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IN ORCHARDS (LEPIDOPTERA) - PHYLLOPHAGOUS PESTS AND MEASURES TO COMBAT THEM

Yusupov Abdusalim Kholboevich[1], Rakhimov Uchkun Khamraevich[2], Ergashev Jaxongir Abduganievich [3], Usvaliev Oybek [4]

Doctor of Agricultural Sciences, Professor, Tashkent State Agrarian University. [1]

Candidate of Agricultural Sciences, Professor, Tashkent State Agrarian University. [2]

Doctor of Philosophy in Agricultural Sciences (PhD), Assistant, Tashkent State Agrarian University. [3]

Assistant, Tashkent State Agrarian University. [4]

Yusupov Abdusalim Kholboevich, [1] , Rakhimov Uchkun Khamraevich, [2], Ergashev Jaxongir Abduganievich, [3], Usvaliev Oybek, [4]: In orchards (Lepidoptera) - phyllophagous pests and measures to combat them-- Palarch's Journal Of Archaeology Of Egypt/Egyptology 17(6). ISSN 1567-214x

ABSTRACT:
According to the research conducted in 2018-2019 in different regions of the country, there are three types of pests: studied separately. These xylophages damage the roots, trunks and branches of trees; phyllophages - infect leaves; as well as scientifically based on the damage of carpophagous plant fruits. This article focuses on phyllophagous pests, which cover the biology, damage, quantitative criteria of several dozen species of leaf-toothed tree pests in horticultural crops, and new modern chemicals for their control are tested and recommended for experimental production.

Introduction. As a result of the growing demand for food due to the growing population of the world, increasing and increasing the volume of food production, ensuring food security is becoming one of the global challenges in the world.

It is one of the largest groups of insects in terms of the number of cocoons, second only to that of solid and winged cocoons. The genus includes more than 150,000 species of insects. Although dozens and hundreds of new species are described each year, many of them have not been studied in detail. It is noted that more than 15,000 species are known in the CIS countries, and more than 1,500 in Uzbekistan. The moths are a relatively young but highly formed group of fully evolving insects. The size of the butterflies varies greatly: from 3.25 mm (Nepticula filipendulae Wok.) To

very large, 24-28 cm saturnia (Saturnia atlas). This category includes a large number of harmful species living in the gardens of Uzbekistan. Their number includes 326 species belonging to about 26 families D.A. Azimov et al. [1]. Representatives of the genus Lepidoptera occupy a special place among the common pests of fruit trees. These pests cause great damage to the crops, vegetative and generative organs of orchards. Several methods are widely used in controlling and managing the number of pests. S.A. Alekseeva [4]. X.X. Kimsanboev., A.X.Yusupov [11].

Review of foreign research on the topic. Orchards have been studied at leading universities and research centers in many countries, including Texas A&M. University (USA), All-Russian Plant Protection Research Institute (VIZR, Pushkin) and Voronezh Plant Protection Research Institute, University of Agricultural Scinces (India), Xinjian Academy of Agricultural Scinces and China Agricultural University (China), Ottawa University, Canada comprehensive research is underway.

The degree to which the problem has been studied. Studies on the species composition, distribution, biology, damage and biological, chemical control measures and their effectiveness of orchid pests in orchards in different regions of the world have been conducted on the topic: Andermatt M., Nane N., Wildball T., Luthy P., Beirne BN, Berankova J., Kocourek F., Kneifi V., Zeman B., Boubatrin J., Pinzaru B., Voineac V., Burdajewicz S., Kokot J., Burmann K., Huemer P., Chapman PJ, Charmillat PJ, Comins HN, Friese G., Georghiou GP, Taylor Ch.E., Gries G., Jumean Z., Hagley KLC, Allen WR and others.

CIS scientists V.P. Vasilev., I.V. Livshits., A.S. Avetyan., N.E. Enekudze., A.S.Danilevskiy., V.G.Baeva and others on the biology of agricultural pests and measures to combat them in the Republic .V.V. Yaxontov, V.I.Plotnikov, R.O.Olimjonov, K.I. Larchenko, B.N, Adashkevich., Z.K.Odilov., X.R.Mirzalieva, O'.Nabiev, O.Eshmatov, D.Berdiev, Akbutaev A., Mirzaeva S., T.Atamirzaeva., A.U .Sagdullaev., S.Dusmanov, A.Kh.Yusupov, D.I.Obidjonov, H.M.Shukurov and others conducted research on fruit trees.

The purpose of the study: study of the species composition, distribution area, detection and biology of pests of orchids found in orchards, management of their number on the basis of determining the quantitative criteria of economic damage and making recommendations for their production.

Research tasks consists of: study and identification of biological development characteristics of the main species of pests belonging to the group of phyllophages; establishment of economically and scientifically justified quantitative criteria for pest control in production; assessment of the species composition and importance of natural cousins in pest management; improvement of agro-technical methods of protection of orchards from pests; selective introduction of promising insecticides that meet the requirements of the integrated defense system in agrotoxicological research;

The object of research orchards of the republic, productivity, level of resistance to pests. **Research subjects** coin-winged pests of orchards and their entomophagous, various methods and means of protection.

