

Design of Planthopper Trap Based Solar Panel as the Energy Source of Automatic UV-Trapping Lighting

Risse Entikaria Rachmanita, S.Pd., M.Si. (Supervisor)

Sela Anggraini

Study Program of Renewable Energy Engineering
Departement of Engineering

ABSTRACT

Indonesia's rice production in 2018 reached 32.42 million tons of rice. The most common obstacle for farmers in rice production is the attack of pests in every rice harvest season. This can reduce rice productivity. In order to increase rice productivity, tools that are faster, more effective and environmentally friendly are needed. This study aims to design the UV-Trapping of leafhoppers with light sensor-based solar panels. This device is designed so that 1) it able to work automatically, depending on the intensity of the light it receives when the surrounding conditions are dark without sunlight or in bright conditions; 2) effective in catching leafhoppers; 3) having low current (DC) so that it is safe for farmers; 4) can be used for rice fields that are far from the reach of PLN, because the power source comes from solar panels; 5) low in operating costs, but the device are designed to be durable and can operate in the long run; and 6) it is designed so that it can still run even though the PLN electricity is off. This planthopper trap uses solar panels as an energy source and is equipped with lights and stingers that turn on automatically as leafhoppers. The results of the functional test showed that the planthopper trapping tool that was designed was in accordance with the design that was made. The average energy consumption of the lamp and stinger is 42.618 Wh. The average daily energy yield is 60,564 Wh. The energy yield from solar panels has exceeded the amount of load energy used.

Key words: planthopper trap, productivity, solar panel, UV-Trapping