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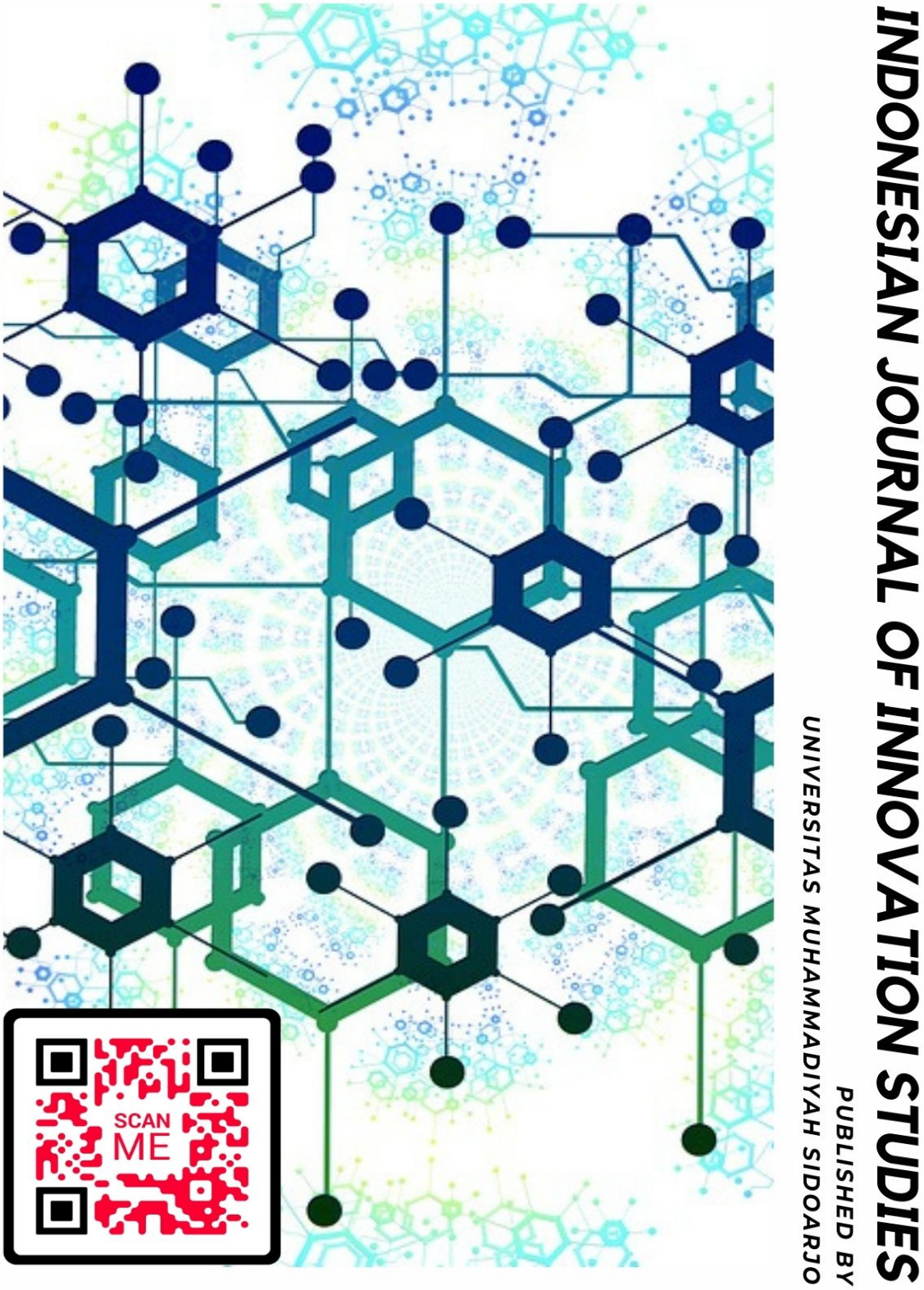

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Systematic analysis of the dominant types of entomophages in fruit orchards

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Abstract

This article is focused on a systematic analysis of leaf-mining fly types that belongs to Agromyzidae family. Due to it, 2 types of leaf-mining flies were identified in agricultural plants and 1 type in weeds. Also, it was identified that *Liriomyza sativae* Blanchard type of leaf-mining flies that belong to 4 families are met in 12 different plants in conditions of the Andijan region. Besides that, a number of insecticides as indoxamecty, protect were used against these kinds of pests.

