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Effectiveness of new chemicals in the management of the amount of apple red mite (*Panonychus ulmi* Koch)

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Abstract

The article provides information on the harm and control methods of apple red mite (*Panonychus ulmi* Koch) in apple orchards. Apple red mite (*Panonychus ulmi* Koch) is the most dangerous pest of seed orchards and other crops of other European countries. This pest can destroy more than half of the crop yield in some fields. In normal years, spiders are said to destroy 6-10% of the gross crop, and in some years even 14%. Apple red mite (*Panonychus ulmi* Koch) is the most dangerous and harmful in terms of mites. It is the main pest of melons, technical plants, and horticulture, ornamental trees. More than 150 species of spiders in the world are listed as the main pests of crops.

Materials and methods: New chemical Envidor em. k against apple red mite (*Panonychus ulmi* Koch) in seed orchards. To determine the biological effects of the drug (0.5 l/ha), research was conducted on 25 (twenty-five) hectares of Fuji apple orchards located on the territory of Zevar farm in Sariosiya district in the Surkhandarya region. Agrototoxicological experiments were carried out by the method of K.A.Gar, Sh.T.Khojaev. The calculation of biological efficacy in field and laboratory experiments was determined according to the W.S.Abbot formula, which takes into account the control option. Research results. According to research, the new Envidor em. k. (0.5 l/ha) was the highest on the 3 days of our observations in the variant in which the drug was used, i.e., the biological efficacy was 89.2%.

Conclusion: Envidor em. k. high biological efficiency can be achieved by applying the drug at the rate of consumption per hectare (0.5 l/ha). The fight against apple red mite (*Panonychus ulmi* Koch) can be obtained the expected result by timely agro-technical measures in late autumn and early spring, the use of low-toxic chemicals for the environment, and beneficial insects during the growing season.

Keywords: Mite, pest, spider, drug, species, orchard, damage

Introduction

Of the total 269.5 thousand hectares of orchards in the country, 118,000 hectares or 44% are apple orchards. Over the past 3 years, \$ 750 million has been invested in horticulture. Demand for new intensive gardens is also growing ^[1]. Along with the expansion of seed orchards, pest infestation remains a major problem.

In orchards, several types of mites cause damage. They belong mainly to two families, the first being the four-legged mites (*Tetranychidae*) and the two-legged mites (Eriophyidae). These mites can be seen in the field under a special magnifying glass, in the laboratory under a microscope ^[2].

Several species of mites have been found to cause significant damage in seed orchards, mainly with high levels of damage. These are the gray fruit mite (*Bryobia redikorzevi* Rech), the hawthorn mite (*Tetranychus viennensis* Zacher), the apple red canal (*Panonychus ulmi* Koch), the common spider mite (*Tetranychus urticae* Koch), and other gall-forming mites. Spider mites mainly develop and multiply under cobwebs ^[3].

Although several species of plant mites damage apple orchards and other crops, the most dangerous of them is the apple red mite (*Panonychus ulmi* Koch). The apple red mite is a plant-eating creature belonging to the class Arachnida, the family Acariforms ^[4].

Apple red mite (*Panonychus ulmi* Koch) is the most dangerous pest of seed orchards and other crops of other European countries. This pest can destroy more than half of the crop yield in some fields. In normal years, the spider kills 6-10% of the gross crop, and in some years even 14% ^[5, 6].

In seed orchards, many species of mites, such as garden spider mite, pear mite, apple red mite, cause serious damage. Mites damage leaves, annual young twigs, growth points, and young cave fruits by sucking ^[7]. Damaged fruits are stained and the quality decreases. The twigs, on the other hand, lag in development and are less resistant to winter and frost.

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Apple red mite (*Panonychus ulmi* Koch) is the most dangerous and harmful in terms of mites. It is the main pest of melons, technical plants, and horticulture, ornamental trees. More than 150 species of spiders have been reported as the main pests of crops around the world [8, 9].

According to other scientists, the apple red mite (*Panonychus ulmi* Koch) is found in almost all agricultural areas of the world, and phytophagous mites are more plant-related than all other mites [10]. Spiders were found to infect 1,200 species of cultivated and other plants, and 150 of these plants were found to be at high economic risk [11, 12].

Materials and Methods

New chemical Envidor em. k against apple red mite (*Panonychus ulmi* Koch) in apple orchards. To determine the biological effects of the drug (0.5 l/ha), research was conducted on 25 (twenty-five) hectares of Fuji apple orchards located on the territory of the farm "Zevan" Sariosiya district of Surkhandarya region. According to him, to test chemicals envidor em. k. (0.5 l/ha) of the active substance (spirodiclofen).

As a standard for this drug, Error received 1.8% em. k. (0.4 l/ha) of the active substance (abamectin). Because both of these drugs are recommended for mites in other crops. They researched to determine their biological efficacy by mutual comparison.