Research methods. Entomological calculations and observations were

performed on the basis of methods adopted in entomology. N.V. Bondarenko et al. [6], VV Yakhontov [20]. Methodical instructions on the density of pests. Sh.T. Khojaev [16], and the number of beneficial insects was determined by S.N. Alimukhamedov et al. [5]. recommendations. B.P. Adashkevich [3], performed on the basis of. Insect Harm V.I. It was determined by the method of Tansky [14]. Agrotoxicological experiments were performed according to the accepted method. Sh.T. Khojaev [17], K.A.Gar [8], A.F. Chenkin [18]. Biological efficacy in laboratory and field experiments was determined according to the Abbot [22] formula, which takes into account the control variant. The explanation for this formula is that the experiment is stopped when the natural extermination of pests in the control exceeds 30%. The results obtained show that V.I. Terexov, S.P. Mathematical and statistical processing was carried out using the methods of Afonin [15].

Types of phyllophagous (leaf-eating) pest butterflies on fruit trees. In one of the major scientific works devoted to the pests of fruit trees, V.P. Vasilev and I.Z. Livshits [7] are a serious pest of leafhoppers, phyllophagous (leaf-eating) insects that live in orchards. Coins live in the form of mature offspring during the day or night. Butterflies feed mainly on the flower nectar of trees; especially asked for water during the hot times of the day. Those who do not develop the khartoum are not fed at all. Some species feed at night. Worms of individual species and families make a shell, live in it and carry it with them. The worms feed by biting all parts of the plant. Leaf rodents also feed on the leaves, buds, and flowers of trees, sometimes with fruits. Some are adapted to feeding inside or outside the fruit. A.K. According to Zagulyaev [10], mining worms feed on leaf flesh. During the season, butterflies develop by giving one or more generations. (In Central Asia, up to six generations are observed in some species). Most of Uzbekistan is desert and valley basins. The mountains are located in the south and northeast of the republic. The number of Colophoridae is twice as low as that of nightshades. Large families, such as the Geometridae and the Tortricidae, are characterized by fewer species, while the remaining families are represented by a much smaller number of species. In the desert regions of Uzbekistan, along with the southern valleys, live a total of more than 700 species A.S. Danilevsky et al. [9]. According to him, more than 900 species of butterflies have been recorded in Uzbekistan so far.

Depending on the damage to insects, nutrition and habitat, leafworms can be divided into three trophic groups: species that live under the roots and bark and infect skeletal parts of trees - xylophagous, leaf-eating phyllophagous (leaf-eating), fruit-bearing species - carpophagous (fruit growers). V.P., Vasilev, I.V. Livshits [7].

PHILOSOPHIES - PEST OF LEAVES AND PARTIAL FRUIT ORGANS OF FRUIT TREES

Pandemis chondrillana H.S. It is a widespread pest in Uzbekistan and feeds on about 40 fruit trees. 15% in Uzbekistan and 38% in the Panjikent district of Tajikistan; gives 2-3 generations per year. Pest worms can lose up to 48.4% of their leaves and buds in the first generation before flowering trees, as well as up to 48.4% in leaves and fruits in subsequent generations. This species is widespread in the orchards of Uzbekistan with green curved leaves and affects more than 11 tree species. A.X. Yusupov [19]

Fruit tree species infested with green curved burdock foliage Tashkent region Tosh.DAU experimental farm,

2018. 1-Table

№	Fruit tree type			Damage
	Uzbek name	Russian name	Latin name	
1.	Apricot	Apricot	Armeniaca vulgaris L.	+ + +
2.	Behi	Quince	Cydonia vulgaris Pers.	+ +
3.	Don't	Yablonya	Malus domestica Boznh.	+ + +
4.	Peaches	Persik	Prunus persica L.	+
5.	Nok	Grusha	Pirus communis L.	+ + +
6.	Plum	Sliva	Prunus domestica L.	+
7.	Cherry	Vishnya	Pzunus diquarata L.	+
8.	Pista	Pistachio	Pistacia vera L.	+
9.	Cherries	Chereshnya	Prunus avium L.	+
10.	Bodom	Mindal	Amygdalis communis L.	+
11.	Hawthorn	Boyaryshnik	Grataegus turkestanica	+