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Introduction.

Over the last years a new type of pest appeared (it was registered in 1999 in our Republic). Its harm to agricultural products is increasing much. It is a leaf-mining fly that harms different vegetables, melons and other plants and adopts other plants as well. It was named as cosmopolite insect by the scientists of the world. Because of convenient climatic condition of our region this pest is adopting different plants and is spreading fast. One of the main reasons for this is there are not much natural fighters against it in our country[1]. Nowadays, Agromyzidae family is a represantative of the group of two winged that harm most in plant growing. More than 300 types of this family are registered in the world's fauna. Most types of this family are considered to be monophage and 16 types as polyphages. 250 types of this family harm agricultural plants of the world. 100 types of them were registered to be met in former Soviet Union [2].

Liriomyza sativae Blanch(Diptera, Agromyzidae)type of leaf-mining flies have been harming agricultural products more than the other types in our Republic for the last period. Due to Zlobin and Drugova's conceptions Liriomyza bryoniae and L. Strigata type sof leaf-mining flies can be met in Uzbekistan [3].

In 25 generations of Agromyzidae family Liriomyza is secondly important. A number of observations are carried out on determining the types of leaf-mining flies in Andijan. According to investigations and observations several patterns of leaf-mining flies were gathered from the fields with vegetables. Their types were identified with the help of the cooperation of specialists from Zoology Institutions.

The following types of leaf-mining flies were determined in the patterns taken from the plants of solanum family in the investigations carried out in Andijan region:

Liriomyza sativae Blanchard

Liriomyza cicernae Rond

Liriomyza strigata Meigen

As it was identified in the carried observations leaf-mining flies that harm the representatives of solanum family are spread widely as a dominant type. Due to it, a basic part of leaf-mining flies is composed of L. sativae type. Also, L. cicernae type was also determined in this territory. L.strigata type is mainly observed to harm weeds.

Main part

Liriomyza sativae Blanch and Liriomyza cicernae Rond types of leaf-mining flies were observed to harm agricultural products in biocenosis of our region. Liriomyza huidobrensis Blanch and Liriomyza bryoniae Kalt., Chromatomiya fuscula Zett., Opimiya phaseolus., Phitomyza ilicis Kert. may be spread in our Republic. Liriomyza trifolii Burg. Type is registered as an object of outer quarantine.

Table 1 Systematic analysis of leaf-mining flies (Agromyzidae) and and frequency of their appearance (Andijan region, 2016-2017)

№	Types	Group	Family	Registration
1	Liriomyza sativae Blanch	Diptera	Agromyzidae	+
2.	Liriomyza trifolii Burg.	Diptera	Agromyzidae	-
3	Liriomyza strigata Meigen.	Diptera	Agromyzidae	+
4	Liriomyza cicernae Rodani	Diptera	Agromyzidae	+
5.	Liriomyza huidobrensis Blanch.	Diptera	Agromyzidae	-*
6.	Liriomyza bryoniae Kalt.	Diptera	Agromyzidae	-*
7.	Chromatomiya fuscula Zett.	Diptera	Agromyzidae	-*
8.	Opimiya phaseolus	Diptera	Agromyzidae	-*
9.	Phitomyza ilicis Kert.	Diptera	Agromyzidae	-*

Table 1.

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We continued our investigation in order to identify the frequency of the appearance of L.sativae type in various agricultural plants of Andijan region. The squares with the pests were identified and the types of plants were studied during 2016-2017.

