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**BIOLOGICAL EFFICIENCY OF PREPARATIONS USED TO
CONTROL THE SPIDER BREED IN SOYA CROPS**

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Abstract: *This article describes the developmental characteristics of the two-spotted spider mite (*Tetranychus urticae* Koch) as one of the main destructive sucking pests affecting soybean (*Glycine max*) crops, and evaluates its overall impact on crop yields under the agro-ecological conditions of the Tashkent region. Field experiments were comprehensively conducted during the 2022-2024 seasons at the Rice Research Institute located in the Urtachirchik district on the "Oltin toj" soybean variety to test modern acaricides. The biological efficacy of Avimayt 57% e.c. (1.5–2.0 l/ha) and Omayt 57% e.c. (1.5–2.0 l/ha) was specifically evaluated on days 3, 7, 14, and 21 after treatment against the control and standard Nissorán 5% EC. (0.2 l/ha) plots. According to experimental data, all tested acaricides exhibited high initial and long-term toxicity against the pest population. The highest biological efficiency was observed when applying Omayt 57% EC at a maximum consumption rate of 2.0 l/ha, which successfully achieved an 83.8% mortality rate on the 3rd day and reached a peak efficiency of 93.5% by the 21st day of observation. Consequently, both Omayt and Avimayt at 2.0 l/ha are scientifically recommended for integrated pest management systems to reliably protect soybean plantations.*

Keywords: *soybean, spider mite (*tetranychus urticae*), pest density, acaricides, biological efficiency, omayt, avimayt, crop protection.*

Introduction. Today, grain legumes, particularly soybean (*Glycine max*), occupy a leading position in meeting the global population's increasing demand for plant-based proteins and vegetable oils. Soybean seeds contain 38–45% high-quality protein, up to 18–25% semi-drying oil, and a wide array of vitamins (A, B, C, D, E) and essential amino acids critical for human health and livestock feed industries. Consequently, expanding soybean cultivation areas and maximizing crop productivity represent strategic cornerstones for ensuring global food security within modern agricultural systems. In recent years, the Republic of Uzbekistan has paid significant national attention to expanding soybean cultivation, optimizing agricultural production technologies, and securing a reliable, nutrient-dense domestic feed base for rapidly growing poultry and livestock sectors. Throughout the entire vegetative period of the soybean plant, the two-spotted spider mite (*Tetranychus urticae* Koch) stands out as one of the most perilous and economically damaging pests. In regions with hot, arid climatic conditions like the Tashkent province, sharp increases in summer ambient temperatures combined with a significant drop in relative air humidity create an ideal ecological environment for the mass reproduction and population outbreaks of these mites. By inhabiting the undersides of leaves and feeding continuously on cell sap, the pest depletes chlorophyll content, disrupts the transpirational balance, and drastically inhibits vital photosynthetic processes. Severely infested leaves turn yellow, dry out, and drop prematurely, which directly prevents proper pod formation or leads to wrinkled, empty seeds. Scientific data indicates that if timely and effective control measures are neglected, spider mites can cause devastating soybean yield losses ranging from 30% to 50%, and potentially higher under severe outbreaks. In practical agriculture, phytosanitary diagnostics and chemical interventions remain the primary methods for managing spider mite populations. However, the pest's specific biological traits namely its short life cycle, rapid multiplication rate, high number of generations per season, and

