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ORYZAEPHILUS SURINAMENSIS L. BIOLOGICAL EFFICIENCY OF THE CHEMICAL PREPARATION AGAINST THE PEST

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Annotatsiya: Ushbu maqolada surinam unxo‘ri (Oryzaephilus surinamensis L.) zararkunandasiga qarshi qishloq xo‘jalik mahsuloti yuklangan fumigatsiya kamerasida (fumigant) kimyoviy preparatlarni samaradorligi bo‘yicha ma’lumot berilgan.

Kalit so‘zlar: turkum, hasharot, fumigatsiya, biologik zaxira, fosfin, fumigant.

Аннотация: В данной статье представлена информация об эффективности химических препаратов против вредителя мукоедки суринамской (Oryzaephilus surinamensis L.) в фумигационной камере (фумиганте), загруженной сельскохозяйственной продукцией..

Ключевые слова: род, насекомое, фумигация, биологический запас, фосфин, фумигант.

Abstract: This article provides information on the effectiveness of chemical preparations against the Surinam flour moth (Oryzaephilus surinamensis L.) pest in a fumigation chamber (fumigant) loaded with agricultural products.

Keywords: genus, insect, fumigation, biological reserve, phosphine, fumigant.

Introduction. The mouthparts of pests belonging to the order Coleoptera are of the rodent type and possess diverse wings. Of these, the upper wing consists of a layer of

chitin—hard. For this reason, they are also called hardwings. The lower wing is softly membranous. The lower wings of flying insects are well-developed [1; P. 24].

A. Radek et al. (2022) note that phosphine (PH_3) is a widespread fumigant used worldwide to control pests of stored products. Research conducted on 56 species of warehouse pests (Sitophilus oryzae, Oryzaephilus surinamensis, and Rhyzopertha dominica) collected from grain warehouses in the Czech Republic yielded the following results: General status: Approximately 43% of the studied populations exhibited signs of resistance to phosphine [2; 1162).

S.A. Sayeda et al. (2022) conducted research to study the effectiveness of carbonic anhydrite environments and phosphine mixtures against the imagos of Oryzaephilus surinamensis and Tribolium confusum. Although the use of a modified medium (MA) is environmentally safe, its main disadvantage is that it takes a long time to completely destroy pests. Studies have shown that a combination of low doses of CO_2 gas and phosphine (PH3) (50% of the recommended dose) allowed for the elimination of this problem. According to the study results, the combined use of CO_2 and phosphine (0.5 mg/l) resulted in 100% mortality of the Oryzaephilus surinamensis and Tribolium confusum imago stages within 6 hours. For comparison: when using 85% CO_2 gas separately, it took at least 36 hours to achieve such a result [3; 1933–1941).

To eliminate warehouse pests, work was carried out to disinfect seedlings and fruit products. Warehouse products are steamed with vapors or gases of toxic substances before storage and transportation. The following well-acting fumigants, which are very poorly absorbed by products and are highly volatile in gas, are recommended for the fumigation of products (List, 2010): Quicksilver - 5 g/m^3, Phosphoctin - 3 g/m^3, Depos - 5 g/m^3. Disinfection was carried out by special fumigation groups (in compliance with personal and public safety measures) [4; 318-319].

Chemical methods are also widely used to control pests in warehouses. These include fumigation and treatment with fumigants. Fumigants penetrate deep into the product and affect various stages of the pest. At the same time, it is important to maintain product

quality and reduce economic losses by regularly monitoring the storage process in warehouses, cleaning premises before receiving the new harvest, and disinfecting equipment and machinery [5; 34-36).

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Research materials and methods. The study was conducted using observation, comparison, and mathematical-statistical analysis methods widely used in general entomology and agricultural entomology.

The legal provisions for the use of fumigants were implemented in accordance with International Phytosanitary Disinfection Standard 43 [6]. Disinfection experiments for Surinamese flour beetle control measures were conducted according to the methodology of Ya.B.Mardkovich [7]. Research on determining the effectiveness of pesticides was conducted based on methodological guidelines recommended by Sh.T.Khodjaev [8]. The results obtained from the experiments were mathematically analyzed using B.A.Dospekhov's methodological manual [9]. The biological efficacy of the chemical preparations was calculated using W.Abbott's formula [10].

In order to carry out chemical control measures against Surinamese wheatgrass, experimental experiments were conducted in the laboratory for controlling warehouse pests at the Research Institute of Plant Quarantine and Protection.