+ - weak damage, + + - moderate damage, + + + - severe damage

Research on the stages of development of green curved leaf beetle was conducted in 2018-2019 on the experimental farm of Tashkent State University of Tashkent region. The two-year-old worm overwinters in cracks and crevices in the bark, buds, root buds, and under plant debris during the two-year-old larval stage. The pest emerges from the hibernation in the spring periods, when the period of flowering of budding fruit trees begins. The first-year worms develop in 2-3 decades of March, when the average daily temperature rises to + 8 + 11 ° C and the relative humidity is 60-70%. If a temporary cold snap begins during this period, the worms will hide in winter areas. Wintering worms feed on buds, buds and leaves for a month. When they have finished feeding, they bend the leaves with a spider and wrap them in a tube. In our study, the first mushrooms of the new generation were recorded in the third decade of April and early May, depending on seasonal conditions. The fungal period of the green curved-leafed beetle lasts 10–13 days. The flight of butterflies was observed at the end of the second decade of May, at the beginning of the third decade: May 5, 2018; May 10, 2019; the active flight of butterflies took place at night. During this period, butterflies feed on the nectar of flowers. Butterflies mate after 3-5 days of feeding and the females begin to lay eggs after 3-9 days. Females lay an average of 250 to 400 eggs. The third generation worms of the green-curled-leafed beetle go to winter. The disadvantage of green-curled burdock is that in early spring the worms eat the buds and buds, as a result of which they dry out and shed. The worms then move on to the leaves and fruits. Damaged fruits are ugly, lose up to 50% of their weight, ripen 10-15 days later than undamaged fruits. The following indicator can be taken as a criterion for the economically harmful quantity of green curved burdock leaf: the total loss of apple and pear yield (taking into account the market price) - can be up to 60 kg per hectare. Such a loss occurs when an average of 2 kg of fruit is lost from each tree, which in turn is about 125 g of each fruit. that is, 16 worms per tree. If we take into account that about ¼ part of the inflorescence is pollinated and bears fruit, it

follows that 64 worms on one tree can lose up to 2 kg of yield.

The criteria for the amount of economic damage of apple and pear green curved leafhoppers are as follows: 1) when the total yield loss from each strong growing tree with a yield of not less than 250 ts / ha is 2 kg; 2) when there are more than 60 pest worms on each fruit tree. It was noted that when there are more than 20 wintering worms of the pest in 1 m2 of the trunk of a fruit tree, it is necessary to carry out chemical control measures against green leafhoppers. According to the results of the study, on April 23-24, 2018 in TashDAU experimental farm conducted a field experiment to study a promising insecticide achiv and three insectoacaricides (tsiperfos, deltafos and killer) against young wintering worms and satellite pests of green-curled beetle. Processing was performed using a motorized hand sprayer. At the same time, working fluids of different concentrations were prepared, and the water consumption was experimentally equalized to 1000 l / ha. Subsequent research repeated the experiment in 2018 under the same conditions as above, only in the apricot orchard (8–10 years old), in which the treatment was carried out on 13–14 August against the 2nd generation of green curved burdock. Processing was carried out using a hand sprayer, as in the previous year, using 1000 l per hectare of working solution. In this experiment, the standard insecticide BI-58 was used as a standard variant. (Table 2).

Biological effectiveness of insecticides against the second generation of green curly-leaved beetles in orchards

Tashkent State Agrarian University, experimental station, handheld. 1000 l / ha 13-14. VIII. 2018 y.

№	Options	Working fluid cont.,%	The average number of worms in 10 infected horns before processing	Efficiency,% days after processing:					
				4		8		15	
				Š	±m	Š	±m	Š	±m
1.	Tsiperfos, 55% k.e.	0,08	21,2	94,2	1,3	100	-	87,3	2,2
		0,12	26,5	100	-	100	-	91,4	0,8
2.	Killer, 5% k.e.	0,04	34,2	89,2	2,6	100	-	94,2	1,2
		0,06	23,2	100	-	100	-	87,4	2,7
3.	Deltafos, 36% k.e.	0,06	17,5	94,4	0,7	100	-	100	-
		0,01	24,2	100	-	100	-	96,6	0,6
4.	Achiv, 20% n.kuk.	0,025	32,2	77,6	3,2	92,3	0,6	100	-
		0,03	25,2	84,2	2,9	100	-	100	-
5.	BI-58, 40% k.e.-new (default)	0,14	17,2	100	-	100	-	87,4	2,6
6.	Control	-	22,2	The natural density of worms					
				31,2		29,2		19,2	
	EKF_{05}=			3,2		0,2		1,8	

Thus, based on the results of field experiments, it was concluded that insecticides: tsiperfos - 0.08%, killer - 0.06%, deltafos 0.08% and achiv 0.03% showed high biological efficacy against green curved leaf beetle

joint. Many other satellite pests were also killed, which had a positive effect on the overall condition and productivity of the trees.

Apple moth – Hyponomeuta malinellus Zell. It belongs to the family of mountain moths (Hyponomeytidae). Apple moth is found in the foothills and mountainous regions of Central Asia. It spreads everywhere and only harms the apple. Alone, the worms feed on the writing buds and leaves of the apple. Strongly damaged trees do not bear fruit or yield less. The growth of damaged trees slows down. This moth overwinters under the shields of tree branches and twigs during the first year of larvae. It begins to feed a week before flowering in the spring. They live in mines, and during the flowering period they gather in groups and eat the leaves from the outside, enclosing the upper leaves with a spider. The worms are lined, but each is mushroomed on a separate cocoon. Vasilev V.P., Livshits I.V. [7]

