

***Performance Testing of an Off-Grid Solar-Powered Ultrasonic Bird and Rat
Pest Control Device in Agricultural Fields***

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ABSTRACT

This study aims to test the performance of bird and rat pest control devices using ultrasonic waves supplied by an off-grid Solar Power Plant (PLTS) system. The research method was carried out by testing the efficiency of the PLTS system (solar panels, solar charge controller (SCC), and battery) and testing the effectiveness of ultrasonic waves on pest responses. The results showed that bird pests showed aggressive reactions (confusion) often flying erratically looking for a way out at a sound intensity of 100-110 dB, while rat pests showed aggressive reactions (confusion) running around looking for a way out at an ultrasonic frequency of 35-40 kHz. Meanwhile, the PLTS installation showed the efficiency of each solar panel component of 15.5%, SCC of 92.5%, battery 85.4%, with a total system efficiency of 12.2%. Based on the results of the analysis of the effectiveness of the tool's performance and energy efficiency, it was declared feasible and capable of operating well.

Keywords: Pest control tools, Ultrasonic, Solar Power Plant Efficiency