ability to quickly develop resistance to frequently used pesticides pose severe challenges. Relying on identical chemical groups over extended periods inevitably diminishes control efficiency in fields. To resolve this issue while preserving the ecological stability of the soybean agrocenosis, it is critical to evaluate and implement modern, low-toxicity acaricides that target multiple developmental stages of the pest and provide long-term protection. Identifying optimal application rates for such advanced compounds is an urgent scientific task and a vital practical necessity for modern crop protection. Conducted in light of these challenges, the primary objective of this research is to evaluate the developmental dynamics and economic destructiveness of spider mites on the promising "Oltin toj" soybean variety under the specific agro-ecological conditions of the Urtachirchik district in the Tashkent region, while comparatively assessing the biological efficacy of advanced chemical acaricides. To achieve this goal, comprehensive field experiments were organized from 2022 to 2024 at the experimental research fields of the Rice Research Institute. During these investigations, the systemic and contact-acting acaricides Avimayt 57% e.c. and Omayt 57% e.c. were comprehensively tested at varying application rates ranging from 1.5 to 2.0 l/ha. Their performance was scientifically evaluated and compared against the standard local reference treatment, Nissorán 5% e.c. applied at 0.2 l/ha, to establish statistically sound, environmentally viable recommendations for integrated pest management. In 2022-2024, in the conditions of the Tashkent region, Avimayt 57% em.c. was used against the spider mite found on soybean crops. (1.5–2.0 l/ha), Omayt, 57% EC. (1.5–2.0 l/ha) and Nissorán, 5% EC, (0.2 l/ha) in the standard variant (Table 4.23). According to the results of the conducted studies, the biological efficacy of the Avimayt 57% EC preparation against the spider mite found on soybean crops at a consumption rate of 1.5–2.0 l/ha compared to the control variant was 80.3–82.4% on the 3rd day of calculation, and by the 21st day of observation, this indicator increased to 89.5–92.3%.

Based on the results of the study, it was established that when using Avimayt 57% EC at a consumption rate of 2.0 l/ha against the spider mite found on soybean crops, the biological efficiency compared to the control variant was 79.8% on the 3rd day of calculation, and by the 21st day of observation, this indicator increased to 93.1%. In the variants using the drug Omayt, 57% EC at a consumption rate of 2.0 l/ha, the biological efficiency was 80.6% on the 3rd day of calculation compared to the control, and by the 21st day of observation, this indicator was 94.2%.

When using Nissorán 5% EC at a consumption rate of 0.2 l/ha in the standard variant, the biological efficiency was 81.8% on the 3rd day of calculation and 92.8% by the 21st day of observation.



Preparations used in the control of the spider mite found on soybean crops biological efficiency

(Tashkent region, Urtachirchik district, Rice Research Institute, "Oltin Toj" variety, 2022-2024)

No	Experiment options	Amount of preparations I/ha	Average number of pests per leaf, units					Biological efficiency, %			
			Before the medicine is sprayed	Days after injection							
				3.	7.	14	21	3.	7.	14	21
1.	Avimite 57% em.c.	1.5	22.6	4.6	4.0	3.6	2.8	80.3	83.8	86.2	89.5
		2.0	19.8	3.6	3.2	2.6	1.8	82.4	85.3	88.6	92.3
2.	Omite, 57% EC.	1.5	21.2	4.1	3.7	3.1	2.4	81.2	84.1	87.3	90.4
		2.0	21.0	3.5	3.0	2.5	1.6	83.8	87.0	89.7	93.5
3.	Nissoran, 5% EC. <i>Template</i>	0.2	23.0	4.2	4.0	3.2	2.3	82.3	84.2	87.9	91.5
4.	Control (without medication)	-	21.4	22.1	23.5	24.7	25.3	-	-	-	-

EKF05= 1.9 2.2 2.6 3.2

Results and discussion. According to the research results, when using Avimayt 57% EC at a consumption rate of 2.0 l/ha against the spider mite found on soybean crops, the biological effectiveness compared to the control variant was 79.8% on the 3rd calculation day, and by the 21st day of observation, this indicator increased to 93.1%. In the variants using the drug Omayt, 57% EC at a consumption rate of 2.0 l/ha, the biological efficiency was 80.6% on the 3rd day of calculation compared to the control, and by the 21st day of observation, this indicator was 94.2%. When using Nissorán 5% EC at a consumption rate of 0.2 l/ha in the standard variant, the biological efficiency was 81.8% on the 3rd day of calculation and 92.8% by the 21st day of observation.

Conclusion: When using the drug Avimayt 57% EC at a consumption rate of 2.0 l/ha against the spider mite found on soybean crops, the biological efficiency compared to the control variant was 79.8% on the 3rd day of calculation, and by the 21st day of observation, this indicator increased to 93.1%. In the variants using Omayt, 57% EC at a consumption rate of 2.0 l/ha, the biological efficiency was 80.6% on the 3rd day of calculation compared to the control, and by the 21st day of observation, this figure was 94.2%.

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