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PHEROMONE TRAP FOR RASPBERRY BUD MOTH (SCHRECKENSTENIA FESTALIELLA)

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Abstract: This article describes an integrated pest management method against the raspberry bud moth (Schreckenstenia festaliella). The pheromone trap is a device equipped with a lure that contains a pheromone dispenser in the form of a rubber capsule treated with a mixture of attractant substances. The study presents the results of using pheromone traps to monitor the raspberry moth population under open field conditions.

Keywords: raspberry bud moth, larvae, pupae, eggs, caterpillars, pheromone trap, attractants.

Introduction

The raspberry bud moth (Schreckenstenia festaliella) is widely distributed in Asia and several European countries, including Armenia, Georgia, Azerbaijan, Turkey, Belarus and Syria.

Throughout the year, the raspberry bud moth produces 2–3 generations. The larvae are responsible for the damage — initially, they feed on the buds. Once the contents of the buds are completely consumed, the caterpillars move into the young raspberry shoots and bore into the core. The damaged parts of the plant dry out.

Early-ripening raspberry varieties are usually the most affected, as their main flowering period coincides with the time when adult moths emerge. The butterflies appear at the beginning of flowering and lay their eggs directly into the flowers. Within 1 to 1.5 weeks, voracious larvae hatch and immediately begin feeding on the floral receptacles. After two weeks, they pupate. For overwintering, the larvae of the raspberry bud moth form cocoons and remain dormant. They overwinter in small cocoons located under peeling bark, at the base of stumps and branches, or among plant debris in the soil [1–3].

Discussion of Results

As a result of the conducted research, the effectiveness of various compositions and concentrations of attractant substances was determined, and the optimal preparative doses and combinations of these substances — those that elicited the strongest response from the moths — were studied.

The most effective design of the pheromone trap was identified, and practical recommendations for pheromone-based monitoring were developed for integration into pest management systems targeting the raspberry bud moth.

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The behavior of the moth in field conditions was also analyzed using different designs of pheromone traps in raspberry orchards. Two types of traps and two types of dispensers were tested in the experiments. One was a glue-type "Delta" trap — a triangular structure made of laminated cardboard with a replaceable sticky insert. In the center of the insert, a rubber capsule containing the pheromone attractant (the dispenser) was placed on a flat surface. Three traps were suspended above the plants at a height of 50 cm. Sticky inserts were replaced with new ones as they became contaminated.

The traps were deployed starting from the initial appearance of the pest during both the spring–early summer and summer–autumn periods, lasting from April 20 to June 10, and from June 11 to October 11, respectively, over an area of 160 m². For bio-testing, a mixture of attractant substances with the highest insect response was used. Pheromone traps were installed at a rate of one trap per 5 m², and the pheromone mixture dose was 0.5 mg per dispenser. The attractiveness of two pheromone trap variants — the Delta-type and a water-based trap — was evaluated based on the infestation rate by raspberry bud moth.

The dynamics of male moth captures using pheromone traps of different designs were analyzed, with average capture values recorded.

№	Option	№ trap repetition	The number of individuals caught by each trap over one week with the corresponding number.				
						total	Average per one trap
1.	"Delta" traps hung 50 cm above the plants	1.	7	17	19	43	14,3
		2.	5	18	15	38	12,6
		3.	5	7	10	22	7,3
2.	Water trap on the ground	1.	10	13	15	38	12,6
		2.	16	19	22	57	19,0
		3.	14	17	20	51	17,0

The tests demonstrated that a total of 54 male melon flies were caught in 10 pheromone traps. Using the "Delta" type device, an average of only 7–8 individuals were caught, whereas the water-based trap recorded up to 19 male captures. Thus, the application of pheromone monitoring can significantly increase crop yields and fruit quality.

Conclusion

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The conducted study characterized the potential for mass trapping of the raspberry bud moth (Schreckenstenia festaliella) in raspberry plantations. A comparative evaluation of two types of traps and dispensers with high insect-attracting efficiency was also presented. The water-based pheromone trap design proved to be the most promising for practical use. All tests were carried out under open-field conditions for mass trapping of the raspberry bud moth.

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