Butterflies fly in June-July. The female lays her eggs in 20-70 balls on thin branches and twigs. The butterfly covers the egg ball with a special mucus, which hardens and forms a shield. In the same season, the worms hatch from the eggs, but they do not emerge from under the shield, but go into diapause until the spring of next year. Moth development is influenced by weather and biotic factors. In winter, when the temperature drops below 30 ° C, the worms freeze to death. In summer, they die even in August, when the average temperature is 40 ° C and humidity is 35-40%. In Uzbekistan, fruit trees have been tested with a number of insecticides as a means of combating apple moth and other rodent pests. Field experiments were conducted in apple orchards at the experimental station of Tashkent State Agrarian University. Trees up to 3 m in height (6 in each variant) were treated with a motorized hand sprayer. Water consumption rate was 1000 l / ha. The working fluid concentration was selected accordingly. Pest identification was performed before and 1, 5, 10, and 15 days after treatment.

Biological effectiveness of insecticides against apple moth

It was processed at the experimental station of Tashkent State Agrarian University in Kibray district.

1000 l / ha, 13.V. 2018 y. Table 3

№	Вариантлар	Working fluid cont., %	Consumption norm, l (kg) / ha	The average number of worms in 3 affected horns, pcs					Efficiency,% after the following day			
				Until processing	After processing the following day							
					1	5	10	15	1	5	10	15
1	Endjeo, 24.7% s.k.	0,03	0,30	46,4	3,2	4,4	0	1,4	93,9	90,9	100	96,0
		0,04	0,40	74,2	0	2,1	0	0	100	97,3	100	100
3	Deltafos, 36% k.e	0,16	0,16	61,2	3,2	2,1	0	0	95,4	96,8	100	100
		0,2	2,0	53,1	3,1	0,9	0	0	94,9	98,4	100	100

4	Achiv, 20% n.k.	0,05	0,50	36,2	8,1	2,1	3,2	1,6	80,3	94,5	88,9	94,2
		0,06	0,6	44,4	4,2	1,5	1,4	0	91,4	96,8	96,0	100
5	. Killer, 5% k.e.	0,08	0,8	51,2	4,7	3,2	0	0	91,9	94,1	100	100
		0,12	1,2	43,2	2,6	1,9	1,7	0	94,7	95,8	95,1	100
6	Fufanon, 57% k.e. (standard)	0,03	3,0	61,4	3,6	3,7	2,6	2,6	94,8	94,3	94,7	94,4
	Control (unprocessed)	-	-	36,6	41,4	38,7	29,1	27,7	-	-	-	-
	EKF_{05}=								2,8	2,6	1,2	0,8

The results of the study conducted in 2018 at the experimental station of Tashkent State Agrarian University in Kibray district are given in Table 3, where it was found that all tested drugs are highly effective in the fight against apple moth. ***Coleaphora hemorobiella*** **Scop.** This insect is an example of the family Coleophoridae and is one of the most common pests of apple and other satellite fruit crops. Distributed in all regions, including the northern regions: Khorezm region, the Republic of Karakalpakstan, as well as southern Surkhandarya, Bukhara, Fergana and other regions. Butterflies are very small, the wings are thin and sharp-pointed, gray-white in color, with imperceptible dark spots. When the wings are spread, it reaches 12-14 mm, the eggs are lemon-yellow, 0.3-0.4 mm long, 0.2 mm wide, smooth. The larvae often live in a cigar-shaped sheath, which they make from pieces of leaf tissue, up to 10 mm in length. Its development period is two years. V.V. Yaxontov [20]. The pest overwinters during the larval stage in the hollows attached to the bark near the tree bud buds. In the spring, the worms wake up and begin to infect the buds and leaves, and then feed on the flowers and leaves of apples, apricots, almonds, pears, cherries and cherries. Strongly damaged buds dry out, and when weakly damaged, ugly leaves are formed. In damaged plants, assimilation processes are disrupted, the buds are unable to accumulate nutrients, resulting in poor growth, drying and reduced yields. The moth infestation ends when the white acacia begins to bloom, i.e. the worms go to the fungus. In June-July, the worms move from the leaves to the branches, attach their sheaths to the bark, and enter a state of diapause, not moving or feeding until next spring.

In our research, we studied a number of modern insecticides as a chemical control agent against this pest. The following 2 periods can be noted as the period of control of moths: 1 – during the period when the worms begin to feed after the winter (in the sheaths), it is less effective, but useful, because it protects the buds from damage at the same time; 2nd generation worms were conducted in open pests in June-July.

Two experiments were conducted in the 2019 season: the first processing was on April 15-16 during the budding period of apple buds, the second - on July 14-15 against the summer population of the sheath. In each variant, 4 trees were treated using a motorized hand sprayer. The working fluid was consumed at a rate of 500 l per hectare, adjusting the concentration of the

drug to the appropriate condition. The experiments were conducted in Denov district of Surkhandarya region, where shell moths are constantly developing. As a result of the first early spring treatment, it had a high efficiency and differed positively from the standard - fufanon (4 l / ha). However, in terms of effectiveness, endjeo (0.4 l / ha) and tsiperfos (1.6 l / ha) were found to be the best (Table 4).

