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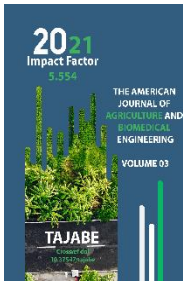

Efficiency Of Biological Preparations In The Fight Against Cotton Scoop On Tomato

Hikoyat Kamilovna Agzamova
Ph.D., Senior Researcher, Research Institute Of Plant Protection, Tashkent, Uzbekistan

Saidakhon Abdusalomovna Mirzaeva
Candidate Of Technical Sciences, Associate Professor, Head Of The Department Of Plant Protection Of The Andijan Institute Of Agriculture And Agrotechnology, Andijan, Uzbekistan

Khurshidabonu Shavkatjon Kyzy Shokirova
Master, Andijan Institute Of Agriculture And Agrotechnology, Andijan, Uzbekistan

ABSTRACT

The article presents the results of testing microbiological preparations Bioslip BT and Bioslip BW against cotton scoop on tomato. The results of the experiment showed that in the experimental variants treated with Bioslip BT at a rate of 1.0-1.5 kg/ha and Bioslip BW at a rate of 2.0-3.0 l / ha, the efficiency was, respectively, on the 14th day after treatment 77.9-91.2%; 70.2-87.3%. The advantages of the microbiological method are both in the possibility of prevention and in their safety for humans, warm-blooded animals and the environment.

KEYWORDS

Bioslip BT, Bioslip BW, cotton scoop, tomato, biological product, efficiency, consumption, OVT-1200

INTRODUCTION

In modern conditions, the applied plant protection products must not only ensure high yields, but also be safe for the environment and cost effective.

To this end, specialists in biological plant protection have joined in the general struggle for the purity of cultivated products and the biosphere.

In recent years, the main attention of plant protection specialists around the world has been directed to the creation of such a system for the control of agricultural pests of plants, which would reduce the use of chemicals to the

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necessary minimum, as well as the development of safe methods of plant protection that are not inferior in efficiency to the chemical method.

The essence of biological control methods is to increase the number and efficiency of entomophages and entomopathogenic microorganisms and their practical use in suppressing the number of pests of agricultural crops. The climatic conditions of Uzbekistan are favorable not only for the cultivation of various agricultural crops, but also for the mass reproduction of numerous species of harmful insects and ticks. Among them, the dangerous ones are cotton, winter, exclamation moths, locusts, spider mites, aphids, whiteflies, etc.

Cotton scoop - is one of the most serious pests of tomato. The caterpillars of the cotton bollworm are extremely polyphagous. Currently, microbiological insecticides based on spore-crystalline complexes of Bacillus thuringiensis (Bt) are used as environmentally friendly means of controlling agricultural pests.

In recent years, in foreign countries, bacterial preparations, mainly based on Bacillus thuringiensis, have been successfully used in the fight against pests of agricultural crops (Fomenko, 1991). Using microbiological means of pest control of agricultural crops, despite the fact that they are prepared on the basis of bacteria and production technology, both in quantitative and the high-quality content of entomocidal components, contribute to a decrease in the number of pests.

Of all microorganisms, the most widely and successfully used are bacteria of the Bacillus thuringiensis group, which largely meet these requirements. Every year, more and more bio - and serovariants of Bacillus thuringiensis are allocated. More than 30 serotypes have already been registered (Kandybin, 1991).

Yu.K. Samoilov noted in 2013 the trend of biologization of plant growing, the use of biological methods and plant protection products, bacterial fertilizers and other agents of natural origin, requires the improvement of the industrial production of biological products, in particular, of fungal and bacterial origin.

Prospects for the development of the biological method in the branches of the Rosselkhoztsentr, the issues of the future development of biological production were discussed, noting the fact of the acquisition of assets for the production of biological products by the largest chemical companies (Zhivykh, Proskuryakova, 2014)

In connection with the harmlessness of the drug to humans and safe for the environment and efficiency in the fight against pests of vegetable crops, the use of microbiological preparations is promising in Uzbekistan. Tomatoes are the main vegetable crop in Uzbekistan.

