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Efficiency of antibac Uz biopesticide against colorado potato beetle

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ABSTRACT

The Colorado potato beetle (Leptinotarsa decemlineata Say), is a major pest of potatoes in Uzbeksitan and many other parts of the world. Decreasing crop losses aused by the Calorado Potatoes Bettle and larvae feed on the foliage and stems of potato plants, resulting in poor yields and plant death. We observed the Efficiency of biological in Antibac Uz of biopesticide against Colorado potato beetles on Potatoes. Determination the Efficiency of biological in Antibac Uz of biopestiside against Colorado potato beetles a field and laboratory experiments have been conducted "Agro farmer family Shalola Abdurakhim Yusupov", disrtict Qibray, Province Tashkent. We use Antibac Uz bioinsecticide 5.0 liter per hectare spending in the days of 3, 7, 14, 21 against Colorado potato beetles after inoculation showed effect of 6,6; 31,6; 44,8; 37,5%. The against to larvae was better in fact 35,4; 54,7; 56,7; 68,8%. Once we use Antibac Uz biopesticide 6.0 liter per hectare in the days of 3, 7, 14, 21 pesticide showed effect of 38, 2; 41, 9; 56,0; 48,1%.

KEYWORDS

Antibac Uz biopesticide;
Colorado potato beetle;
Biological effect.

INTRODUCTION

The Colorado potatoes beetle (Leptinotarsa decemlineata Say.) is pest insect of potatoes than can completely destroy potato crops. The Colorado potatoes beetle was observed in Tashkent Region, district Bustonliq in 1972. The Colorado potato beetle is a leaf beetle (Family *Chrysomelidae)* with the destructive stages (larvae and adults) feeding primarily on the foliage. Adult Colorado potato beetles are oval and approximately 9-12 mm in length and 6-7 mm in width. They are yellow-orange with 10 narrow, black longitudinal stripes on their elytra. Female Colorado potato beetle is very prolific; they can lay as many as 300-800 eggs[1]. Colorado potato beetles experience intense selection pressure for insecticide resistance, because of the significant economic impacts of this pest and the subsequent intensive use of pesticides in infested areas. More than 30 active ingredients are currently registered for use against *L. decemlineata* around the world[2].

Bacillus thuringiensis's different strains phytopathogen bacteria and fungi various effect with big interest wake and plant protect effective utilized[3]. *Bacillus thuringiensis* var. Darmstadiensis a new bioinsecticide has been produced against larvae of Colorado potato beetles. The efficiency up to 90-93% by use the agent[4].

Kandybin N.V[5] reported that, scientific works has shown the successful potential of microbial agents in the control of Colorado potato beetles owing to their, highest efficiency, harmless for useful entomofauna, harmless for hot-blood animals and humans compared to chemical insecticide.

Biological control of the Colorado potato beetle is likely to remain a major challenge. Up-to-date, foreign exploration has failed to produce an effective biological control agent that would become established in major potato-growing areas and bring Colorado potato beetle populations under control. A new bacterium species, C*hromobacterium subtsugae*, has been found to be toxic to the Colorado potato beetle[6]. In the present work, we observed the ffficiency of biological in Antibac Uz of biopesticide against Colorado potato beetles on Potatoes.

MATERIALS AND METHODS

In order determination the efficiency of biological Antibac Uz of biopesticide against Colorado potato beetles - a field and laboratory experiments were conducted at "Agro farmer family Shalola Abdurakhim Yusupov", disrtict Qibray, Province Tashkent. The cultivation treatments were following options: 1. Control (with water), 2. Mospilan 20% (measurement), 3. Lepidocide-100 (measurement), 4. Antibac Uz 05th+TAM (0,4%), 5. Antibac Uz 05th+TAM (0,45%), 6. Antibac Uz 05th (0,4%), 7. Antibac Uz 05th (0,45%). For the determination

TABLE 1 : Determination of biological efficiency in Antibac Uz biopesticide against larvae of colorado potato beetles