Biological efficacy of insecticides applied against overwintering populations of bark beetle

Denov district of Surkhandarya region, field experience, processed by hand (1000 l / ha), 15-16.IV. 2019 y. Table 4

№	Options	Working fluid concentration, %	Препарат сарф-меъёри, л(кг)/га	The average number of worms in 3 affected horns in the following days after treatment:				Efficiency,% on the following days:			
				6	10	15	20	6	10	15	20
1.	Bagira, 20% e. k.	0,04	0,4	2,8	5,3	3,5	4,2	89,2	79,0	87,1	83,6
2.	Danadim, 40% e. k.	0,3	3,0	5,6	2,7	3,6	3,7	78,5	89,3	86,8	85,6
3.	Tsiperfos, 55% k.e.	0,16	1,6	1,2	0	0,9	1,9	95,4	100	96,7	92,6
4.	Endjeo, 24.7% k.e.	0,04	0,4	0	0	1,7	3,2	100	100	93,7	87,5
5.	Tsipermetrin, 25% k.e.	0,04	0,4	2,9	4,2	3,1	1,2	88,8	83,4	88,6	95,3
6.	Fufanon, 57% k.e. (default)	0,4	4,0	3,2	1,9	4,2	6,5	87,7	92,5	84,5	74,7
7.	Control (unprocessed)	-	-	26,1	25,3	27,2	25,7	-	-	-	-
	EKF_{05}=							2,4	2,8	2,6	3,1

Standard of all tested insecticides and insecticides: bagira - 0.4 l / ha, danadim - 3 l / ha, cypermethrin - 0.4 l / ha, endjeo - 0.4 l / ha and tsiperfos - 1.6 l / ha the biological efficacy of fufanone (4 l / ha) was high and they were recommended for practical use

***Cemiostoma scitella* L.** The hawthorn is a common member of the family Semiostomidae. The pest mines apple, pear, quince, cherry, cherry, peach, hawthorn leaves. The first infestation of the leaves by the pest was recorded in late April. The butterflies of the hawthorn moth are grayish-white, very small, reaching a length of 3 mm, and 5-7 mm when spreading their wings. Eggs oval, smooth, white in color. The larvae reach 3-5 mm in length, greenish or yellowish-white in color, the head is brown. The dome is brownish-yellow, about 2 mm long, located on a white spider-rhombic cocoon.

The fungi of the hawthorn moth overwinter partially in the bark cracks of the butterflies and among the shed leaves. In the spring, when the

leaves are hatched, the butterflies fly away and lay 75-80 eggs on the underside of the leaves. After 7–11 days, worms appear, and they begin to eat the leaf flesh, gnawing on the bark of the leaves. In doing so, they form round mines with a diameter of 7-9 mm. The mines take on an increasingly dark hue and turn a dark brown color. The development period lasts 16-20 days, after which they are mushroomed on a thin spider cocoon at the bottom of the leaf.After 7-10 days, new (second) generation butterflies continue to fly out of the fungus. .. Butterflies fly in April and lay their eggs up to 80 on the underside of the leaf The pest develops by giving 3-4 generations per year. D.Obidjonov [13]. M.I. Boldyrev [6]. Apples, cherries, walnuts are strongly affected by the fruits. The hawthorn moth develops with 3-4 generations per year.

We conducted field and production experiments on hawthorn moth in the territory of Bostanlyk district of Tashkent region. In the first experiment conducted in June 2018 in the Bostanlyk forestry area, 4 drugs were tested against the standard Carbophos (Table 5). Processing was carried out on 16 and 17 June 2018 using a motorized hand sprayer at a water consumption rate of 1000 l / ha. Pest identification was detected 3, 6, 9, and 13 days before and after treatment. The number of live worms in the mine was taken into account. In all variants of the experiment, high values were obtained due to the fact that the drugs Camelot, Bagira and Danadim had a systemic effect. The control revealed a natural increase in the number of mines and worms in the leaves on the trees.

Biological effectiveness of insecticides against hawthorn moth in apples

Bostanliq district, field experience, processed by hand machine - 1000 l / ha, 2018 16-17.VI.

5-Table

№	Options	Working fluid conc., %	Consumption norm, l (kg) / ha	The average number of live worms in mines in 1 king, pcs					Efficiency,% on the following days			
				Prior to processing	In the following days after processing:							
					3	6	9	13	3	6	9	13
1.	Dalamectin, 1.8% k.e.	0,06	0,6	143	24	11	7	7	83,8	92,8	95,6	95,8
		0,08	0,8	162	17	3	8	7	89,9	98,3	95,6	96,3
2.	Camelot, 20% n.kuk.	0,04	0,4	131	24	17	13	12	82,3	97,9	91,1	92,2
		0,05	0,5	107	12	7	6	2	89,2	90,4	94,9	98,4
3.	Bagira, 20% k.e.	0,06	0,6	124	19	9	9	7	85,2	93,3	93,5	95,2
		0,08	0,8	160	21	11	7	7	85,5	93,6	96,1	96,3
4.	Danadim,	0,4	4,0	134	17	16	10	9	87,	92,	93,	94,

