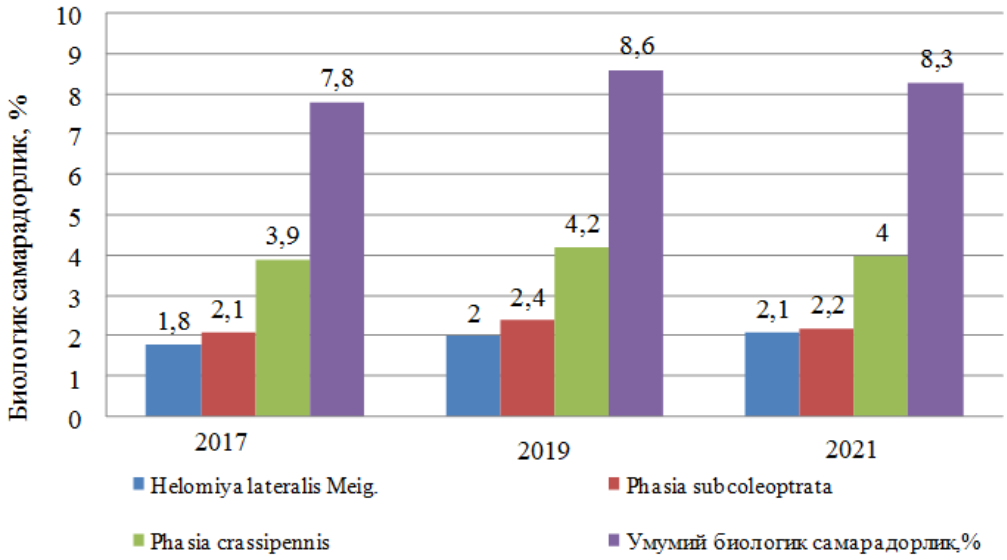

Figure 4. Tashkent region Eurygaster integriceps information on the contamination of the imagos with phase flies

In the scientific literature Eurygaster integriceps 4 species of phase flies have been reported as parasites of imago [2]. Throughout our research Clotiomyia helluo It was found that the fly is not found in the Tashkent region.

Under natural conditions Eurygaster integriceps its as a biotic factor limiting the size of the population Trissolcus spp, Telenomus spp. The importance of ovarian parasites such as is known from the data cited in scientific sources. Trisssolcus grandis (Thomson, 1860) and Telenomus chloropus (Thomson, 1861) the prevalence of parasitic species has been recorded in many countries [1, 2, 11].

As a result of the research, data were collected on the importance of telenomus as a parasitic ovary in the conditions of the Tashkent oasis. When the ovarian parasites have a stable air temperature of 17ºC, Eurygaster integriceps Cases of parasite infestation of eggs have been reported. Eurygaster integriceps as a result of the constant occurrence of imagos during the vegetation period of the plant and the duration of the egg-laying period, favorable conditions are created for the development of oviparous parasites that parasitize its eggs.

As a result of identification of the collected samples, the most widespread and practically important species in the Tashkent region Scelioninae of the younger family Telenomus and Trissolcus found to belong to generations. Their taxonomic status is as follows.

Class Insects - Insecta

Curtain winged Category - Hymenoptera

Big family Platygastroidea

Family Scelionidae

Generation Trissolcus.

It belonged to this generation T. flavipes, T. maori, T. grandis, T.oenone, T. simony, T. basalis, T. pseudoturesis, T. scutelaris such species are known to be common in nature. From them T. simony Mayr, 1879., T. grandis Thomson, 1860. Species in Central Asia Eurygaster integriceps The spread of eggs as a parasite has been cited in scientific sources [2].

Trissolcus grandis (Thomson, 1860)

Location: Ortachirchik, Akhangaron, Piskent districts of Tashkent region.

Meeting date: During the study, 2017 - 2021 from 20 April to 5 June.

Features: Regularly occurring species.

The ovipositor protrudes from the top of the abdomen, the body covering is not metallic shiny (Scelionidae). The posterior part of the thorax is clearly divided into two parapsidal grooves (Trissolcus). The thigh of the leg is completely or partially darkened of the hind leg [2].