№	Treatments	Concentration of biopesticide, %	The efficiency % (the order of days)							
			The number of larvae until inoculation	3	5	7	10	12	15	20
			I-II young larvae							
1.	Control (with water inoculation)	-	25	-	-	-	-	-	-	-
2.	Mospilan 20%.(measurement)	0,025	25	72,0	96,0	100,0	100,0	100,0	100,0	100,0
3.	Lepidocide-100 (measurement)	0,2	25	20,0	36,0	64,0	100,0	100,0	100,0	100,0
4.	Antibac Uz 05th+TAM	0,4	25	16,0	28,0	72,0	100,0	100,0	100,0	100,0
5.	Antibac Uz 05th+TAM	0,45	25	24,0	32,0	87,5	100,0	100,0	100,0	100,0
6.	Antibac Uz 05th	0,4	25	8,0	20,0	68,0	70,0	87,5	87,5	87,5
7.	Antibac Uz 05th	0,45	25	12,0	24,0	72,0	91,6	91,6	100,0	100,0
			III-IV young larvae							
1.	Control (with water inoculation)	-	25	-	-	-	-	-	-	-
2.	Mospilan 20%.(measurement)	0,025	25	64,0	88,0	96,0	100,0	100,0	100,0	100,0
3.	Lepidocide-100 (example)	0,2	25	12,0	48,0	70,0	78,0	100,0	100,0	100,0
4.	Antibac Uz 05th+TAM	0,4	25	18,0	32,0	64,0	87,0	91,0	91,0	91,0
5.	Antibac Uz 05th+TAM	0,5	25	24,0	50,0	73,0	91,0	96,0	96,0	96,0
6.	Antibac Uz 05th	0,4	25	16,0	36,0	42,0	66,0	77,0	88,0	88,0
7.	Antibac Uz 05th	0,45	25	24,0	40,0	44,0	78,0	88,0	92,0	92,0
		P<0.05			18,4	14,3	11,6	4,4	3,1	2,1

Laboratory experiment, August- September, 2012

TABLE 2 : Determination of biological efficiency in antibac Uz biopesticide against colorado potato beetles

№	Treatments	Concentration of biopesticide, %	The number of beetles until inoculation	The efficiency % (the order of days)					
				3	5	7	10	14	21
1.	Control (with water inoculation)	-	25	-	-	-	-	-	-
2.	Mospilan 20%. (measurement)	0,025	25	40,0	84,0	91,6	91,6	91,6	91,6
3.	Lepidocide-100 (measurement)	0,2	25	12,0	24,0	29,1	45,8	50,0	50,0
4.	Antibac Uz 05^{th}+TAM	0,4	25	8,0	20,0	25,0	33,3	41,6	41,6
5.	Antibac Uz 05^{th}+TAM	0,5	25	8,0	28,0	33,3	41,6	45,8	45,8
6.	Antibac Uz 05^{th}	0,4	25	0,0	12,0	16,6	29,1	33,3	33,3
7.	Antibac Uz 05^{th}	0,5	25	4,0	16,0	20,8	37,5	45,8	45,8
		P<0.05			14,4	12,6	9,4	8,6	7,2

Laboratory experiment, August- September, 2012

the efficiency of biological Antibac Uz of biopesticide 0,4% and 0,45% solutions were used in laboratory condition.

Adults of Colorado potato beetles were picked from nature and they were reared in laboratory conditions. Colorado beetle and its larvae were placed at 30-32^{o} C along with 47-50 % relative humidity. For control the beetle was sprayed with pure drinking water. While Antibac Uz bioinsecticide was sprayed on leaf and stalk in respective treatments. The stalk and leaf of potato, worked out with, have been fed. Control of treatment was saturated with feed water.

Analysis of variance was performed using the Excel program package version 11 for Windows 2007 (Microsoft Corporation), Student's t-test and least significant differences (LSD) were applied to compare means at P<0.05.

RESULTS AND DISCUSSION

The biological efficiency of two types of Antibac Uz biopesticide against to Colorado beetle larvae is shown in TABLE 1. Resuls, obtained under laboratory condition, showed that Antibac Uz $0,5^{th}$+ TAM and Antibac Uz $0,5^{th}$ biopesticide samples are most fruitful against to the I-II aged Colorado beetle larvae under laboratory condition. Here Antibac Uz $0,5^{th}$+ TAM and Antibac Uz 0,5 th 0,4-0,45 % concentrate solutions gave 100,0-87,5-91,6% efficiency to the I-II aged larvae and 91,0-96,0%, 77,0-88,0% efficiency in the III-IV aged larvae respectively in 12^{th} day. Mospilan 20%, 0.025% concentrated and lepidosid 0.2% concentrated solutions used as a sample in experiment. As a result, it was obtained that these concentrated solutions showed 100% efficiency in 10^{th} day. In our next laboratory experiment we used two types of Antibac Uz biopesticide to against to Colorado beetle and its results showed in TABLE 2.

