

ABSTRACT

Agricultural land in Indonesia, which is still large and relies on traditional management, is one of the significant impacts on crop yields. Besides that, pests are also a factor that causes crop failure, one type of pest that often disturbs rice fields is rat pests. To be able to find out the level of success of the tool in producing ultrasonic waves that are used to drive away rat pests and to find out the performance of the ESP32 Camera in taking and sending pictures via telegram bots. This tool is designed with a PIR Sensor, NE555 IC, ESP32 Camera, and Arduino UNO. The PIR sensor functions as input for detecting rats, the NE555 IC is used as a timer and ultrasonic wave multivibrator, for ultrasonic wave transmitters using speakers, the ESP32 Camera functions to take pictures and then send them to telegrams. This research was conducted to produce an automatic rat repellent tool in rice fields using ultrasonic waves connected to the internet. The results of the trial on the design of the tool that has been made can be produced by testing the PIR sensor can detect rats as far as 3 meters. Testing the NE555 IC module uses a frequency of 1 kHz, 5 kHz, 10 kHz, 15 kHz, 20 kHz, 30 kHz and 40 kHz then ESP32 Camera testing can send images to the telegram bot platform and for the final conclusion that rat pests can be disturbed at frequencies between 30 – 40 kHz with a test distance of 1 meter with a long speaker sound of 20 seconds and ESP32 Camera can take pictures and send images to telegram bots.

Keywords: *Rat Pest, Ultrasonic Waves, IC NE555, Arduino UNO, ESP32 Camera.*