Trissolcus simoni (Mayr, 1879)

Location: Ortachirchik, Akhangaron, Piskent districts of Tashkent region.

Meeting date: During the study, 2017-2019 from April 20 to June 05.

Features: Regularly occurring species.

Specific morphological features of the image: The ovary protrudes from the top of the abdomen, the body covering is not metallic luster .. The back of the breast is clearly divided into two parapsidal pits (Trissolcus). The temples are swollen, in females the base of the mustache is thin, the back of the breast is transversely curved between the parapsidal fossa, and when enlarged it looks like a third parapsidal fossa [2].

Generation Telenomus.

There are 25 species of this genus in the world [165].

1. **Telenomus sokolovi (Mayr, 1940)**

2. Location: Ortachirchik, Akhangaron, Pskent districts of Tashkent region.

Meeting date: During the study, 2017 - 2021 from 20 April to 5 June.

Features: Regularly occurring species.

The ovary protrudes from the top of the abdomen, the body covering is not metallic luster. The posterior part of the thorax is not separated by a parapsidal fossa (Telenomus). The forehead is smooth and shiny, the eyes are covered with hairs, the body is compact, the abdomen is without the first tergiti sublateral tumor [2].

In the course of the experiments, it belonged to two generations Trissolcus grandis (Thomson, 1860), Trissolcus simony (Mayr, 1879), Telenomus sokolovi (Mayr, 1940) types Eurygaster integriceps egg parasites were found to be dominant species.

Further research Eurygaster integriceps The study of ovarian parasites (because their bioecology is very close and similar) was carried out according to generally accepted methods [2] and Eurygaster integriceps collected data of theoretical and practical significance on the total contamination of eggs with telenomines.

In the second ten days of May 2017 in Ortachirchik, Ahangaron, Pskent districts of Tashkent region in the grain fields Eurygaster integriceps eggs with egg-eating parasites damage 86,4-91,2 % found to be. Eurygaster integriceps eggs with egg-eating parasites damage In order to study the consistent damage during the season, the research started from the period of Sunn Pests migration (06.04) and continued until the harvest of the grain (15.06). The experiments were conducted for 40 days, from April 15 to May 25.

In the laboratory Eurygaster integriceps the collected eggs were left in the field for a week to be contaminated in the field and then brought to laboratory conditions and their degree of contamination was determined. As it turned out, it was left in the field Eurygaster integriceps the damage rate of eggs on April 20 was 5.1%. On April 25 and 30, the proportion of infected eggs was 11.4 and 13.5%, respectively. The figure was 37.8% on the fifth day of the first decade of May and 75.8% on the ninth day.

As can be seen from the data provided, Eurygaster integriceps The rate of contamination of eggs with ovarian parasites has been steadily increasing since the beginning of the experiment - April 20, and for a period of one month, ie by May 19, was 98.5%. The parasitic activity of oviparous parasites was quite high, and by the end of the experiment, the flow rate was always 100% on the day of calculation (Fig. 5).

