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BIOLOGICAL EFFECTIVENESS OF PEST CONTROL OF ORNAMENTAL TREES OF THE LEGUMINE FAMILY

1 Allayarov Nodirjon Jo‘rayevich,

2 Nafasov Zafar Nurmahmadovich,

3 Muminov Mansur Shodikulovich

1 Senior Researcher, Plant Protection and

Quarantine Research Institute, 111215, Tashkent, Uzbekistan,

Email: allayarovnodir78@gmail.com

2 Doctor of Agricultural Sciences, Senior Researcher, Head of the Laboratory

Plant Protection and Quarantine Research Institute, 111215, Tashkent, Uzbekistan,

https://orcid.org/0000-0001-9569-1120, email: zafar.nafasov85@gmail.com

3 Doctoral Student (PhD), Plant Protection and

Quarantine Research Institute, 111215, Tashkent, Uzbekistan,

email:muminov-mansur@inbox.ru

ABSTRACT

In Uzbekistan, the issue of nature conservation and environmental improvement has become one of the leading directions of state policy. Therefore, in recent years, much attention has been paid to plant protection. The plant world is considered the most important resource in human life, and when used wisely, it becomes an inexhaustible source of raw materials. Plant diversity is an important source of life, an actual and potential resource for all countries. Plants are important in the sustainable development of society, in solving its economic, cultural, aesthetic, and environmental needs. Sucking pests of ornamental trees cause serious damage and lead to the death of trees. The reasons for the sharp increase in the number of pests, bioecological characteristics, distribution area, level of harmfulness and measures to combat it have not been sufficiently studied. Implementing out current scientific research is one of the urgent tasks of our time. For this reason, it is necessary to study control measures and develop a system of environmentally friendly and effective measures against these pests. According to the results of the study, the biological effectiveness of the entomophage Chrysoperla carnea, distributed against Aphis craccivora, damaging Styphnolobium japonicum, was high and in a ratio of 1:10 85.9%, in a ratio of 1:15 70.3%, in a ratio of 1:20 was 57.2 % biological effectiveness. In 2022, the areas of distribution of entomophages were controlled, and the following year there was no need for the spread of entomophages in these territories. This is due to the fact that in the spring of 2024, 65-70% of Chrysoperla carnea overwintered well, and such data are also presented in the literature. Similar experiments were carried out on Japanese saphora 2023-2024. As a result of monitoring, it was established that trees with Styphnolobium japonicum are infected with Aphis craccivora (Table 1.).

INTRODUCTION

Table 1 Biological effectiveness of lacewing against Aphis craccivora on Styphnolobium japonicum

(Kashkadarya region, Kamashi state forestry enterprise, 2022-2024.)

Chrysoperla carnea distribution coefficient	Allocated time (day, month)	Tree height, meter	The number of pests before the distribution of the entomophage on 1 fruit bunch, specimen	The number of pests after the distribution of the entomophage on 1 fruit bunch, specimen	Biological effectiveness,%
1:10	24.08.	4,0	55,8	9,2	83,5
1:15	24. 08.	4,5	57,5	17,1	70,3
1:20	24. 08.	5,5	63,5	27,2	57,2
Control (without processing)	-	4,8	76,9	77,0	-
CED$_{05}$=				2,12	

Among microbiological preparations against Aphis craccivora, Bioslip BV (Beauveria bassiana) and Bioslip BT (Bacillus thuringiensis) were used. Insect counts were carried out before treatment with a microbiological preparation and on days 1, 3, 7, 14, 21 and 28 after treatment. The biological effectiveness of the drugs was calculated using the formula of W.S. Abbot (1925).

Biological efficiency when using Bioslip BV at a rate of 2.0 l/ha was 7.7% on the 3rd day, 23.7% on the 7th day, 48% on the 14th day and 67-74% on the 21 -28 days. When using Bioslip BV at an application rate of 3.0 l/ha, the biological efficiency was 9.8% on the 3rd day of calculation, 26% on the 7th day, 54% on the 14th day, 80-82% on the 21-28th days. Thus, it was found that the effectiveness was 8-12% higher when Bioslip BV was used at 3.0 L/ha compared to 2.0 L/ha. Bioslip BT was also used at two different application rates and the following results were obtained.