After used two types of Antibac Uz biopesticide inoculation with 0.4-0.45 % concentrated against to Colorado beetle, there was significantly decrease in the days of 7, 10 and 14^{th} respactivily in percent of 25,0-33,3-41,6%; 33,3-41,6-45,8%; 16,6-29,1-33,3% ; 20,8-37,5-45,8%. 400 liter amount field experiment liquid used to work out potatoes in inoculation. Experiment accomplished on the sort of Santa when Colorado beetle larvae developed.

The number of Colorado beetle on the control and experiment lands, calculated in per plant, was about from 2.5 till 4.0 number until inoculation. The number of ovules was 19.5-34.5.

During our investigations, Antibac Uz biopesticide against to Colorado beetle larvae observed and its numerical properties outlined as stated below (TABLE 3). According to the information showed in the TABLE 3, if we use Antibac Uz biopesticide 5.0 liter per hectare in the days of 3, 7, 14, 21 after inoculation showed effect of 6,6; 31,6;

TABLE 3 : Efficiency of biological in antibac Uz of bioinsecticide against colorado potato beetles on potatoes

№	Treatments	Biopesticide limits l, kg/ha	Number of insect average of per plant						The efficiency % (the order of days)				
			The number of insect until inoculation	1	3	7	14	21	1	3	7	14	21
Colorado potato beetles													
1.	Control (without inoculation)	-	2,5	2,5	3,0	3,0	3,4	3,0	-	-	-	-	-
2.	Mospilan 20%. (measurement)	0,025	3,5	2,0	1,3	0,6	0,5	0,6	42,5	69,5	85,7	89,9	85,7
3.	Antibac Uz	5,0	4,0	4,0	3,5	3,3	3,0	3,0	0,0	6,6	31,6	44,8	37,5
4.	Antibac Uz	6,0	2,7	2,5	2,0	1,9	1,6	1,7	7,4	38,2	41,9	56,0	48,1
				Larvae									
1.	Control (without inoculation)	-	27,3	29,6	35,5	41,0	33,6	21,0	-	-	-	-	-
2.	Mospilan 20%. (measurement)	0,025	34,5	23,0	15,0	6,5	3,6	2,0	38,4	66,5	87,4	91,5	92,4
3.	Antibac Uz	5,0	25,0	25,0	21,0	17,0	13,3	6,0	0,0	35,4	54,7	56,7	68,8
4.	Antibac Uz	6,0	19,5	18,0	14,6	7,3	3,3	2,3	14,8	42,4	75,0	86,3	84,6
		P<0.05							13,1	12,2	10,6	8,7	7,1

Field experiment, " Agro farmer family shalola abdurakhim yusypov", disrtict qibray, Province tashkent, August-September, 2013 year, 400 L/ha .

44,8; 37,5%. The against to larvae was better in fact 35,4; 54,7; 56,7; 68,8%. Once we use Antibac Uz biopesticide 6.0 liter per hectare in the days of 3, 7, 14, 21 preparate showed effect of 38,2; 41,9; 56,0; 48,1%. The against to ovules was better 42,4; 75,0; 86,3; 84,3%.

Second times inoculated against in the seventh day of experiment new born ovules larvae. As an example chemical Mospilan 20% used and it has spent 0.025 liter per hectare. In the days of 3, 7, 14 against to beetles 69,5; 85,7; 89,9%; and against to larvae 66,5; 87,4; 91,5% efficiency observed.

CONCLUSION

These results of this study showed that biological efficiency were determinated in Antibac Uz of biopesticide to hectare 6,0 l limits liquid 400 l two time inoculation against Colorado potato larvae. Efficiency of Antibac Uz of biopesticide compared to chemical pesticides lowest but it does not soiled environment and have been never observed negative effect on warm-blooded animals and useful entomophage.

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