One of the reasons that reduce the yield of tomatoes is the negative activity of pests and diseases. Of the pests, the cotton scoop is especially dangerous, destroying up to 20-30% of the crop in some years.

According to sanitary and hygienic requirements, the use of pesticides on tomatoes is possible only in the first growing season before the beginning of fruit formation, and it is during this period that the harmful activity of the cotton bollworm begins.

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One of the techniques is the microbiological method of combating the cotton bollworm on tomato, the widespread use of which ensures the maximum reduction in yield losses while maintaining the high quality of products and eliminating the toxic effect on warm-blooded animals, humans and useful entomofauna, as well as environmental pollution.

Currently, entomopathogenic bacterial preparations based on various variants of the crystalline bacillus Bacillus thuringiensis are being produced. The advantages of the microbiological method are both in the possibility of preventing pests and in their safety for humans, warm-blooded animals and the environment.

We consider it expedient to test biological products Bioslip Bt and Bioslip BW produced by Organic Service Uzbekistan in the fight against cotton budworm on tomato. The obtained positive results will be promising for inclusion in the system of integrated control of cotton bollworm on tomato in Uzbekistan, as the most effective element allowing to preserve the environment.

MATERIAL AND METHODS OF RESEARCH

BIOSLIP BT is a biological insecticidal preparation produced as a dry powder with a titer of 1x1011 CFU / g of viable spores /g., The basis of the preparation is Bacillus thuringiensis.

BIOSLIP BW - a biological preparation produced in the form of a liquid with a titer of 1x108 based on Beauveria bassiana presented by Organic Service Uzbekistan is a means for protecting agricultural crops from pests.
Field trials to determine the effectiveness of biological products were carried out on the basis of the following guidelines: "Recommendations for the use of bacterial drugs against pests of agricultural crops," Guidelines for testing insecticides, biologically active substances and fungicides. In field experiments, we used the Volgograd variety against the cotton bollworm on a tomato. Experiments were carried out in the farm "Sotvoldiev Abugaffor orzusi" of the Altynkul district of the Andizhan region against the second generation with a cotton scoop on a tomato.

The dynamics of the number of caterpillars in the experimental and control fields was determined by examining 100 tomato plants in 5 variants of 3 replicates. On each replication, 20, 5 samples each were taken. Plants in the samples were carefully examined, the number of found eggs of moths and caterpillars was counted, dividing into three age groups - younger (1-2 ages), middle (3-4 ages) and older (5-6 ages).

The age composition of the populations before treatment was characterized by the following parameters: caterpillars of I-II ages - 12.3 - 27.0 ind., Caterpillars III-IV ages 7.6-19.0 ind., Caterpillars V-VI ages 5.8-11 , 7 copies. Consequently, the processing time of the tomato coincided with the most favorable period for the fight against this pest.

Spraying of tomato crops was carried out using tractor equipment OBT - 1200 with a working fluid flow rate of 500 l / ha. Picked up the fields during the mass of the birth of caterpillars. Control fields - the drug was not treated. The pest population was counted on the following days: the first (preliminary one day) before treatment and then on the 3rd, 7th and 14th days after treatment. Technical efficiency calculations were carried out according to the Abbott formula.

