

The Prospect of Protecting Tomatoes From Rust

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Abstract. If the rust mite is detected on 15% of the tomato leaves, chemical control should be carried out against it. As a result of research, insectocides with high biological effectiveness against the rust mite: Bi 58 plus 40% YeC (1,5-2,5 l/ha.), Abamectin plus 3,6% k.e. (0,1-0,2 l/ha), Golmektin, 1,8% k.e. (0,2 l/ha), Nurell D plus, 55% ye.c. (1 l/ha) these standards recommend its use against rust mites on tomatoes

Key words. Tomato rust mite, pest, drug, chemical control, biological effectiveness, productivity.

Introduction. During the period of entering the world market, the Republic of Uzbekistan ensures that all the agricultural products produced have quality indicators that meet the requirements of the world market. Now reforms are being carried out in all areas of agriculture and a number of works are being carried out to ensure the food safety of our country.

In particular, bringing a sufficient amount of agricultural products per capita to the ranks of the most developed countries in terms of production and consumption is the basis of the agrarian policy carried out in the republic.

Among the vegetable crops in Uzbekistan, tomatoes are of great importance. According to the calculations of scientists in the field of health and hygiene, 120 kg of vegetables per capita should be consumed every year, of which 25-35 kg of tomatoes and cucumbers should be consumed [5]. In the decisions and comprehensive measures of our government to ensure food safety in the republic, it is aimed at guaranteeing the population's needs for vital food to the extent that ensures a healthy lifestyle.

Since vegetables are considered to be incomparable food products for human health, great attention is paid to increasing their cultivation in our republic. In Uzbekistan, tomato is considered one of the main vegetable crops and occupies a special place in the cultivation of vegetable crops, because it is consumed directly. Tomatoes are valued for their high taste and nutritional qualities, they are one of the important sources of biologically active substances and antioxidants that protect the human body from oxidation during mental stress and prevent aging processes.

To date, several types of pests damage vegetable crops in greenhouses and open fields, reducing the amount of yield and spoiling its quality indicators. Among the sucking pests, the tomato rust mite, spider mite, greenhouse spider mite and plant aphids, autumn moth, pore-forming flies and pests belonging to various families cause a loss of 50-60% of the crop [1, 3, 4].

There should be scientifically based, economical and environmentally friendly methods of combating pests of vegetable crops grown in greenhouses. In order to protect the crops grown in the greenhouses of our country from pests, it is one of the important issues to know the time of their appearance in advance and to create highly effective tools and new modern, ecologically safe methods based on this.

The appearance of the rust mite in the greenhouses of our country caused new problems. This mite was found in greenhouses in Karakalpakstan in 1987 [2].

Soon after, in 1989, it was noted that it was also found in Surkhandarya region [7]. Later, it was found that it was found in most regions of the republic, and by 1991, it was found in almost all vegetable crop fields and greenhouses of Uzbekistan [3, 4].

In the fight against the rust mite, it is important to implement several methods together. These are sanitary-preventive, agrotechnical and chemical methods aimed at drastically reducing the number of mites, etc. Their use ensures that the number of pests is kept at a level that does not cause harm [4, 5].

It has been noted that Omayt, Nissoran, Deltafos and Metak drugs are highly effective against the rust mite [3, 4]. Therefore, the main research, scientific researches were carried out based on the method of chemical control, because this method is currently the most effective method against the rust mite. The main researches were conducted in open fields and greenhouses of Tashkent region.

Research methods. Researches were carried out using methods and techniques widely used in general entomology and agricultural entomology (B.P. Adashkevich, S.N. Alimukhamedov, G.Ya. Bey-Bienko, V.I. Tansky, V.F. Paliy, K.K. Fasulati). Study of bioecological characteristics of pests K.K. Fasulati, V.F. Paliy, B.V. Dobrovolsky, Ye.A. Dunaev, agrotechnical activities V.N.shchegolev, I.F. Pavlov, B.V. Yakovlev, agrotoxicology studies Sh.T. Khojaev, G.I. Sukhoruchenko, biological of chemical and microbiological agents the effectiveness of Sh.T. Khojaev, W.S. Abbot methods were used. The results obtained from the experiments were mathematically and statistically analyzed by BA Dospikhov. Economic efficiency was calculated based on the methods of K.A. Gar, A.F. Chenkin [6, 8].