At the Research Institute of Plant Quarantine and Protection of the Kibray District of the Tashkent Region, we conducted a laboratory experiment on disinfection against the flour beetle in a fumigation chamber with an unloaded volume of 3 m^3..

Table 1.

In an unloaded fumigation chamber, Kvikfos 57% tab. biological efficacy of the chemical preparation (fumigant) against the Surinam flour beetle (Oryzaephilus surinamensis L.) pest

(Tashkent region, Kibrau district, Research Institute of Plant Quarantine and Protection, 3 m^3 fumigation chamber exposure for 3 days, at a temperature not lower than +10 °C, 2023).

No	Experience	Active substance	Dosage regimen, g/m^3	Number of pests per 1 m3, units				Biological efficiency, %			
				Preprocessing	Ishlovdan keying kunlar			Post-degasing	Days after degassing		
					Post-degasing	1	3	5		1	3	5
1.	Kvikfos 57% tabs.	Alyuminiy fosfid	2,0	25,0	4,0	2,0	-	-	84,0	92,0	100	100
2.			3,0	25,0	1,0	-	-	-	96,0	100	100	100
3.	Kvikfos 56% tabs. (default)	Alyuminiy fosfid	3,0	25,0	2,0	1,0	-	-	92,0	96,0	100	100
4.	Control (without processing)	-	-	25,0	25,9	26,7	28,1	30,3	-	-	-	-

In the fight against the surinamese flour beetle, Kvikfos 57% tab. We continued the experiment using the preparation (Aluminum phosphide) at a consumption rate of 2.0–3.0 g/m^3.

The experiments were conducted in a 3 cubic meter fumigation chamber at the Research Institute of Plant Quarantine and Protection in the Kibray district of the Tashkent

region. Kvikfos 57% tabs against the warehouse pest Surinam's flour beetle. The experiment was continued using the preparation (Aluminum phosphide) at a consumption rate of 2.0–3.0 g/m^3.

The internal volume of the fumigation chamber is 3 cubic meters. In the control of the Surinam flour beetle (O.surinamensis) pest, Kvikfos 57% tab. (Aluminum phosphide) preparation. Kvikfos 56% as the standard. The preparation (Aluminum phosphide) was obtained.

The experiments were conducted in fumigation chambers with a volume of 3 cubic meters. For the first experimental variant, the second experimental variant, the third experimental variant (standard), and the fourth control variant (without processing), 25 suriname flour beetle imagoes were placed in 0.3 liter plastic jars and covered with a cloth. In all variants, plastic jars with Surinamese mealworm pests were placed in the fumigation chamber.

In fumigation chambers, Kvikfos 57% tablespoons are used against the Surinam flour beetle pest. Experiments were conducted to study the biological effectiveness of the preparation (Aluminum phosphide) at a consumption rate of 2.0–3.0 g/m^3. Pests placed in the fumigation chamber were examined on days 1-3-5 after degassing. The pests subjected to the experiment were considered both alive and dead.

The first variant (experimental) against the aforementioned Surinamese flour moth pest was Kvikfos 57% tablets at 2.0 g/m^3 per 1 cubic meter. In the second variant (experiment), the preparation Kvikfos 57% tabs was used at a rate of 3.0 g/m^3 per 1 cubic meter. Third variant (standard dose): Kvikfos 56% tab. (standard) preparation 3.0 g/m^3 per 1 cubic meter was used.

Experiments were conducted in the fumigation chamber to study the effectiveness of the preparation Kvikfos 57% tabs against the surinam oatmeal pest.

Research results. According to the experimental results, the efficacy of the drug Kvikfos 57% tabs at a consumption rate of 2.0 g/m^3 after the experiment was 84.0% after degassing, 92.0% on the 1st day, 100% on the 3rd day, and 96.0% after degassing at a

consumption rate of 3.0 g/m^3, 100% on the 1st day, Kvikfos 56% tabs. At a consumption rate of 3.0 g/m^3, the efficiency after degassing was 92.0%, on the 1st day 96.0%, and on the 3rd day 100% efficiency was achieved.

Conclusion. In the chemical control of the Surinamese flour beetle in the fumigation chamber where the studies were conducted, Kvikfos 57% tabl. At a fumigant (Aluminum phosphide) consumption rate of 3.0 g/m^3, 100% biological efficacy was recorded on the 1st day after decontamination.

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