It is seen from the following table, it is seen that when leaf-mining flies (L.sativa) are spread in a number of plants grown in Andijan, 4 families of leaf-mining flies harm 12 types of plants in different degrees[4].

Table 2 Degree of harming the plant types by leaf-mining flies (L.sativa) (Andijan region, Andijan district, 2016-2017)

№	Type of a plant	Latin name of a plant	Plant families	Degree of appearance
1	Potato	Solanum lycopersicum	Solanaceae	+++
2	Egg-palnt	Solanum melongena	Solanaceae	++
3	Potato	Solanum tuberosum	Solanaceae	++
4	Pepper	Capsicum	Solanaceae	++
5	Bell-pepper	Capsicum annuum	Solanaceae	++
6	Peas	Cicer arietinum	Fabaceae	+++
7	Water melon	Citrullus lanatus	Cucurbitaceae	+++
8	Melon	Cucumis melo	Cucurbitaceae	+++
9	Cucumber	Cucumis sativus	Cucurbitaceae	+++
10	Pumpkin	Cucurbita maxima	Cucurbitaceae	+++
11	Tobacco	Nicotiana tabacum	Solanaceae	++
12	Basilica	Ocimum basilicum	Lamiaceae	+

Table 2.

Comment: +++- much, ++-average,+ little

4 representatives of Cucurbitaceae family are met in (), water melon (), cucumber () and pumpkin plants (and a representative of Solanaceae family is met in tomato(), a representative of Fabaceae family is met in peas () in high degree. Leaf-mining flies are met in average degree in egg plants of Solanaceae family (), bitter pepper () and tobacco. They can be rarely met in the plants of Laminaceae family during the season.

In conclusion we can say that, 12 plants of solanum family (Solanaceae), pumpkins (Cucurbitaceae), leguminous plants (Fabaceae) are harmed with leaf-mining flies. Tomatoes, cucumbers and pumpkins are harmed much by these pests.

More than 330 types of Liriomyza generation are phytophages in agricultural plants all over the world and sometimes destroy the plants up to 75-80%. The most important economical harm is made in vegetable, leguminous crops and decorative gardening. In the practice of production chemicals are widely used to decrease the amount of pests in a short period of time. But some types of pests have high tolerance to insecticides. The researchers of different countries are carrying out a number of investigations in harmonized fighting against pests [5].

According tpo B.Sulaymonov’s investigations, 3 classes, 12 groups, 12 families and 36 types of pests harm tomatoes and cucumbers in green houses of Uzbekistan. Here the harms of leaf-mining flies are very high. Such preparations as Sumi alfa 20% in 0,6l/hec solution, Konfidor 20% in 0,25 l/hec solution, Vermitek 1,8% in 0,6l/hec solution, Carbaphos 50% in 0,6l/hec solution show high effectiveness in chemical fighting against pests.[6].

Biology of Liriomyza sativa type was studied in Beijing region of Chinese People’s Republic. Due to the results, the process of the lives of male and female pests lasted up to12-20 days under 28 ºC and 70% of relative air moist. They paired on the 2nd day of imago phase. Also, a n umber of preparations were tested. Xia yu and Ai Fu Ding preparations effected on worms and imagos in 80%-95% of cases. Ai Fu Ding preparation effected on chrysalis in 34% of cases [7]

Object and methods of investigation. We carried out investigations on chemical fighting against pests in the station of the institute of scientific investigations “Vegetable, melon and potato growing” in Andijan’s scientific experimental station. In this experiment we used such chemical preparations as Indoxemactin (Indoxacarb 7.5%+Abamectin1.8%)0.2l/hec and Protect (Emmamectin benzoate 5%) 0.5kg/hec against leaf-mining flies. Vermitek preparation was taken as a pattern.

