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Assessment Of The Biological Efficiency Of The Microbiological Preparation Cropguard (Ipl Biologicals Limited, India) Against Thrips On Cotton Under The Conditions Of Syrdarya Region, Republic Of Uzbekistan

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Abstract: The article presents the results of field experiments conducted in 2025 in the Syrdarya region, aimed at evaluating the biological efficiency of the microbiological preparation CropGuard (IPL Biologicals Limited, India), containing entomopathogenic fungi *Beauveria bassiana* and *Verticillium lecanii*, against thrips (Thripidae) on cotton. As a reference standard, the biopreparation BioSleep BW based on the entomopathogenic fungus *Beauveria bassiana* (strain OPB-43) was used. The experiments accounted for the abundance of two thrips species: onion thrips (*Thrips tabaci* Lind.) and wheat thrips (*Thrips angusticeps* Uzel). The results showed that at an application rate of 3.0 L/ha, CropGuard reduced thrips density by 87.4%, which is comparable to the reference (84.1%). At a rate of 2.5 L/ha, the efficiency was 82.6%. No phytotoxicity or negative effects on beneficial entomophages were observed.
Keywords: cotton, thrips, *Thrips tabaci*, *Thrips angusticeps*, biopreparations, *Beauveria bassiana*, *Verticillium lecanii*, biological efficiency, Syrdarya region.

Introduction: Cotton (Gossypium hirsutum L.) is a strategic crop of the agricultural sector of Uzbekistan, which has been repeatedly emphasized in the speeches of the President of the Republic, who pointed out the need to use innovative and environmentally friendly methods of plant protection. Among the sucking pests of cotton, thrips (family Thripidae) are of particular importance, capable of damaging young leaves, buds and flowers, reducing the yield and quality of fiber. In the conditions of the Syrdarya region, two species dominate: T. tabaci and T. angusticeps, distinguished by high adaptability and the ability to quickly develop resistance to chemical insecticides. In this regard, an urgent task is the introduction of biopreparations with a high level of biological efficiency and safe for the agrobiocenosis.

Objective of the study: In order to increase the efficiency of biological protection of cotton from pests and reduce dependence on chemical insecticides, scientific studies were conducted to assess the biological activity of the microbiological preparation CropGuard (IPL Biologicals Limited, India) against thrips (Thysanoptera) in the conditions of the Syrdarya region of the Republic of Uzbekistan.

The study considered the following parameters:

- ❖ application rates of the preparation (2.5 and 3.0 l/ha),
- ❖ frequency and intervals of treatments during the vegetation phase of plants,
- ❖ comparative assessment of efficiency with the reference biological preparation based on Beauveria bassiana (BioSleep BW).

The analysis took into account both biological indicators (reduction in pest numbers, preservation of natural entomophages) and economic criteria - in particular, the effect of the use of the preparation on cotton yield and the potential for reducing the chemical load on the agrocenosis.

Research methodology: The CROPGUARD preparation was tested in a large field experiment using OVH-600. The preparation consumption was 3.0 l/ha depending on the condition of the plants (Fig. 1).

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Fig-1 Cotton leaves damaged by thrips

The experiment on combating thrips on cotton was conducted in the fields of the Syrdarya region, Sardoba district, "Sardoba Universal cluster". The setting and conduct of the experiment corresponded to the "Methodological guidelines..." issued by the State Chemical Commission in 2004.

Results of the research: Treatment against thrips was carried out at the stage of plant vegetation. The plot size was 1 ha, each variant was laid out in 4-fold replication. The calculation of biological efficiency was performed using the Abbott formula. The results of calculating the biological efficiency of the tested preparation and the standard are given in (Table 1).

During field tests, an analysis of the effect of the microbiological preparation CropGuard (IPL Biologicals Limited, India) on the dynamics of the number of thrips in cotton crops was carried out. The total indicators of biological efficiency are given in Table 1.

The highest efficiency was observed when using the preparation at a dosage of 3.0 l / ha. Already 3 days after treatment, a decrease in the pest population by 18.5% was recorded, after 7 days - by 54.2%, after 14 days - by 79.6%, and by the 21st day the efficiency reached 87.4%.

Biological efficiency of CROPGUARD against thrips on cotton.
(Syrdarya region, 2025)

№	Options	Consumption rates of preparations, kg, l/ha	Average number of thrips per 100 leaves				Biological efficiency %		
			Before processing	After processing the other day					
				7	14	21	7	14	21
1	CROPGUARD	2,5	13,9	7,6	3,9	2,3	47,9	72,5	82,6
2	CROPGUARD	3,0	14,2	6,8	3,6	1,7	53,4	74,1	87,4
3	BIOSLEEP BW. (reference)	3,0	13,7	7,4	3,8	2,1	50,3	72,6	84,1

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August 2025

4	Control	-	14,0	14,6	13,9	13,2	-	-	-

When using a rate of 2.5 l/ha, the preparation showed slightly lower, but stable activity: after 3 days, the efficiency was 15.2%, after 7 days - 48.7%, after 14 days - 72.4%, and by the 21st day - 82.6%. The reference option - the biopreparation BioSleep BW (Beauveria bassiana strain OPB-43, registered in the Republic of Uzbekistan) at a consumption rate of 3.0 l/ha ensured a decrease in the number of thrips by 16.4% (3 days), 51.3% (7 days), 75.1% (14 days) and 84.1% (21 days).

Field studies have shown that the microbiological bioinsecticide CropGuard (IPL Biologicals Limited, India) is highly effective in protecting cotton from thrips in the conditions of the Syrdarya region. The preparation does not exhibit phytotoxicity, does not have a negative effect on beneficial entomofauna and is generally safe for the agrobiocenosis.

The highest biological efficiency rates were recorded at a consumption rate of 3.0 l/ha - by the 21st day after treatment, the reduction in the pest population was 87.4%, which exceeded the result of the reference biological product BioSleep BW (Beauveria bassiana, strain OPB-43), which showed 84.1%.

At a consumption rate of 2.5 l/ha, the efficiency of CropGuard was 82.6%. Taking into account the obtained data, the CropGuard preparation is recommended for inclusion in the “List” of products approved for use against thrips on cotton in the Republic of Uzbekistan, with a consumption rate of 3.0 l/ha and a working fluid consumption rate of 500 l/ha, with application during the growing season by the method of continuous spraying of plants with OVKh-600.

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