1-жадвал.

Тут кўчатлари парваришланаётган майдончалардаги зараркунанда бузоқбоши қўнғизлари миқдорлари
(Андижон вилояти, Пахтаобод тумани, 2021-2022 йй.).

Вариант	Қўлланилган препарат номи ва унинг сарф меъёри	Зараркунанда бузоқбоши миқдорининг ўзгариши динамикаси, та/м²					БС, %
		2021 ноябрь (А)	2022 апрель	2022 июнь	2022 август	2022 октябрь (Б)	
1	Назорат	5,5	5,5	7,1	8,6	9,4	-
2	Karate 5% (R) эм.к., 0,5 л/га (эталон)	5,7	3,1	2,1	1,9	0,5	91
3	Дефектокс 2,5 %, эм.к., 0,5 л/га	5,8	3,2	2,2	2,0	0,6	90
4	Децис 10 % эм.к., 0,3 л/га	6,2	3,3	2,3	2,1	0,7	89

Кейинги босқич 2022 йил апрель ойининг бошларидан то ноябрь ойи охиригача олиб борилиб, унда тажриба ҳудудлари тупроқларидан ҳар 2 ойда намуналар олиниб улардаги зараркунанда бузоқбоши қўнғизлари ажратиб олинди ва уларнинг миқдорлари қайд этиб борилди. Буларда препаратлар билан ишлов беришда эришилган биологик самарадорлик (БС) қуйидаги муносабат орқали ҳисобланди:

$$БС = \frac{А - Б}{А} \cdot 100\% .$$

Бу уерда А ва Б мос ҳолда тажриба бошидаги ва охиридаги зараркунанда бузоқбоши миқдорлари. Олинган натижалар бўйича маълумотлар 1-жадвалда келтирилган.

Жадвалдан кўринадики, назорат вариантида кутилганидек зараркунанда бузоқбоши қўнғизларининг сони борган сари кўпайиб борган. Бу майдончадаги тут кўчатларидан яна 20-25 % улуши қуриб қолган. Бу ҳол зараркунандага қарши курашиш чораси зарурий тадбир эканлигини, акс ҳолда парваришланаётган тут кўчатлари буткул қуриб қолиши мумкинлигини кўрсатади.

Ишлов берилган 2-, 3- ва 4-вариантларга келсак, уларда қўлланилган препаратларнинг тажриба мобайнида бор-йўғи бир марта ишлов берилганига қарамасдан яхши самара берганлигига гувоҳ бўламиз. Улар туфайли эришилган биологик самарадорлик мавсум охирига бориб мос ҳолда 91, 90 ва 89 % ни ташкил қилган. Бу шуни кўрсатадики, қўлланилган препаратлар самарадорлиги жиҳатидан бир-биридан деярли фарқ қилмайди. Демак, бундай ҳолда препарат танлашда нархи арзонроғи ёки заҳира омборида мавжуд туридан фойдаланган маъқулроқ.

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LYSIPHLEBUS FABARUM ROLE IN REDUCING THE NUMBER OF APHIDS IN VEGETABLES PLANTS

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Abstract. *One of the parasitic species for the aphids present on tomato plants are the braconid wasp called Lysiphlebus fabarum (Braconidae: Hymenoptera: Insecta). The purpose of this scientific paper is to determine whether these wasps can be a way of reducing the population aphids. Tomato plants typically attract many harmful aphid species. It is known that aphids are the most common dangerous species with a high number of generations, and generally difficult to control. Observations were conducted under laboratory conditions in Uzbekistan. The study of the efficacy of Lysiphlebus fabarum on aphids shows that*

parasite entomophagus can provide a reduction in the number of aphids in tomatoes, even at a ratio of 1:20, their biological efficiency being approximately 50%, and in the ratio of 1: 5 and 1: 10 is about 90%.

Keywords: *biological control, aphids, parasitic species, Lysiphlebus fabarum.*

Аннотация: *Одним из паразитирующих видов тлей, присутствующих на растениях томата, является браконидная оса, называемая Lysiphlebus fabarum (Braconidae: Hymenoptera: Insecta). Целью данной научной работы является определение того, могут ли эти осы стать способом сокращения популяции тлей. Растения томатов обычно привлекают множество вредных видов тлей. Известно, что тли являются наиболее распространенными опасными видами с большим числом поколений и, как правило, трудно поддающимися контролю. Наблюдения проводились в лабораторных условиях в Узбекистане. Изучение эффективности действия Lysiphlebus fabarum на тлей показывает, что энтомофаги-паразиты могут обеспечить снижение численности тлей на томатах даже при соотношении 1:20, биологическая эффективность которых составляет примерно 50%, а при соотношении 1: 5 и 1:10 это около 90%.*

