

***KILLER TECHNOLOGY AND AUDIO-BASED REPELLENT SYSTEM
WITH INTERNET OF THINGS (IOT) AND SOLAR PANEL POWER
SUPPLY***

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ABSTRACT

Insect pests are one of the major factors causing a decline in rice production. Excessive use of chemical insecticides may lead to negative impacts on the environment and farmers' health. Therefore, an environmentally friendly and efficient pest control alternative is required. This study aims to design and evaluate the feasibility of an automatic pest control device (Insect Killer) utilizing ultraviolet light powered by solar panels for rice fields. The research employed the Research and Development (R&D) method, including literature study, CAD-based design development, stress analysis, and expert validation using a Likert-scale questionnaire. The results showed that the galvanized steel frame material produced a maximum Von Mises stress of 3,19872 MPa, which was significantly lower than the material yield strength of 207 MPa. The safety factor value of 64,7 ul indicated that the structure was safe for operational use. Expert validation conducted by seven validators resulted in a feasibility index of 80.28%, categorized as very good. Based on these findings, the solar-powered Insect Killer was considered feasible as an environmentally friendly, safe, and sustainable alternative for pest control in rice cultivation.

Keywords: Insect Killer, solar panel, ultraviolet lamp, rice plants, stress analysis, insect pests.