Biological efficiency is 4.4% on the 3rd day, 9.1% on the 7th day, 43.2% on the 14th day, 59.5-76.4% on 21-28 days, when added to at an application rate of 2.0 kg/ha, and at an application rate of 3.0 kg/ha, the biological efficiency is 15.3% on the 3rd day, 24.0% on the 7th day, 49.8% on the 14th day, 66.3% on the 21st day and 84.6% on the 28th day (Table 2.).

Against Aphis craccivora Koch. for Styphnolobium japonicum from chemical preparations we used Entolucho 20% sus. 0.3-0.4 l/ha, Bi-58 (new), 40% em.con. at consumption rates of 1.5-2.0 l/ha. The standard for these drugs is Bagheera 20% w.r.c. the drug was used at a rate of 0.3 l/ha. When using Entolucho 20% k. sus. from a consumption rate of 0.3 l/ha, the biological efficiency is 45.0% on the 1st day, 68.4% on the 3rd day, 76.0% on the 7th day, 81.8% on the 14th day and 85.2% on the 21st day.

When using Entolucho 20% sus. at a consumption rate of 0.4 l/ha, the biological efficiency is 47.3% on the 1st day, 71.3% on the 3rd day, 81.5% on the 7th day, 92.1% on the 14th day, 96.6% showed biological effectiveness in 21 days. When using Bi-58 (new) 40% e.e., at the rate of 1.5 l/ha, the biological efficiency on the 1st day of the calculation day was 41.4%, on the 3rd day 71.6%, on the 7th day 80 .1%, on the 14th day 88.6%, on the 21st day - 95.8%. Bi-58 (new) 40% k.e., at a consumption rate of 2.0 l/ha, the biological efficiency was 43.7% on the 1st day

of the calculation day, 74.7% on the 3rd day, 74.7% on the 7th day day 84.1%, on the 14th day 89.4%, and on the 21st day - 97.6%.

When using the drug Bagheera 20% i.r.c. as a standard at an application rate of 0.3 l/ha, the biological efficiency was on the 1st day of the calculation day - 46.7%, on the 3rd day 75.1%, on the 7th day 85.8%, on the 14th day 93.1%, and 95.3% on day 21 (Table-3).

In experiments, the biological effectiveness of Effect-Extra preparations was studied, 80% k.e. and Entolucho, 20% k.sus. against Aphis craccivora Koch. on Albizia julibrissin at different application rates. At an application rate of 1.0 l/ha Effect-Extra, 80% e.e. biological effectiveness was 60.1% on the first day of testing (Table-4).

By the 7th day it increased to 87.7%. The greatest effectiveness was observed on the 14th day of testing and amounted to 92.8%. At a consumption rate of 1.5 l/ha Effect-Extra, 80% e.e. biological effectiveness was 69.3% on day 1, 84.6% on day 3, 94.7% on day

7, 97% on day 14. The drug Entolucho, 20% sus. also tested at two different application rates: 0.3 and 0.4 l/ha. Entolucho, 20% sus. at a rate of 0.3 l/ha, the biological efficiency was 65.1% on the 1st day of the experiment, 77.7% on the 3rd day, and 88.3% on the 7th day. The highest biological efficiency corresponded to the 14th day of calculation and amounted to 93.3%. At a consumption rate of 0.4 l/ha Entolucho, 20% dry matter. biological effectiveness was 68.8% on day 1, 81.5% on day 3, and 92.2% on day 7. The highest biological efficiency corresponded to the 14th day of calculation and amounted to 97.3%. The drug Bagheera 20% k.em. used as a reference showed a biological efficacy of 68.0% on day 1, 79.5% on day 3 and 91.5% on day 7. The highest biological efficiency was observed on the 14th day of calculation and amounted to 96.2%.

According to monitoring results, in 2022-2024, ornamental trees of the Legume family were infected. Parthenolecanium corni. During our studies, when using the drug Angeo Duo, 24.7% sus. at a rate of application of 0.2 l/ha against Parthenolecanium corni on Albizia julibrissin, the biological effectiveness on the first day was 28.0%, and by the 7th day it increased to 67.4%. The greatest effectiveness was observed on the 21st day of testing and amounted to 90.2%. When using the drug Angeo Duo, 24.7% sus. in an amount of 0.3 l/ha on the first day of testing, the biological efficiency was 29.1%, and by the 7th day it increased to 72.5%.

Table 2 Effect of microbiological preparations against Aphis craccivora Koch. on Cercis canadensis

(Tashkent city, M.Ulugbek district, working fluid 1000 l/ha, 2022-2024.)