	40% k.e.								8	4	3	3
5.	Carbophos, 50% k.e. (default)	0,6	6,0	127	26	17	19	21	80,3	87,6	86,6	86,0
6.	Control (unprocessed)	-	-	132	137	142	147	156	-	-	-	-
	EKF_{05}=								2,6	1,8	1,4	1,2

***Choreuthis nemorana* Hb.** One of the most common species in the family Glyphiptorygidae. Occurs in all regions of Uzbekistan. The butterfly is relatively small, brown in color, with transverse stripes and shapes, the wings have a peculiar shape, reaching 16-18 mm when spread on the wings. under, between the shed leaves, and so on. The worms wake up in late March-early April and then turn into mushrooms. After the worms are fed and mated, they begin to lay eggs. In our study, each female butterfly laid up to 140 eggs, mostly on the underside of a fig leaf. After some time, worms emerge from the eggs, which feed on the lower tissue of the leaf and skeletalize the leaves. As the worms grow, they begin to feed more vigorously by bending the leaf edges using spiders. Damaged fig trees weaken, new leaves begin to turn green, and the fruit crumbles, dries, loses its appearance, yields fall. In the first half of the season, the fig moth damages more leaves, and in the second, the fruit elements formed in the evening are more damaged. This is because in the second half of the growing season, the fig leaves become brittle. The developmental worms are silvery-white spider webs, mushroomed under protection consisting of a sufficiently dense layer of fibers; After 8–12 days, a new generation of butterflies will fly. As a result of research conducted in Tashkent region in 1918-2019, it was observed that the pest reproduces 4 times a year and partially 5 times. Develops with 4-5 generations per year S.A. Mirzaeva [12].

To protect figs from pests based on observed and identified fig phenology, we use a number of modern pesticides. Held in 2018 and 2019 in the Tashkent region (Table 6). According to the data in the table, all drugs tested (except cypermethrin) gave very high results. In addition, 4 of the first drugs provided reliable protection of trees from spiders; phytotoxicity was not observed.

6-Table

Biological efficacy in the application of pesticides against fig moth

Field experience, Tashkent region, processed by hand machine 1000 l / ha, 21.07.2018 y.

№	Options	Working fluid cont.,%	Consumption norm l (kg) / ha	Efficiency,% on the following days:			
				3	6	10	15
1.	Deltafos, 36% k.e.	0,16	1,6	100	100	89,1	97,2
2.	Tsiperfos, 55% k.e.	0,2	2,0	100	89,1	91,4	96,2
3.	Killer, 5% k.e.	0,08	0,8	91,7	96,2	100	91,7
4.	Endjeo, 24.7% k.e.	0,04	0,4	100	100	99,2	91,6
5.	Tsipermetrin, 25%	0,04	0,4	82,2	87,5	77,2	79,7

	k.e.						
6.	Achiv, 20% n.kuk.	0,05	0,5	100	92,2	87,9	91,2
7.	Control	-	-	Number of worms on 10 branches, pcs			
				17,2	16,1	18,9	9,7
			EKF_{05}=		4,2	3,8	4,4

3,4

The phenogram shows the scientifically based terms of protection against the first "spring" and the remaining "evening" generations of the pest, taking into account the ripening of the fruit and the harmless use of pesticides. In our research, we studied the density of the pest or the degree of contamination of the fruit elements. In this case, 3 stages of damage to trees were selected: 1.5-2 of fruit elements; 8-10 and 15-18% damage. The condition of 16-18-year-old fig trees was satisfactory, and their productivity was within their potential. Calculation of the biological yield of fig trees affected by the pest with different levels of control (protected trees) showed that when the fruit was infested with a minimum (1.5-2%) of the fig moth, the yield loss was 1.3 kg per tree and 190 kg per hectare. formed. Yield loss was observed when the initial damage was 8-10%, respectively: 6.3 kg and 960 kg / ha, and when the damage was 15-18%, 9.7 kg and 1470 kg / ha, respectively.

Thus, as a measure of the extent of the economic damage of the fig moth, its prevalence is 1.5–2% in fruits or 10% in leaves. In our study, we calculated the economic and cost-effectiveness of processing figs twice a season in order to protect them from fig moth and satellite pests. (Table 7). The results of the experiment showed that after the first treatment, an additional yield of 14.0 ts / ha is possible, which is 50% of the control, and after the second treatment, respectively, 22.6 ts / ha or 62.4 compared to the control. %

7-Table

Preservation of fig crop in protection of figs from fig moth and satellite pests (economic and economic efficiency)

Field production experience, Tashkent region, 2018

Experiment options	Account date	The average of the fruits on 1 branch	1 ta total number of fruits on the tree, pcs	Average weight of 1 ripe fruit, gr.	Productivity		Extra received		
					kg / tree	ts / ga *)	yield, ts / ga	Separate start prices thousand soums **)	Net profit, excluding processing costs, thousand soums ***)
Experiment: 2 chemical treatments:	5.06 and	17,2	653,6	33,7	22,0	42,0	14,0	1120,0	1038,0
I - 7.06. - Tsiperfos-2.0 l / gaII - 3.08. - Karate-1.0 l / ha	2.08	22,4	851,2	36,2	30,8	58,8	22,6	1808,0	1726,0

Control (unprocessed)	5.06 and 2.08	17,2 12,4	511,7 607,2	28,7 31,2	14,7 18,9	28,0 36,2		-	

*) – 1 ha - 191 trees, **) - The average market price of the product in 2018 - 800 soums / kg,
***) – The cost of one processing is 82,000 soums

This indicates that, on the one hand, there is a high risk of fig moth and satellite pests, and on the other hand, protective measures are highly effective.

