CHEMICAL CONTROL MEASURES AGAINST LOCUSTS

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Abstract. *The article studies and analyzes the types of swarming locusts, young and old larvae, the chemicals used against them and their biological effectiveness in the agrocenoses of the Fergana Valley.*

Keywords: *sarancha, dominiruyushchie vidy, rasprostranenie, agrocenosis, regionaly, chemical preparations, normal consumption.*

Introduction. Dozens of species of locusts in the world pose enormous problems for food security. Their rampant development occurs on every continent except Antarctica, threatening the lives of 10 percent of the world's population. In particular, the desert locust is undoubtedly the most common and globally damaging agricultural pest, and in 2020, more than 25 million people in Africa and Asia faced a severe food crisis due to locust damage. As a result of their gross increase, solving environmental problems in agriculture at an unprecedented level is one of the urgent issues.

Research materials and method. Research was conducted in several districts of Andijan, Fergana and Namangan regions during 2020-2023. During the research, all observations, counting the number and density of locusts, collecting samples, were carried out by F.N.Pravdin, E.P.Tsyplenkov, F.A.Gapparov in areas where they are widespread, G.Ya.Bey-Bienko, L.L.Mishchenko, A.V.Lachininsky in determining species of locusts, calculation of biological effectiveness of preparations V.V. Kurdyukov. From the methods of Sh.T.Khojaev, F.A.Gapparov, economic efficiency was conducted based on the methods of N.R.Goncharov [1].
As a result of the increase in the population of local species of harmful locusts in the Fergana Valley and the introduction of some species from the territory of neighboring countries, their damage is increasing year by year. In the Fergana Valley, locust control is carried out seasonally during the periods of mass development of Moroccan and Italian locusts. In particular, every year in the valley regions, chemical preparations are used to control oasis and Moroccan locusts on an average of 13-15 thousand hectares. Some years, locusts, which live in swarms in the territories of neighboring countries, fly to the territory of our country as a result of a large increase. In such cases, the areas of fighting against locusts can be doubled. In the fight against it, the active substance is mainly used in drugs belonging to the pyrethroid and neonicatinoid groups. 2(09) [pp. 299-303].

At the moment (2023) in Andijan region, treatment with chemical preparations against harmful locusts is carried out on an area of more than 6000 hectares. During the years of massive breeding of the Moroccan locust due to its flight from neighboring countries, mainly from the Republic of Kyrgyzstan, the area of cultivation increases several times. [5]. In our experiments to determine the biological effectiveness of chemical preparations, we used preparations with the active ingredient lambdacyhalothrin, alpha-cypermethrin and cypermethrin. We carried out our experiments in the mountain pastures of Markhamat district of Andijan province, in the border area with the neighboring Kyrgyz Republic. The main reason for our choice of Markhamat district

is that the Moroccan locusts, which live in swarms through the Ulug mountain ranges located on the border of the Kyrgyz republics of Uzbekistan, have been observed in these places. Quarantine and protection of plants during field experiments was carried out in cooperation with the staff of the anti-locust and mulberry moth control service of the Andijan regional administration. According to the generally accepted method in Uzbekistan, chemical treatment is carried out when the number of locust larvae exceeds 10-15 units per 1 m^2, depending on the state of vegetation and climatic conditions. OVX-600 and VP-1 tractor sprayers and gasoline-powered RUBIN-MM-909 hand-held sprayers are used to control locusts in the experimental field. Processing works were carried out mainly early in the morning in the desert and late, before sunset.

Field experiments Karat iks 20% sus.k. and Atilla Super, 10% em.c. (sample) preparations were conducted in order to determine their biological effectiveness against the larvae of Moroccan and Italian grasshoppers. The active substance of both drugs belongs to the group of pyrethroids - lambdacyhalothrin. These preparations differ from each other in the concentration of the active ingredient. [8].

Analysis and results. During the experiments Karat iks 20% sus.k. the drug was determined at the rates of 0.0375-0.0625 l/ha against large and small larvae of the Italian grasshopper. Counting the number of larvae was carried out by counting the number of larvae in 1 m2 area before treatment with the drug and 3, 24, 48 hours after treatment.

