ISSN 2181-3187

UOT:632.937

MICROBIOLOGICAL CONTROL MEASURES AGAINST CHERRY AND PEACH PESTS

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Аннотация. Ўсимликлар карантини ва ҳимояси илмий-тадқиқот институтида колорадо қўнғизидан ажратиб олинган B.thuringiensis бактериясининг ва B.bassiana замбуруғининг махаллий штаммларини боғ ўргимчакканаси (Schizotetranychus pruni Oudms.), оддий ўргимчаккана (Tetranychus urticae Koch.), гилос қора бити (Myzus cerasi), комсток қурти (Pseudococcus comstoki), шарқ меваҳўри (Grapholitha molesta Busck.) каби зараркунандаларга қарши инсектицид фаоллигини аниқлаш бўйича илмий изланишлар олиб борилди.

Абстрактный. В НИИ карантина и защиты растений проведены исследования по определению инсектицидной активности местных штаммов бактерий B.thuringiensis и гриба B.bassiana, выделенных из колорадского жука, в отношении таких вредителей, как садовый паутинный клещ (Schizotetranychus pruni Oudms.), обыкновенный паутинный клещ (Tetranychus urticae Koch.), вишневый черный тля (Myzus cerasi), комсток-червь (Pseudococcus comstoki) и восточный плодовый мотылек (Grapholitha molesta Busck.).

Abstract. The Research Institute of Quarantine and Plant Protection conducted studies to determine the insecticidal activity of local strains of bacteria B.thuringiensis and the fungus B.bassiana, isolated from the Colorado potato beetle, against pests such as Schizotetranychus pruni Oudms., Tetranychus urticae Koch., Myzus cerasi, and Pseudococcus comstoki Kuw. and the Grapholitha molesta Busck.

Enter. Increasing the productivity of gardens and improving the quality of fruits is one of the urgent tasks of our time. One of the main factors is protecting them from pests and diseases. More than 150 pests and diseases are known to harm gardens. Knowing the bioecology of such pests, it is very important to carry out control

ISSN 2181-3187

measures during the most vulnerable period of their life. Since the climatic conditions of Uzbekistan are favorable for the growth of insects that damage gardens, various pests are reported to damage gardens every year. In some years, as a result of their damage, the weight and quality of grown fruits are reduced to one degree or another in all regions of our republic. This dangerous group of pests are frugivores. Fruit moths are garden pests that reduce the productivity of apple, pear, quince, peach, cherry, plum, cherry, almond and walnut trees and spoil the quality of the fruit, sometimes making them unfit for consumption.

One of the serious problems of agriculture is that most of the crop is destroyed by insects. In this case, the use of biopesticides based on entomopathogenic fungi becomes a priority, since they are more environmentally friendly than pesticides [1].

The use of microbiological preparations to protect plants from harmful organisms is constantly expanding throughout the world. According to experts, the market share of biopesticides in 2020 was determined to be 20% and amounted to $8 billion. In terms of scale of application, drugs based on Bacillus thuringiensis Berliner (Bt) took first place in the world. In 2009, preparations based on Bacillus thuringiensis Berliner (Bt) were used on 50 million hectares of land in the world, and 33 million hectares were discovered in the USA [2].

Insect diseases (mycoses) are caused by the following classes of fungi: phycomycetes, basidiomycetes, deuteromycetes and ascomycetes. More than 100 species of entomopathogenic fungi are known. But the basis for creating the drug is Beauveria species (causing white muscardine), Metarhizium (source of green muscardine disease) and Enthomophthora species [3].

Also today there is great interest from specialists in the field of means of counteracting the cultivation of products that are harmless to biological, environmental and human health within the framework of the requirements of organic and world standards in agriculture.

Location of the study. In 2023, research was carried out to test the fungal strains B. bassiana VTq-28 and bacterial strains B. thuringiensis-26 under field conditions on cherry and peach trees at the orchard of the Research Institute of Quarantine and Plant Protection.

Research methods. Isolation of local pathogenic isolates and strains from cherry and peach pests, as well as the study of their biological effects, was carried out using the following traditional published methods: “Methods for recognizing insect diseases” by A.A. Evlakhova, O.I. Shvetsova M., (1964).), “Diseases of harmful insects” (1965) [4,5], “Microbological methods of combating harmful insects” [6;] J. Weiser, “Micrology of insects”, “Pathology of insects” by E. Steinhaus [7,8]., A.A. Evlakhova “Entomopathogenic fungi” [9], N.Yu. Geshtov “Entomopathogenic fungi” [10]. The distribution of cherry and peach pests, testing of pesticides in small and large field

ISSN 2181-3187

experiments to combat them was calculated on the basis of the methods given by Sh.T. Khodzhaev [11].