Our experiments were held in 4 versions and 4 repetitions. Before using the preparations, we identified the larva in3 leaves of each plant. For this we took patterns of 20 different parts of each version. By this way we determined the number of larva in each leaf.

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Results of the investigation.

In the 1st version of our experiment we identified the existence of average 4.1 larva of pests in a leaf when Indoxamectin (Indoxacarb7.5%+Abamectin 1.8%) preparations were used in the solution of 0.2 l/hec. On the 3rd day of our observations after the usage of the preparation the number of pests decreased up to1.6. In this case the biologic effectiveness of chemical preparations was equal to 60.9%. On the 7th day of the experiment the number of pests in a leaf decreased up to 0.5 and the biologic effectiveness of the preparation composed 88.4%. On the 14th day of the experiment the influence of the chemical preparation a bit weakened. That is, the number of pests on the leaf a bit increased than on the 7th day. The number of pests on 1 leaf composed 0,9. The biologic effectiveness composed 79.7%. On the 21st day of the experiment the number of pests on 1 leaf was 1.3, biologic effectiveness composed 71.4%. On the 28th day of our observations the number of pests in 1 leaf was 2.0 and the biologic effectiveness was 57.1 %.

In the 2nd version where Protect (Emamectin benzoate 5%) preparation was used in 0,5 kg/hec solution, 4.2 pest larvas were identified in 1 leaf. On the 3rd day of our observations the number of pests decreased up to 1.9. In this case the biologic effectiveness of the preparation was 55.8%. On the 7th day of the experiment the number of pests in 1 leaf decreased to 0.7 and the biologic effectiveness of the preparation composed 85.8%. on the 14th day of the experiment the influence of the preparation a bit weakened.

Biologic effectiveness of chemicals against leaf-mining flies (Liriomyza sativae).

That is the number of pests in 1 leaf a bit increased than on the 7th day. The number of pests in 1 leaf composed 1.2 and the biologic effectiveness composed 76.7%. On the 21st day of the experiment it was identified that the number of pests in 1 leaf composed 1.7 and the biologic effectiveness composed 69.6%. On the 28th day of our observations, the number of pests on 1 leaf was 2.5 and the biologic effectiveness composed 55.3%.

In the 3rd version of our experiment where Vermitek 1.8% (Abamectin) preparation was used in 0.25 l/hec solution we identified the existence of average 4,5 larva of pests. On the 3rd day of our observations after the usage of preparation the number of pests decreased to 2.0. Here the biologic effectiveness of the chemical preparation composed 56.6 %. On the 7th day of the experiment the number of pests in 1 leaf decreasd up to 0,9 and the biologic effectiveness of the preparation composed 83.0%. On the 14th day of the experiment it was identified that the influence of the chemical preparation a bit weakened. That is the number of pests in 1 leaf increased a bit than the 7th day of the experiment. The number of pests in 1 leaf composed 217 and the biologic effectiveness composed 69.3%. On the 21st day of the experiment the number of pests in 1 leaf composed 2.9, the biologic effectiveness composed 50.7%. On the 28th day of our observations the number of pests in 1 leaf was 3.4 and the biologic effectiveness composed 43.7%.

Conclusion.

In our investigations we identified that L. sativae Blanch and L. cicernae Rond types of leaf-mining flies harm agricultural plants in agrobiocenos of vegetables of Andijan region. When comparing the development of different types of leaf-mining flies in various plants, 4 representatives of Cucurbitaceae family harm melon, water melon, cucumber and pumpkin plants and a representative of Solanaceae family harm tomato much. In chemical fight against this pest Indoxamectin (Indoxacarb 7.5%+Abamectin 1.8%) was used in 0.2l/hec. On the 7th day of the experiment the number of pests in 1 leaf decreased to 0.7 and the biologic effectiveness of the preparation composed 88.4%. When Protect Emamectin benzoate 5%) was used in the solution of 0.5kg/hec. The number of pests decreased to 1.1 and the biologic effectiveness of the preparation composed 85.8%.

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