Options	Consumption rates of the drug, l (kg)/ha	Average number of pests on 10 leaves, pcs.						Biological effectiveness, days, (%)				
		Before processing	After treatment, days									
			3	7	14	21	28	3	7	14	21	28
Control	-	32,9	33,1	32,1	32,5	33,5	33,8	-	-		-	
Bioslip BV 1 ml 10^8	2,0	29,3	27,2	21,8	14,8	9,6	7,8	7,7	23,7	48,0	67,0	74,0
Bioslip BV 1 ml 10^8	3,0	30,9	28	22,3	14,0	6,3	3,2	9,8	26,0	54,0	80,0	82,0
Bioslip BT 1 ml 10^{10}	2,0	36,2	34,8	32,1	20,3	14,9	8,8	4,4	9,1	43,2	59,5	76,4
Bioslip BT 1 ml 10^{10}	3,0	23,6	20,1	17,5	11,7	8,1	3,6	15,3	24,0	49,8	66,3	84,6
CED $_{05=}$												2,7

Table 3 Effect of chemicals against Aphis craccivora Koch. on Styphnolobium japonicum (Tashkent city, Ulugbek district, working fluid 1000 l/ha, 2022-2023.)

Options (name of chemicals)	Consumption rates of the drug, l (kg)/ha	Active substance	Average number of pests in one bunch of Japanese saphora fruits, pcs.						Biological effectiveness, days, (%)				
			Before processing	After treatment, days									
				1	3	7	14	21	1	3	7	14	21
Entolucho 20% sus.k.	0,3	*Imidacloprid*	197,2	109,2	62,1	46,3	36,5	29,8	45,0	68,4	76,0	81,8	85,2
	0,4		181,7	96,4	52,1	32,7	14,5	6,3	47,3	71,3	81,5	92,1	96,6
Bi-58 (new) 40% e.k.	1,5	*Dimethoate*	180,7	106,6	51,2	34,9	9,5	21,0	41,4	71,6	80,1	95,8	88,6
	2,0		177,9	100,7	44,9	27,6	3,2	19,2	43,7	74,7	84,1	97,6	89,4
Bagheera, 20% w.s.c. (reference)	0.3	*Imidacloprid*	177,5	95,2	44,1	24,6	12,4	8,4	46,7	75,1	85,8	93,1	95,3
Control (without processing)	-		178,7	179,9	178,3	174,2	181,6	183,1		-	-		-
CED $_{05=}$	3,6								2,4	1,8	2,1	2,4	

Table-4 Biological effectiveness of chemical preparations against Aphis craccivora Koch. on Albizia julibrissin

(Kamashinsky state forestry enterprise, Kashkadarya region, 2022-2024.)

№	Options	Drug consumption rates l, kg/ha	Number of aphids per 10 leaves, pcs.					Biological effectiveness, days %			
			Before processing	After treatment, days							
				1	3	7	14	1	3	7	14
1.	Эффект-Екстра, 80 % k.e.	1,0	87,2	38,4	21,8	12,3	7,1	60,1	76,5	87,7	92,8
		1,5	84,4	29,0	13,8	5,1	2,9	69,3	84,6	94,7	97,0
2.	Entolucho, 20% k.sus.	0,3	94,2	36,8	22,3	12,6	7,1	65,1	77,7	88,3	93,3
		0,4	82,0	28,6	16,1	7,3	2,5	68,8	81,5	92,2	97,3
3.	Bagira, 20% k.e. (etalon)	0,3	73,1	26,2	15,9	7,1	3,1	68,0	79,5	91,5	96,2
4.	Control (without processing)	-	86,4	96,7	91,9	99,3	97,7	-	-	-	
CED $_{05=}$										2.7	

The greatest effectiveness was observed on the 21st day of testing and amounted to 93.6%. Entospilan, 20% s.por. used as a reference preparation at the rate of 0.3 l/ha (Table 5).

When using Militar, 10% k.em. against Parthenolecanium corni on Cercis canadensis at a rate of 0.5 l/ha on the first day of testing, the biological effectiveness of the drug was 24.4%, and by the 7th day it increased to 60.5%. The greatest effectiveness was observed on the 21st day of testing and amounted to 76.4%. When using the drug Militar, 10% k.em. at the rate of 0.6 l/ha against acacia false scale insects in the Canadian purple grass on the first day of testing, the biological effectiveness was 25.3%, and by the 7th day it increased to 72.1%. The greatest efficiency was observed on the 21st day of testing and amounted to 80.3% (Table 6).

