

ABSTRACT

Fruit flies are one of the main pests for fruit and vegetable crops. Effective and efficient control is needed in large-scale cultivation which is then referred to as Area Wide Pest Management (AWPM). In implementing AWPM, one of the main components is pest monitoring activities which must also be carried out on a large scale. Smart pest monitoring is a pest monitoring platform characterized by 3 main components, namely automatic pest control, digitization, and sending data to the cloud and prediction models. This study aims to test the efficiency of automatic pest counter sensors that will be implemented in a smart pest monitoring unit. The pilot test was carried out by comparing three sensors, namely infrared sensors, ultrasonic sensors, and laser sensors. Tests were carried out by connecting the sensor to the Arduino and the results showed that the use of laser sensors and infrared sensors did not show any significant differences in the level of accuracy, while ultrasonic sensors were unable to perform calculation functions. Laser sensors have an accuracy rate of 56.64% while infrared sensors have an accuracy of 50.24%. Using a sample of 100 live fruit flies, the infrared sensor test in the smart trap unit was continued by using a dummy sample made of impraboard with an accuracy of 83.86%. Finally, testing of infrared sensors as insect counters in the field is carried out by implementing a smart monitoring unit using two types of power supply, namely electricity and batteries, which are then compared to conventional trapping units. The results showed that the battery power supply had a higher number of catches compared to the other treatments. However, the accuracy rate for using a battery power supply is only 37.59%, while the accuracy rate for a unit with an electric power supply is 72.88%. If related to the diversification of fruit fly species caught in the three treatments, in general there was no difference in the number of species caught. From the results of the several test patterns above, it can be concluded that the use of infrared sensors in intelligent pest trap units has the potential to be developed. Some things that need to be developed are related to the type of power supply used in order to increase the accuracy of the automatic calculation.

Keywords: fruit fly, smart trap, infrared sensor, electric power supply, battery power supply.