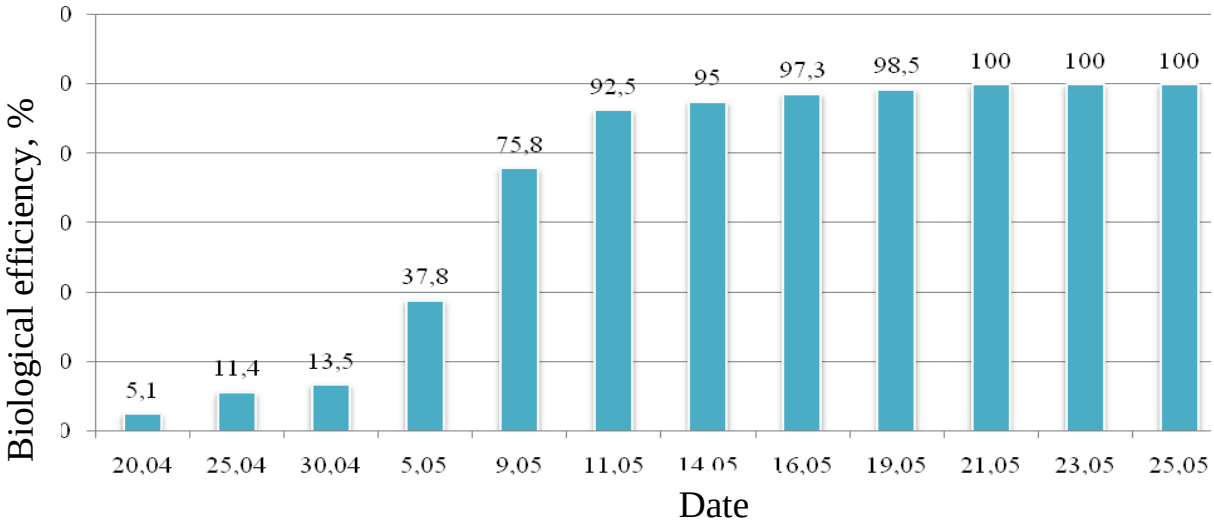

Figure 4.5. Eurygaster integriceps infestation of wintering imagolari eggs with egg-eating parasites entomophagous

Egg-eating parasites the density of parasites in the field is also of great importance in the process of imaging eggs and in their selection. In the initial periods of the experiment, i.e., April 20; One or two eggs were found to be damaged from a set of hashish eggs installed in grain fields for 25 days of infestation.

On April 20 and 25, only 3 or 4 of the 14 eggs in the set of eggs installed in the grain fields were infested with the telenomin parasite (Fig. 6). Then the number of infected eggs from each set increased. It has been found that parasitic imagoes can infect all eggs as a result of the limited selection of eggs in this way and the increasing density of parasites.

A **B**

Figure 6. Eurygaster integriceps eggs with egg-eating parasites, they are
in cases where the density of the imagos in the field is low
damage A- 3 eggs are damaged. Infected eggs
turned black. B - 4 eggs from infected, undamaged eggs Eurygaster integriceps case in which the larvae emerge

According to the results of the experiment, egg-eating's it was found that with increasing density they could damage all the eggs. Egg-eating parasites with the emergence of the next generations of imago, i.e., on the 11th and 14th of May, the parasitic imago Eurygaster integriceps damage to most or all of the eggs was observed (Fig. 7).

The data obtained are in field conditions Eurygaster integriceps egg parasites can determine the density of imago and use it in short-term prediction of its development.

A B

Figure 7. Eurygaster integriceps eggs with Egg-eating parasites, they are in cases where the density of the imagos in the field is high

damage

Eurygaster integriceps According to the results of daily monitoring of development, the density of imago in field conditions, the ratio of their sexes, laid eggs Eurygaster integriceps number, the amount of eggs laid, by studying daily data on the contamination of eggs with telenomins, Eurygaster integriceps a program will be developed to fully predict the potential damage to the population, to determine the calendar dates of measures to combat it.

In several areas of the Tashkent oasis Eurygaster integriceps Put. type imago and larvae Aspergillus flavus, Paecilomyces sp., Microascus (Scopulariopsis) brevicaulus (Sacc.) Bain., Cordyceps sp. entomopathogenic fungi, eggs Telenomus sp. egg-eating parasites and imago Helomiya lateralis Meig., Phasia subcoleoptrata (Linnaeus, 1767), Phasia crassipennis (Fabricius, 1794) With parasites, as well as cases of damage to the composition of the population by natural predators - beetles, ants, spiders were recorded.

Conclusion.

In the conditions of Tashkent region Eurygaster integriceps Put. natural entomophages in limiting population size - Egg-eating parasites and phase flies, in which disease-causing entomopathogenic fungi are of great importance as bioagents. In the conditions of Tashkent oasis Eurygaster integriceps Put. 3 types of parasitic phase flies: Phasia subcoleoptrata Linnaeus, 1767, Ectophasia crassipennis (Fabricius, 1794) and Helomiya lateralis Meig. prevalence and their biological efficacy were determined. However

Eurygaster integriceps the species composition of egg parasites was studied and they Eurygaster integriceps data were obtained that the eggs were 100% damaged by mid-May.

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