Ключевые слова: *биологическая борьба, тли, паразитические виды, Lysiphlebus fabarum.*

Annotatsiya: *Pomidor o'simliklarida mavjud bo'lgan shira uchun parazit turlaridan biri Lysiphlebus fabarum (Braconidae: Hymenoptera: Insecta) deb nomlangan brakonidlari hisoblanadi. Pomidor o'simliklari odatda ko'plab zararli aphid turlarini o'ziga jalb qiladi. Ma'lumki, shira ko'p sonli avlodlarga ega bo'lgan eng keng tarqalgan xavfli tur va odatda nazorat qilish qiyin. Kuzatishlar O'zbekistonda laboratoriya sharoitida o'tkazildi. Lysiphlebus fabarumning shira ustidagi samaradorligini o'rganish shuni ko'rsatadiki, parazit entomofag pomidordagi shira sonini 1:20 nisbatda ham kamaytirishi mumkin, ularning biologik samaradorligi taxminan 50% va 1 nisbatda: 5 va 1: 10 - taxminan 90%.*

Kalit so'zlar: *biologik kurash, shira, parazit turlari, Lysiphlebus fabarum.*

Introduction. One of the principles of the use of parasites and predators in biological control is the seasonal colonization method, based on laboratory reproduction and crop release.

In recent years, there have been numerous worldwide attempts at breeding and the effective application of parasitic wasps in the biological control of. [1.2.4.6,9]

The literature data provided is quite inconsistent and does not provide the necessary basis for each country where this parasite is. [2.5.7,8]

The first Eastern European studies on the growth of these braconid parasitic wasps were made more than 40 years ago in Moldova.

Reproduction and use of the parasite in reducing harmful activities of aphids in Uzbekistan is practically not present at this time. There are only studies conducted by A. G. Davletshinoy, E Gomuliki in years of around '80, on the study of the parasite *Lysiphlebus fabarum* and its reproduction in the laboratory and only on cotton aphids.

Our studies on the reproduction of aphids and their parasites in the laboratory allow us to come to a conclusion on the possibility of growing and applying two types of wasps against the most dangerous species of alfalfa in the second year, pumpkin, tomatoes and sweet peppers.

Material and methods. The process of evaluating the interaction and effectiveness of biological control of parasitic species for aphids was performed under laboratory conditions and phased in, as follows: plant cultivation, growth of aphid species and parasitic species.

The research that is the subject of this paper was conducted in Tashkent, Uzbekistan, more precisely at Tashkent Agrarian State University. Observations were made both in field conditions (from which parasites and parasites were collected) and laboratory (where interactions between aphids and parasites were carried out, as well as their growth, the growth of host plants).

Plants cultivation in laboratory. For the cultivation of the favorite plants, the most apt choices were chosen, namely, alfalfa in the second year, pumpkin, tomatoes and sweet peppers. The plants were grown in ceramic pots. Alfalfa was transplanted from natural conditions into ceramic pots, and the others were grown from planting of saplings (peppers and tomatoes) and pumpkin seeds. The optimal growth and development conditions for these plants were +21.0, + 25.0°C and a relative humidity of 65-75% at 12-13 hours of photoperiod.

Harvesting of aphids (mostly on tomatoes) in winter was made from the protected environment (greenhouses). Reproduction of the aphids took place in a separate room. Harvesting of aphids. When the pepper plants had 6-8 true leaves (Bulgarian varieties), tomatoes had 4-6 levels with leaves, the pumpkins had about 3-5 leaves and 8-10 cm alfalfa, and an average of 25-30 aphids per plant was introduced. The following types of aphids were located: *Aphis craccivora* and *Acyrtosiphon pisum* on tomatoes and alfalfa, *Myzodes persicae* on pepper and *Aphis gossypii* on pumpkin.

Harvesting of aphids (mostly on tomatoes) in winter was made from the protected environment (greenhouses). Reproduction of the aphids took place in a separate room.

Interaction aphid- parasite. A few days later, when the number of aphids reached 100-200 exemplars on pottery boxes, the plants were transferred to another room where they were placed under isolation.

Adults of the *Trioxys asiaticus* and *Lysiphlebus fabarum* parasites were then introduced. Parasites, prior to placement, were fed a 20% sugar syrup in glass jars.

Aphids (in number of 10) were placed to one parasite, host ratio: aphid = 1:10.

Efficacy study. After 2-3 days, the insulator was removed. For 8-10 days after infection of part of the plants with mummified aphid's colonies, these were cut and placed in glass jars.

In these experiments, from a plant has resulted from 80 to 110 mummies to a number of aphids of 150-200 exemplars.

