Auto-Dissemination: Analyzing the Function of a Novel Tool in Mosquito Control

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Small yet dangerous, mosquitoes transmit diseases that kill over 700,000 people annually. Previously, the student researcher found the In2Care© trap, which uses auto-dissemination (mosquitoes pick up pyriproxyfen from the trap, spreading it to secondary breeding sites) to be ineffective in a field setting, contradicting a semifield study cited by the In2Care company. This year, the trap's efficacy was analyzed through a field study determining mosquito pyriproxyfen exposure and a cage assay analyzing pyriproxyfen's spread in an enclosed area. The field experiment resulted in inconclusive data; 2 mosquitoes were collected in 18 vacuum sessions. In the cage assay, one treated and two untreated In2Care traps were set up in an enclosure. Mosquitoes were placed in the enclosure for 2 and 72 hours and collected, along with water from each of the traps. The mosquitoes and water were placed in observation cups with Aedes aegypti larvae, which were observed for mortality. It was found that the average larval/pupal mortality rates of all the experimental subjects were under 30%, in comparison to the 2% mortality in the negative control (tap water) and the over 90% mortality in the positive controls (water from the treated traps). T-tests statistically analyzed the data, concluding that the In2Care trap did not effectively spread pyriproxyfen to mosquitoes or secondary breeding sites, even in an enclosed area. This knowledge can aid pest control agencies to more efficiently use time and resources to protect the public. Topics for further investigation include regional variables affecting the trap, such as humidity.

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