***Phyllocnistis citrella* Stainton.** Citrus moth Mina belongs to the family Lyonetiidae and is an internal quarantine object. The pest is a small butterfly, which entered the territory of the republic under uncertain conditions and began to spread, adapting very easily, because in our country citrus fruits (lemons, part mandarins) are grown with special care. Butterflies lay their eggs near the point of growth of young twigs. The worm-infested leaves curl as they grow and stop growing.

We studied the biological development of citrus moth in two geographical regions of the country: Tashkent (Limonchilik farm, Qibray district) and Surkhandarya region (Denov district, Khazarbog farm). gives two - in summer and autumn. The pest lays its eggs on top of the young leaves in an amount of 150-200 pieces. After 3–5 days, the worms emerge from the eggs and begin to feed on the leaves. At the end of development (after 15–20 days) fungi are formed. Butterflies of the citrus moth can fly very long distances.

Changes in the vital characteristics of the development of citrus mines in the Tashkent region in 2002.

8-Table

Laboratory-field experiments, Qibray district, “Limonchilik” farm

Indicators	Generations			Average
	spring	summer	autumn	
Moth on 7-year-old trees density, pieces / tree	15	26	43	28
Gender ratio: ♂ ♀ (%)	53,3 46,7	53,9 46,1	48,8 51,2	51,1 48,9
The fertility of butterflies, egg / 1 ♀	39	95	171	101,6
Embryonic development of the egg duration, days	15-16	10-12	8-10	11-13
The development of the worm duration, days	16-27	15-22	12-18	14-22
The flight of butterflies duration, days	13-16	11-12	10-12	11-13
The development of a single generation duration, days	43-58	35-46	29-39	36-48

In 2018, the average flight of butterflies in the Limonchilik farm of Kibray district of Tashkent region was 10-13 days. It took 43-58 days to develop a single generation of citrus moth in the spring, 35-46 days in the summer, and 29-39 days in the fall. Due to the unfavorable climatic conditions in the spring in the conditions of the farm "Limonchilik" Kibray district of Tashkent region, all forms of development of the spring generation of citrus mites lag behind the next generation. As can be seen in Table 8, this is due

to low ambient temperature, short duration of daylight, and high humidity.

The results of our observations conducted in the conditions of the farm "Khazarbog" Denov district of Surkhandarya region are given. In the spring period, the males of the citrus moth moths were dominant in the following proportions: male-female 55.5%: 44.5%. In the summer, the same ratio was maintained at 52.3%: - 47.6%, while in the autumn the proportion of males decreased slightly and amounted to - 49.1%: 50.9%. As can be seen in Table 9, this indicates that the pest is preparing for winter. Consequently, the fertility of a single female butterfly was 36 eggs in the spring generation, 73 eggs in the summer generation, and a maximum of 156 eggs in the autumn generation, which is 4 times more than in the spring. The data on other indicators in Surkhandarya region were the same as in Tashkent region. According to the results of laboratory and field observations conducted in Surkhandarya region in the 2018 season, as a result of continuous seasonal development of the citrus miner, 8 generations were recorded per year.

Changes in the vital characteristics of the development of citrus mines in Surkhandarya region in 2018, Table 9

Laboratory-field experiments, Denau district, Khazarbog farm

Indicators	Generations			Average
	spring	Summer	Autumn	
Moth density in 5-year-old trees, pieces / tree	9	21	29	19,7
Gender ratio: ♂	55,5	52,3	44,8	49,1
♀ (%)	44,5	47,6	55,0	50,9
Fertility of butterflies, eggs /1 ♀	36	73	156	88,3
Duration of embryonic development of the egg, days	14-16	12-16	10-12	12-14
Duration of worm development, days	16-23	16-23	13-19	15-22
Duration of butterflies flight, days	13-16	11-12	10-12	11-13
The duration of development of one generation, days	43-55	39-51	33-43	38-49

In order to eliminate pests in dangerous densities in the gardens of Uzbekistan, fast-acting insecticides are used for rapid response to agrobiocenosis. In the 2018 season was held at the farm "Limonchilik" Kibray district of Tashkent region. Six samples of modern insecticides and insecticides against citrus mites were tested (Table 10).

Biological efficacy of insecticides against citrus mites

Lemon farm of Kibray district, field experience, processed by hand - 1000 l / ha, 18.07.2018.