The research is carried out using widely used methods and techniques for the detection of agricultural pests. Entomological calculations and observations were performed using G.Ya. Bey Beyenko, L.A. Kopaneva detectors; K. Fasulati's methods in determining the density, occurrence, dominants of pests; performed based on. The degree of pest infestation was determined by the method of VI Tansky. Agrotoxicological experiments. K.A.Gar methodical manuals, W.Abbott's formula, and Sh. T. Khodjaev's methodical instructions were carried out. sprinkled at the expense of the working fluid. In large field experiments using special centralized sprayers, 1000 l/ha. The working fluid was applied sparingly. The effect of chemical drugs on entomophagous was studied by the method of B.B. Adashkevich *et al.* (1983).



Fig 1, 2: Accounting for the eggs of apple red mite (*Panonychus ulmi* Koch)

Results and Discussion

Apple red mite (*Panonychus ulmi* Koch) is considered to be the dominant species of mites in apple orchards. The biological effectiveness of this antiviral drug Envidor em. k reached 100% when applied to 0.4-0.6 l/ha in the presence of 5.3-6.7 mobile apple red mites per leaf. In 2017, experiments were conducted in the Texron region on the Golden delicious variety of apples with the drug Envidor em. k (0.5 l/ha) against apple red mite.

Observations were made on days 3, 7, 14, and 21 to determine the effect of the Envidor em. k drug (0.5 l/ha) applied against apple red mite (*Panonychus ulmi* Koch). The Henderson-Tilton formula was used to determine the

number of apple red mites (*Panonychus ulmi* Koch) on a single leaf. The results of the study showed that after administration of the Envidor em. k drug (0.5 l/ha), the biological efficacy increased by 82% by day 14 [11].

Experiments have been carried out in Polish apple orchards to control apple red mites (*Panonychus ulmi* Koch). The Envidor em. k drug was applied to the consumption of apple trees before flowering (0.3-0.4 l/ha). Experiments have shown that when Envidor em. k is used in the fight against apple red mite (*Panonychus ulmi* Koch), the duration of action is 2-6 weeks [13].

Envidor em. k drug (spirodiclofen), one of the acaricides with a new method of action, was applied to the eggs of

apple red mites (*Panonychus ulmi* Koch) in 2004-2008. The experiments were conducted on apple orchards in Serbia, according to which the biological efficiency was 89-86% [14].

Endor drug apple red mites (*Panonychus ulmi* Koch) has a strong effect on the biosynthetic properties of lipids, used in apple orchards during the ovarian, larval, and nymph periods, the laying of eggs by female mites. This drug can achieve the expected results when applied to apple orchards during flowering and fruit development [15, 16].

Apple red mites (*Panonychus ulmi* Koch) can be applied to the eggs envision in the consumption brain (0.3-0.4 l/ha) at a

temperature of 5 °C to 25 °C.

According to our research, in apple orchards, the apple red mite (*Panonychus ulmi* Koch) is infested with eggs, larvae, and nymphs by Envidor em. k. (0.5 l/ha) was used.

As a benchmark for this drug, Error used 1.8% em. k. (0.4 l/ha) was obtained. Control observations were analyzed from 3 days of use of the drugs obtained for the experiment. Before processing, Envidor em. k. (0.5 l/ha) in the variant in which the drug was used, an average of 6.8 units per leaf, Error 1.8% em. k. (In the variant applied to 0.4 l/ha, it was 7.2 units.

Table 1: Envidor em. k. against apple red mite (*Panonychus ulmi* Koch). (0.5 l/ha) Biological efficacy of the drug 15.08.2019 y

Options	Consumpti on rate l/ha	Number of pests per leaf, pcs				Biological efficiency, %, by days				
		Pre-processing number	The number after processing, pcs				3	7	14	21
			3	7	14	21				
Envidor em. k.	0,5	6,8	0,9	1,6	2,7	3,4	89,2	82,8	74,1	69,0
Errou 1.8% em. k	0,4	7,2	1,2	2,0	3,1	3,7	86,4	79,8	72,1	68,6
Control	-	8,3	10,2	11,4	12,8	13,6	-	-	-	-

According to research, the new Envidor em. k. (0.5 l/ha) in the variant in which the drug was administered, our observations were highest on the 3rd day after drug administration, i.e., the biological efficacy was 89.2%, and on the 7th day, it was 82.8%. By the 14th day of our observations, the biological efficiency was 74.1%, and on the 21st day, it was 69.0%. From the 21st day of the study, the number of pests began to increase again. (Table 1)

In our variant using the following template, Error has a 1.8% em. k. (0.4 l/ha) was highest on the next 3 days of treatment, i.e., the biological efficiency was 86.4%, while on the 7th day the biological efficiency was 79.8%. By the 14th day of our observations, the biological efficiency was 72.1%, while on the 21st it was 68.6%. In this variant, too, the biological efficacy index was found to decrease after 21 days. It was observed that the chemical effect on the eggs and nymphs of the pest was low.

Conclusions

According to the results of the study, timely control of apple red mite (*Panonychus ulmi* Koch) in orchards is an important factor in their control, taking into account its bioecology and survival, using effective mites. Envidor em. k. high biological efficiency can be achieved by applying the drug at the rate of consumption per hectare (0.5 l/ha). In the fight against apple red mite (*Panonychus ulmi* Koch) in apple orchards can be maintained crop in late autumn and early spring by timely agro-technical measures, the use of low-toxic chemicals for the environment, and beneficial insects during the growing season.

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