In the course of our research, we studied the biological effectiveness of chemicals against seed beetles on Albizzia julibrissin (Table 7.). Karate, 5% k.sus. when using the drug at a rate of 0.5 l/ha on the 5th day of calculation it was 42.7%, on the 10th day - 83.3%. Biological effectiveness of the drug terminator gold, 30% e.m. at a consumption rate of 0.2 l/ha on the 5th day of calculation it is 56.8%, by the 10th day 82.2%, and at a consumption rate of 0.3 l/ha on

the 5th day - 65, 3% by the 10th day of calculation showed 92.9% biological effectiveness. As a standard, the drug Bagira, 20 % e.e. on the 5th day of calculation it showed 51.8% biological efficiency, and on the 10th day of calculation 84.6%.

Table-5 Biological effectiveness of the drug Engeo Duo, 24.7% sus. against Parthenolecanium corni on Albizzia julibrissin

№	Options	Drug consumption rates l, kg/ha	Active substance	Number of scale insects on a branch 10 cm, pcs.						Biological effectiveness, days %				
				Before processing	After treatment, days									
					1	*3*	*7*	*14*	*21*	*1*	*3*	*7*	*14*	*21*
1.	Enjeo Duo, 24,7 % k.sus.	0,2	*Lyambda sigalotrin+ tiametaksam*	38,4	23,1	21,2	15,4	12,4	6,2	28,0	42,6	67,4	81,7	90,2
		0,3		53,8	31,9	24,7	18,2	14,1	5,7	29,1	52,3	72,5	85,2	93,6
2.	Entospilan, 20 % s.p.	0,3	*Asetamiprid*	69,6	29,6	27,3	23,7	19,8	14,4	49,1	59,2	72,3	84,0	87,4
3.	Tayfun plyus, 10 % s.p. (etalon)	0,6	*Imidakloprid*	58,2	23,6	19,8	15,5	14,6	10,9	51,5	64,6	78,3	85,8	88,6
4.	Control (without processing)	-	-	79,3	66,3	76,3	97,6	140,4	130,6	-	-	-	-	-
	CED $_{05=}$													1,7

Table-6 Biological effectiveness of the drug Militar, 10% c.em. against Parthenolecanium corni on Cercis canadensis

№	Options	Drug consumption rates l, kg/ha	Active substance	Before processing	Number of Parthenolecanium corni on a 10 cm branch, pcs.					Biological effectiveness, days %				
					After treatment, days									
					1	*3*	*7*	*14*	*21*	*1*	*3*	*7*	*14*	*21*
1	Militar, 10 % k.e.	0,5	*Piriproksifen*	67,8	63,1	21,7	24,3	16,3	7,5	24,4	53,6	60, 5	68,1	76,4
		0,6		63,9	58,7	20,1	16,2	12,1	5,9	25,3	54,4	72, 1	74,9	80,3
2	Profentrin, 31,5 % k.e.	0,5	*Profenofos +lyambda-ц̧igalotrin*	76,7	56,7	22,6	18,6	12,1	6,1	40,0	55,5	73, 3	79,1	83,0
3	Control (without processing)	-	-	31,6	38,9	21,8	28,7	23,8	14,8	-	-	-	-	-
	CED $_{05=}$									1,3	3,2	2,2	2,9	1,9

Table-7 Biological effectiveness of seed attack chemicals on Albizzia julibrissin (Tashkent city, M. Ulugbek district 2023-2024).

Options	Active substance	Drug consumption rates l, kg/ha	Number of pests before treatment	Number of pests after treatment		Biological effectiveness,%	
				5	10	5	10
Karate, 5 % k.e.	*Lyambdatsigalotrin*	0,5	13,9	7,3	2,5	42,7	83,3
		0,7	14,9	6,3	1,5	53,3	90,1
Terminator gold, 30 % k.e.	*Imidakloprid+ lyambdatsigalotrin*	0,2	15,1	5,9	2,9	56,8	82,2
		0,3	16,9	5,3	1,3	65,3	92,9
Bagira, 20% k.e. (reference)	*Imidakloprid*	0,3	18,6	8,1	3,1	51,8	84,6
Control (without processing)	-	-	17,8	16,1	19,2	-	-
CED $_{05=}$				3.2			

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