Research results. The Research Institute of Quarantine and Plant Protection conducted studies to determine the insecticidal activity of local strains of bacteria B.thuringiensis and the fungus B.bassiana, isolated from the Colorado potato beetle, against pests such as garden spider mites, common spider mites, cherry black aphids, and Comstock worms. and the oriental fruit borer.

Field experiments were carried out against adults and larvae of cherry and peach pests. Pest control of cherries and peaches using manual equipment. The experiment was carried out during a period of mass development of imagoes and larvae of cherry and peach pests.

During our research against the Comstock worm and the eastern fruit borer.

The following results were obtained when testing B. bassiana strain VTq-28. When using the B. bassiana strain VTq-28 against the Comstock worm in a titer of 2×10^8 ml on the 3rd, 7th and 14th days of calculation, respectively, 27.2; 57.3; An efficiency of 81.1% was achieved.

39.8 in a titer of 2×10^8 ml against the oriental fruit fly on the days of the above calculations; 60.2; It was found that an effectiveness of 76.0% was achieved (Table 1).

Table 1

Determination of the biological effectiveness of the B. bassiana strain VTq-28 against the *Pseudococcus comstoki* Kuw.and the *Grapholitha molesta* Busck.

(Research Institute of Quarantine and Plant Protection, 2023)

№	Options	Titre	The average number of insects in 1 plant, pcs				Efficiency, % by days		
			The number of insects before processing	Days after processing					
				3	7	14	3	7	14
Pseudococcus comstoki Kuw.									
1.	Control (idle)	-	60,6	65,4	71,5	79,9	-	-	-
2.	Bioslip BV (template)	1,5	70,8	32,7	10,9	13,2	49,4	80,4	74,2
3.	*B. bassiana VTq-28*	2×10^8	65,2	51,2	32,8	16,2	27,2	57,3	81,1
Grapholitha molesta Busck.									
1.	Control (idle)	-	25,1	25,3	29,7	36,2	-	-	-
2.	Bioslip BV (template)	1,5	33,1	19,6	15,3	11,5	41,3	60,9	75,9
4.	*B. bassiana VTq-28*	2×10^8	32,5	25,4	18,5	10,6	39,8	60,2	76 ,0

ISSN 2181-3187

Table 2

Determination of biological effectiveness of B. thuringiensis-26 strain against cherry black aphid and garden spider mite (Research Institute of Quarantine and Plant Protection, 2023).

№	Options	Drug consumption rate l, kg, l/ha	The average number of insects in 1 plant, pcs					Efficiency, % by days			
			The number of insects before processing	Days after processing							
				3	7	14	21	3	7	14	21
	Myzus cerasi										
1	Control (idle)	-	60,6	65,4	71,5	79,9	82,6	-	-	-	-
2	Tayfun plyus 10 % (template)	0,5	70,8	32,7	10,9	13,2	17,8	57,2	86,9	**85,8**	81,5
3	B. thuringiensis-26 (2×10^8 units).	0,3	65,9	30,8	12,5	15,9	18,5	56,6	83,9	**81,7**	79,4
	Schizotetranychus pruni Oudms.										
1	Control (idle)	-	49,7	54,7	64,7	86,5	120,4				
2	Tayfun plyus 10 % (template)	0,5	45,8	9,2	8,8	10,2	16,3	81,7	85,2	**87,2**	85,3
3	B. thuringiensis-26 (2×10^8 units).	0,3	39,5	17,5	10,8	10,3	16,4	60,2	78,9	**87,9**	82,8

The following results were obtained when testing the B. thuringiensis-26 strain in our studies against cherry black aphids and garden spider mites. When using the B.thuringiensis-26 strain against cherry aphids in a titer of 2×108 ml (0.3 l/ha) on the 3rd, 7th and 14th days of calculation, respectively - 56.6; 83.9; An efficiency of 81.7% was achieved.

60.2 against garden spider mites in a titer of 2×108 ml (0.3 l/ha) on the days of the above calculations; 78.9; It was found that an efficiency of 87.9% was achieved (Table 2).

From the results obtained, we can conclude that as a result of using the B.bassiana strain VTq-28 in a titer of 2×108 ml on the 14th day of calculation, the efficiency was shown to be 81.1% and 76.0%, while the B.thuringiensis strain - 26 showed 2. As a result of application in a titer of ×108 ml (0.3 l/ha), it showed an effectiveness against cherry black aphids and garden spider mites of 81.7% and 87.9%. The use of microbiological preparations is safe for the environment, warm-blooded animals and humans and is considered important when growing organic products.

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