In the experiment Karat iks 20 % sus.k. drug was used against young and old larvae of the Italian locust in the amount of 0.0375 and 0.625 l/ha. According to the obtained data, the biological efficiency of 88.1% after 3 hours, 95.7% and 97.6% after 24 and 48 hours, respectively, was achieved when the drug was used against young locust larvae in the amount of 0.0375 l/ha (Table 1).

Karat iks 20% sus.k. when we used the drug in the amount of 0.0625 l/ha, biological efficiency was achieved 90.7% after 3 hours, 98.0% and 98.9% after 24 and 48 hours, respectively. According to the results of the experiment, the difference between the biological efficiency obtained from the use of the drug in the amount of 0.0375 and 0.0625 l/ha is less than 3%, and Karat iks 20% sus.k. it was concluded that it is appropriate to use the drug in the amount of 0.0375 l/ha.

1-table.

Biological effectiveness of the drug Karat iks 20% sus.k. against larvae of different ages of the Italian locusts ***(On 14.06.2023 in Andijan district, Andijan region, Uzbekistan)***

№	Variations	Consumption rate of the drug, l/ha	The average number of locusts per 1 m2 after n hours									after- n hours biological efficiency %		
			3			24			48					
			Alive	Dead	Total	Alive	Dead	Total	Alive	Dead	Total	3	24	48
Treatment against 2-3-year-old larvae 14.06.2023														
1	Karat iks 20% sus.k.	0,0375	4,7	35,1	39,8	1,6	36,3	37,9	0,9	37,2	38,1	88,1	95,7	97,6
2	Karat iks 20% sus.k.	0,0625	3,9	38,2	42,1	0,8	40,6	41,4	0,4	38,9	39,3	90,7	98,0	98,9
3	Atilla Super, 10% em.c. (template)	0,125	3,7	34,3	38,0	0,7	38,5	39,2	0,4	37,2	37,6	90,2	98,2	98,9
4	Control (idle)	-	38,2	0,1	38,3	37,3	0,4	37,7	34,6	0,3	34,9	0,0	0,0	0,0
Treatment against 4-5 year-old larvae 14.06.2023														
1	Karat iks 20% sus.k.	0,0375	7,5	27,2	34,7	4,9	28,1	33,0	3,0	33,2	36,2	78,3	85,1	91,7
2	Karat iks 20% sus.k.	0,0625	4,3	29,5	33,8	1,4	33,7	35,1	0,8	34,0	34,8	87,2	96,0	97,8
3	Atilla Super, 10% em.c. (template)	0,125	4,7	32,4	37,5	1,3	35,1	36,4	0,7	31,4	32,1	86,4	96,4	97,9
4	Control (idle)	-	31,9	0,0	31,9	32,2	0,3	32,5	32,9	0,3	33,2	0,0	0,0	0,0
	EKF $_{0.5}$											1,0	1,3	0,8

A similar experiment was conducted on adult larvae of the Italian grasshopper. According to the results of the experiment Karat iks 20% sus.k. 78.3% biological efficiency after 3 hours, and 85.1% and 91.7% after 24 and 48 hours, respectively, after treatment with the drug at a consumption rate of 0.0375 l/ha. In our experiment, at the consumption rate of 0.0625 l/ha, 87.2% after 3 hours of treatment, 96.0% and 97.8% after 24 and 48 hours, respectively, were achieved. Karat iks 20% sus.k. Due to the fact that the difference between the biological efficiency of the preparation in comparison with the adult larvae of the Italian locust at the rates of 0.0375-0.0625 l/ha is higher than 6% Karat iks 20% sus.k. it was concluded that it is appropriate to use the drug in the amount of 0.0625 l/ha in relation to adult larvae of the Italian grasshopper.

Conclusion. Experimentally tested Karat iks 20% sus.k for Italian grasshopper larvae. The biological efficiency of the drug was -97.6% when it was used at the rate of 0.0375 l/ha for 2-3 years old, and -97.8% when it was used at the rate of 0.0625 l/ha for 4-5 years old. Against Italian grasshopper larvae Karat iks 20% sus.k. (for young age - 0.0375 l/ha, for older age 0.0625 l/ha) it is recommended to use in norms.

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