10- table

Options	Working fluid concentration., %	Consumption norm, l / ha	Average number of worms in 1 tree, pcs					Efficiency,% on the following days:			
			Prior to processing	On the following days after processing:							
				3	7	14	20	3	7	14	20
Vertimek, 1.8% k.e.	0,04	0,4	61,1	17,1	3,2	8,4	11,3	71,5	95,0	87,4	77,2
	0,05	0,5	72,4	14,2	3,2	2,8	4,1	80,0	95,8	96,5	93,0

Tsiperfos, 55% k.e.	0,1	1,0	63,3	19,1	12,3	9,4	16,1	69,3	81,4	86,4	68,6
	0,15	1,5	84,6	17,2	13,2	7,1	9,7	79,3	85,1	92,3	85,8
Konfidor, 20% k.e.	0,025	0,25	56,9	16,1	7,2	3,1	4,8	71,1	87,9	95,0	89,6
Endjeo, 24.7% s.k.	0,02	0,2	74,4	9,7	8,1	1,7	3,2	86,7	89,6	97,9	94,7
Tsipermetrin, 25% k.e.	0,03	0,3	56,6	24,4	12,1	8,9	12,2	56,0	79,6	85,6	73,4
Carbophos, 50% k.e.	0,1	1,0	57,3	19,1	11,7	8,2	9,3	66,0	80,5	86,9	79,9
Control (unprocessed)	-	-	47,1	46,2	49,3	51,4	38,2	-	-	-	-
	EKF_{05}=								5,4	4,6	3,6 4,7

The processing of 3 trees in the variants was carried out using a motorized hand apparatus that sprayed the working fluid in fine droplets. The sprayer was designed to consume 1000 l / ha of working fluid. Chemicals, especially vertimek with translaminar effect (0.4-0.5 l / ha), as well as tsiperfos – 1.5 l / ha, confidor - 0.25 l / ha, and endjeo – 0.2 l / ha demonstrated high and lasting efficacy; phytotoxicity was not observed.

CONCLUSION

1.Phyllophages cause severe damage to fruit crops in the regions of the republic from the coin-winged insects connected with the food chain during their first stage of development and active fruiting.

2. To the green curved-leafed leafhopper. The following insecticides have shown high biological efficacy in pest control: tsiperfos, working fluid at a concentration of 0.1%; killer - 0.06%, achiv - 0.03%, deltafos - 0.08% and Bi-58 - 0.14%.

3. To combat apple moth, the following influences of the economic damage quantification criterion are recommended: Presence of 1–3 shields with 10–25% damaged leaves or eggs per 1 tree after flowering. The following insecticides are highly effective in combating moths: endjeo - 0.3 l / ha, deltafos - 1.6-2.0 l / ha, achiv - 0.5-0.6 kg / ha, killer 0.8 -1.2 l / ha, fufanon - 3 l / ha.

4. Sheath moth gives one generation per year. The fight against moths is economically justified at a density of 1–2 sheaths per horn after flowering. In the post-winter period, the following insecticides are effective against moths: bagira - 0.4 l / ha, danadim - 3 l / ha, tsipermetrin - 0.4 l / ha, endjeo - 0.4 l / ha, tsiperfos - 1.6 l / ga.

5. Hawthorn is a serious pest of apples and other fruit crops in all regions of Uzbekistan. It develops with 3 or 4 generations per year. Chemical pest control is economically justified when there are 0.5–1 or more mines on a single leaf. The following insecticides are highly effective against pests: dalamectin 0.6-0.8 l / ha, camelot - 0.5 kg / ha, bagira - 0.7 l / ha, danadim - 4 l / ha and deltafos -1, 6 l / ha.

6. Fig moth - monophagous, the main pest of figs; gives 4-5 generations per year; severely damages the bushes by skeletalizing the leaves and gnawing on the fruit. Experiments have shown that with minimal damage to fruits

(1.5-2%), the yield loss per tree is 1.3 kg, and 190 kg per hectare. In the first 8-10% of the damage, respectively: 6.3 and 960 kg per hectare, and in 15-18% - 9.7 and 1470 kg / g. Thus, 1.5-2% prevalence in fruits or 10% prevalence in leaves can be recommended as a measure of the extent of economic damage of fig moth. The following insecticides are effective in the fight against fig moth: deltafos - 1.6 l / ha, tsiperfos - 2.0 l / ha, killer - 0.8 l / ha, endjeo - 0.4 l / ha and achiv - 0, 5 kg / ha.

7. Citrus mousse develops in Uzbekistan with 6 generations per season; the density of worms usually reaches 20-28 per 1 lemon tree; fruit ratio - 1: 1; fertility - 88–101 eggs per 1 ♀; The developmental duration of a single generation is 36-49 days. Chemical protection is carried out when there are 3-4 or more worms on a single tree. Among insecticides, the following are highly effective against pests: vertigo, 0.4-0.5 l / ha; tsiperfos - 1-1.5 l / ha, confidor - 0.25 l / ha and endjeo - 0.2 l / ha.

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