

## **ABSTRACT**

Agriculture plays an important role in the global economy and Indonesia is no exception. As an agricultural country, Indonesia has vast rice farming land. Despite its huge agricultural potential, farmers are still faced with a number of challenges, especially pest attacks that can result in huge losses in food production.

This research aims to overcome the problem of pest infestation in rice farming through a system innovation called LiDi (Lindungi Padi). LiDi is designed as a solution that integrates modern technologies, such as PIR (Passive Infrared) and ultrasonic sensors, with the use of sound-based pest repellents and high-intensity shooting lights. This approach aims to repel and prevent rice pests in a more effective way.

PIR sensors are used to detect the movement of pests around the farm area, while ultrasonic sensors are used to confirm the movement. When pests are detected, the LiDi system responds by activating sound-based repellents that produce specific frequency sounds that are disliked by the pests. In addition, firing lights with high-intensity light are also activated to disrupt the activities of nocturnal animals that are often pests on farms.

One of the key aspects of LiDi is the utilization of Internet of Things (IoT) technology that enables remote monitoring and control of the system. Farmers can keep an eye on the safety of their fields and respond quickly to pest attacks without having to be physically on site.

The LiDi system is expected to increase farmers' work efficiency, reduce crop losses due to pest attacks and contribute to Indonesia's food security. This research is an important step in answering serious challenges in agriculture, utilizing technology to protect rice plants and farmers' yields.

Keywords: Agriculture, Rice, PIR, Ultrasonic, IoT