In winter, for the purpose of keeping the parasitoid wasps in the laboratory and using them, the alfalfa is best suited. In the second year of growth, this plant grows rapidly within 4-5 days of planting, and so can be a very good host for aphids and these for parasite organisms.

The experiment was carried out at the Experimental Plant Biological Research Center and Repeat Experiment Station (TSAU) five times, biological efficiency was calculated according to the Abbot formula (1925), which is the next one:

Table 1

The efficacy of parasitic wasps in the biological control of aphids.

Trials number	The initial ratio of the numbers of the parasite: host (aphid)	Number of aphids on 10 plants of tomatoes		The biological efficacy of the parasite in the %
		Before parasite infestation	10 days after the release of the parasite	
1	Control	695	1205	-
2	1:5	720	134	89.3
3	1:10	815	180	87.2
4	1:20	750	530	49.2
HCP0.5				2.64
				0.82

To which:

A -in control, the number of pests after treatment;

B - in experience, the number of pests before treatment; B - in experience, the number of pests after treatment;

A - in control, the number of pests before treatment.

Results and discussion. Important conditions for obtaining the high biological effect of braconid species (parasitic wasps) are considered the following: resistant organisms, with high viability, environmental factors conducive to development, availability of food (aphids), availability and optimal choice of host plants with a good ratio aphids: parasite.

in this respect, the effect of different perspectives on the behavior of the parasite in the control of aphids in crops, especially tomatoes, has been studied (Figure 1).

The use of parasites against aphids-pest from crops is done in two ways: the first method of arranging mummies on plant, the second placed of adult parasites raised in the laboratory. The parasites were harvested in certain quantities in the test tubes and after these were placed on plants (leaves).

Three variants were tested:

1 parasite to 5 aphids

1 parasite to 10 aphids

1 parasite to 20 aphids

All of these variants respected the parasite reports: host = 1: 5, 1:10 and 1:20. Before the parasites were released, the number of plant aphids was considered.

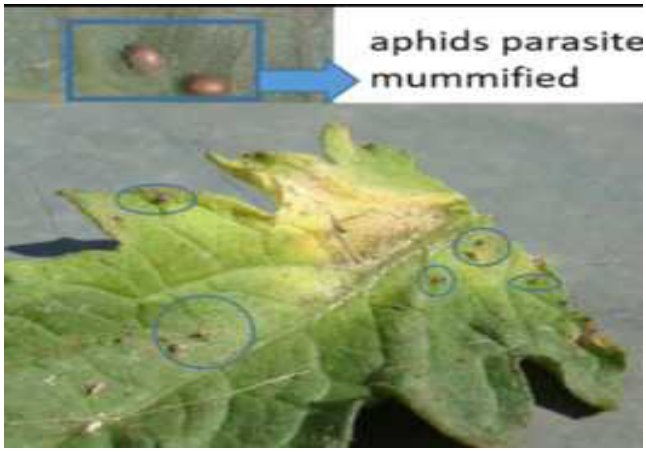

Figure 1. Aphid before parasite by braconid wasps and characteristic mummies (mummified aphids) after parasite; the beneficial effect of biological control.

As can be seen from Table 1, the efficacy results of biological control of aphids consisted of a different release time depending on the three perspectives, namely: 1: 5 - 89.3%, at 1:10 - 87.2% and the 1:20 ratio - 49.2%. These show that the highest efficacy was achieved at the release time of 1: 5 and the highest and most useful for biological control was the parasite release rate at a ratio of 1: 10.

The studies and results obtained at a 1:20 ratio proved to be inappropriate for the release of the wasps because biological feasibility at a 1:20 ratio is not sufficient to reduce the population of aphids, requiring extra time and additional parasite specimens.

At the beginning of the experiment, there were 695 individuals of aphids, 10 days later their number increased to 1205.

It should be pointed out that in the growth and development of aphids in laboratory experiments should not exceed the limits so that they restore themselves to plants, it is only necessary to maintain them at the optimum level.

Studies on parasite reproduction have shown the possibility of growing in the laboratory. Its testing on tomato plants confirmed the effectiveness of their use by seasonal colonization against aphids on greenhouse vegetables. More exactly:

By developing laboratory breeding techniques aphids such as *Aphis craccivora, Myzodes persicae, Acyrtosiphon pisum* and *Aphis gossypii.* In the laboratory, it is easy to breed especially *Aphis craccivora* compared to other types of aphids.

In experiments to study the efficacy of parasite against tomato aphids it is shown that the different relationships between the parasite and host 1:5, 1:10, 1:20 can regulate the number of aphids but in varying degrees.