In recent years, it has been observed that the rust mite causes great damage to tomatoes in greenhouse conditions, especially in the open field. Usually, the rust mite settles in clusters on the top and back of the leaf, as well as on the fruits. In addition, it damages the stem of the plant. Affected stems appear covered with a shiny, brown coating. Yellow, colored spots appear on the leaves of infected tomatoes. The spots later formed necrosis and caused the leaves to drop. Severely infested plants stunted growth, netting, rust-brown discoloration of tomato fruits, and plant death in most cases. In heavily affected areas, crop yield was lost up to 70-80%. This situation was clearly visible in the greenhouse compared to the open field, because the conditions for the pest were more favorable in the greenhouse compared to the open field. One of the main symptoms of tomato rust mite infestation is yellow spots on the leaves and a shiny reddish-brown layer on the stem. Uneven spots appeared on the damaged stem.

Therefore, tomato seedlings were regularly monitored in the greenhouse compared to the open field from the beginning of the stage of pruning until the harvest. In order to determine the amount of rust mites, samples were taken from the fallen leaves of the plant body and the number of mites was accurately calculated under binoculars. In the research, the rust mite was artificially infested during the stages of tomato budding, flowering, fruiting and ripening, and continuous counting was carried out. It was found that the amount of lost yield is 2-3 times higher in plants damaged in the initial period of the growing season.

Biological effectiveness of chemical preparations against the rust mite on tomato plants in Kibrai district of Tashkent region. When calculating the amount of rust mite on tomatoes in open fields and greenhouses, one infected plant was seen in each sample. The number of mites per 1 leaf was determined in each infected plant. Observations before and after spraying the drug 1; 3; It was held after 7 and 14 days. In the experiments, among the insect acaricides against the rust mite: Bi 58 plus 40% EC (1.5-2.5 l/ha), Abamectin plus 3.6% EC. (0.1-0.2 l/ha), Holmectin, 1.8% k.e. (0.2 l/ha), Nurell D plus, 55% YeS (1 l/ha), the drugs were highly effective when used in consumption standards (Table 1).

Table 1

Biological effectiveness of preparations against rust mite in tomato

Field experience: Kibrai district, Tashkent region. Working liquid 300 l/ha, 2021-2023.

Options	Drug consumption, l/ha	The average number of mites on 1 leaf, e.g .					Biological efficiency, days, %			
		until processed	ishlovdan keyin, kunlar				1	3	7	14
			1	3	7	14				
Greenhouse 10.03.										
Bi 58 plus 40% EC	1,5	9,5	1,3	1,2	0,9	1,2	86,8	88,1	91,5	87,6
Bi 58 plus 40% EC	2,5	9,2	1,4	1,0	0,8	1,1	85,2	89,7	92,2	88,4
Brilliant, 10% c.e.- (template)	1,5	10,1	0,9	0,5	0,3	0,8	91,4	95,3	97,4	92,3
control - (idle)	-	8,0	8,3	8,5	9,0	8,2	-	-	-	-
Open field 06.07.										
Abamectin plus 3.6% k.e.	0,1	38,7	18,4	16,1	19,4	11,2	51,8	63,0	70,4	78,6
Abamectin plus 3.6% k.e.	0,2	37,3	14,8	11,7	8,15	5,2	63,1	72,7	81,5	89,8
Golmektin, 1,8% k.e.	0,2	43,7	20,8	15,15	10,35	7,8	55,9	69,9	80,0	87,0

Nurell D plus, 55% YeS	1,0	35,4	3,1	2,5	2,2	3,9	91,6	93,8	94,6	91,0
Double-D, 55% c.e. (template)	1,0	40,1	5,2	4,3	4,0	6,7	87,6	90,5	91,4	86,4
control - (idle)	-	34,6	36,2	39,5	40,2	42,4	-	-	-	-

As a result of the research, insectocarcides with high biological effectiveness against the rust mite: Bi 58 plus 40% EC (1.5-2.5 l/ha), Abamectin plus 3.6% k.e. (0.1-0.2 l/ha), Holmectin, 1.8% k.e. (0.2 l/ha), Nurell D plus, 55% YeS (1 l/ha) were recommended for production according to the consumption standards.

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