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Experiment scheme:

1. Control (without treatment) - 0.1 ha
2. Spraying tomato with Bioslip BT at a rate of 1.0 kg / ha. Experience area - 0.3 hectares
3. Spraying tomato with Bioslip BT at a rate of 1.5 kg / ha. Experience area - 0.3 hectares
4. Spraying tomato with Bioslip BW at a rate of 2.0 l / ha. Experience area - 0.3 hectares

Table number 1

The effectiveness of the use of biological products against cotton bollworm II generation on tomato (Field experiment, f / v "Sotvoldiev Abugaffor orzu", Altynkul district, Andizhan region, July, 2019-2020)

№	Options	Consumption		Average number of caterpillars per 100 plants before treatment (ind.)				Biological efficiency in % to control by day study		
		Preparation kg,l/ha	Liquids l/ha	Before processing	After processing for the day					
					3	7	14	3	7	14
1.	*Bioslip BT*	1,0	500	45,0	35,0	27,3	14,0	36,0	61,4	77,9
2.	*The same*	1,5	500	37,3	18,6	11,6	4,6	58,9	80,2	91,2
3.	*Bioslip BW*	2,0	500	32,5	28,0	18,6	13,6	29,1	44,1	70,2
4.	The same	3,0	500	42,6	26,6	18,3	7,6	48,6	72,7	87,3
5.	Lepidocides n.(*reference*)	1,0	500	51,8	20,6	15,6	6,6	67,2	81,6	90,3
6.	The conrtol	-	-	34,3	41,7	54,0	48,3	-	-	-

5. Spraying tomato with Bioslip BW at a rate of 3.0 l / ha. Experience area - 0.3 hectares
6. Spraying tomato with Beta Pro at a rate of 320 g / ha. The area under the experiment is 0.1 hectares.

Experimental results. Field experiments were carried out in July on tomato. During this period, the fruits were mostly ripe. The average daily air temperature during the experiment ranged from 30.5-380C, maximum 40-430C. The relative humidity of the air during the indicated month, respectively, fluctuated within the range of 33-40%.

The treatment with a biological product was carried out during the period of active feeding

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of young caterpillars. The second generation of the cotton bollworm has been developing since the second decade of July. At the same time, the average number of young caterpillars was at the level of damage threshold. The total area was 0.13 hectares. Meteorological conditions at the time of laying the experiment, the average daily air temperature is 35-400C, the relative air humidity is 31.0 - 35.0%, the wind speed did not exceed 1.7 m / s.

The treatment was carried out on July 10 in the evening during the period of mass appearance of young caterpillars against the second generation of the cotton bollworm. Consequently, the processing time for cotton coincided with the most favorable period for combating the specified pest.

The results of the experiment showed that in the experimental variants treated with the biological product Bioslip BT at a rate of 1.0-1.5 / ha, the efficiency was, respectively, on the 3rd day after treatment, 36.0 - 58.9%. Comparing the data on effectiveness on days 7 and 14, it should be noted that the obtained results are high. Thus, the efficiency was respectively 61.4-80.2%; 77.9-91.2%.

The effectiveness results are shown in the table
According to the use of Bioslip BW at the rate of 2.0-3.0 l / ha, the efficiency on days 7 and 14 was somewhat lower and amounted to 44.1-72.7%, respectively, on days 7 and 14; 70.2-87.3%.

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It is noted that, when using biological products, the first symptoms usually appear on the 5-6th day in the form of a violation of the movement of caterpillars, the skin turgor is lost, the caterpillars become inactive, react poorly to irritations. The caterpillars remaining on the experimental fields were far behind in growth and development. During this period, the control caterpillars reached an older age and began to pupate. In the reference variant, where Lepidocide s.p. was used, at a rate of 1.0 kg / ha, on 7.14 days after treatment, the efficiency was respectively 81.6 - 90, 3%.

Based on the studies carried out in 2020, we believe that the use of biological products Bioslip BT and Bioslip BW contributes to a sharp decrease in the number of cotton bollworms on tomatoes and does not have a harmful effect on the environment, beneficial entomofauna, warm-blooded animals and humans.

CONCLUSIONS

The use of Bioslip BT and Bioslip BW at a rate of 1.5 kg/ha and 3.0 l / ha with a working fluid flow rate of 500 l / ha during ground spraying reduces the number of cottonworm caterpillars on tomato by 91.2-87.3% and not has a harmful effect on the environment, beneficial entomofauna, warm-blooded animals and humans.A

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