Forcipomyia taiwana automated breeding system

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Abstract

Forcipomyia taiwana, due to its hematophagous nature, poses a significant threat to public health. Global climate change has enhanced its ecological adaptability, leading to an expansion of its geographical distribution and exacerbating its impact on human health. Given its diminutive size and broad environmental adaptability, conventional control strategies, such as chemical insecticides, often yield limited efficacy and may induce adverse ecological consequences. Consequently, effective control measures and comprehensive ecological studies of this species have become critical issues in public health and vector management research. However, traditional breeding techniques are constrained by seasonal variability, environmental instability, and high labor demands, thereby impeding research progress. To address these limitations, this study develops an intelligent automated breeding system, integrating multi-parameter environmental sensing, real-time data monitoring, precision automated regulation, and data-driven analysis to ensure year-round stable breeding, enhance breeding efficiency, and improve sample accessibility. The implementation of this system provides a stable and reproducible experimental environment, facilitating advancements in disease prevention and ecological research.

Keywords: *Forcipomyia taiwana*, intelligent automated breeding system, environmental regulation, data-driven monitoring

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