By details, the best results were obtained at a ratio of 1: 5 where after 10 days after infection there remained 134 aphids out of 720, with a parasite biological efficacy of 89.3%. In the 1:10 experiments, the efficiency is high because after 10 days of the release of the parasites, there were 180 aphids out of 815 before the alleged parasite, here the biological efficiency was 87.2%. In tests with a parasite / aphid ratio of 1:20, the effectiveness was less than 50%.

Studies on the efficacy of *Lysiphlebus fabarum* against the pests on the tomato plants have shown that they can reduce their population level to all the different variables (1: 5 and 1:10) the number of aphids in tomatoes, even in the 1:20 ratio. Their biological efficiency is 50% and in ratios of 1: 5 and 1:10 is 90%.

Conclusions. In non-polluting combat, we can successfully integrate the use of braconid wasps. By what has been achieved through laboratory experiments it can be concluded that they can greatly reduce aphids' populations, perhaps not in the same 90% in open field conditions, but something close. Importantly, it is possible to replace partially used insecticides on a large scale, which have disastrous effects on the environment and human health.

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ПИЁЗ ЭКИНИДА ТАМАКИ ТРИПСИНИНГ ЗАРАРИ ВА ҚАРШИ КУРАШДА КИМЁВИЙ ВОСИТАЛАРНИНГ БИОЛОГИК САМАРАДОРЛИГИ

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Аннотация. *Ушбу мақолада тамаки трипси (Thrips tabaci Lind) нинг пиёз экинида зарари хамда унга қарши кураш чоралари тўғрисида маълумотлар мавжуд. Олиб борилган тадқиқотлар давомида Гладиус 10% к.с., Europlan pro 25% н.к., Энжикс 25% сус.к. препаратлар қўлланилиб, биологик самарадорлиги ўрганилган. Препаратларни ишлатилиш усуллари ва меъёрлари илмий асосланган ҳолда кўрсатилган.*

Калит сўзлар: *пестицид, зарарланиш, зараркунанда, кимёвий кураш, ўсимлик, пиёз, самарадорлик, ҳосил, тамаки трипси, вариант, андоза, назорат.*

Аннотация. *В статье приводятся результаты исследования о врединостности и меры борбы против табачного трипса (Thrips tabaci Lind) на луке. Проведено исследования препаратов против табачного трипса Гладиус 10% к.с., Europlan pro 25% н.к., Энжикс 25% сус. к. и определено биологический эффективность. Научно обоснованы сроки и нормы применения химических методов борьбы против табачного трипса.*

Ключевые слова: *пестицид, вредоносность, вредитель, химическая борьба, растение, эффективность,урожай, табачный трипс, вариант, эталон, контроль.*

Abstract. *The article presents the results of pest and control measures against tobacco thrips (Thrips tabaci Lind) on onion. The preparations against tobacco thrips Gladius 10% consistant suspension, Europlan pro 25% wetting powder, Enjix 25% concentrate suspension have been investigated and biological efficiency has been determined. The terms and norms of application of chemical methods of struggle against tobacco trips were scientifically proved.*

Keywords: *pesticide, harmfulness, pest, chemical control, plant, efficiency, yield, tobacco thrips, variant, reference, control.*

Кириш. Бугунги кунда қишлоқ хўжалик экинларига кучли зарар етказаётган тамаки трипси *(Thrips tabaci Lind)* сабзавот экинларида ҳам жумладан пиёзда кучли зарар етказаётганлиги мутахассислар томонидан эътироф этилмоқда. Ушбу зараркунанда пиёзнинг ашаддий кушандаси ҳисобланиб, ўз вақтида кураш чоралари олиб борилмаса 30-50 фоизгача ҳосилдорликни нобуд қилиши мумкин.

Тамаки трипси пиёз униб чиққандан усув даврининг охиригича зарар келтиради Зараркунанданинг личинка ва етук зоти пиёз баргини санчиб-сўриб озиқланиши натижасида пиёз баргида узунасига жойлашган оқ нуқтали доғлар кўринишида пайдо бўлади. Ўз вақтида керакли бўлган кураш чоралари олиб борилмаса ўсимлик барги учидан қурий бошлайди ва ниҳоят бутунлай қуриб қолиш ҳолати кузатилиши мумкин.

С.Н. Алимухамедов, Ш.Т.Хўжаев[1]ларнинг келтирган маълумоти бўйича тамаки трипси 400-га яқин қишлоқ хўжалик экинларига (ғўза, ғалла, сабзавот экинлари ва бошқ.) сезиларли зиён етказади. Зарарланган ўсимлик барги мажмағил бўлиб, ривожланишдан орқада қолади ва ҳосилдорлик 50 фоизгача йўқолиши мумкин. Шу сабабли, ушбу зараркунанда-