

ABSTRACT

Sparrows become nuisance pests in rice fields because of their existence and their negative impact on rice plants. In order to facilitate human work in efforts to control bird pests, an ultrasonic signal-based bird repellent device was created. This bird repellent uses automatic frequency regulation using Arduino by utilizing Pulse Width Modulation (PWM) which is processed using IC NE555. The NE555 IC is a small electronic chip that is commonly used in various applications such as timers, pulse generators and oscillators. This tool also utilizes the Arduino Sleep Mode feature in the form of Power-Save Mode to turn off several modules that are not used as a power saving method. From the results of research that has been carried out, it can be proven that bird repellents can drive away birds at a distance of 1-3 meters with a frequency of 20-25 KHz. The use of the PWM feature can function well as an automatic frequency setting, with the use of the duty cycle feature on IC NE555 of 60%. Tests were carried out at two times, namely in the morning at 07.00-11.00 and in the afternoon between 14.00-16.00. The test results for using Arduino Sleep Mode show that the tool can be used for 6 days with a total voltage used of 5.93 Volts, and when not using Arduino Sleep Mode it can last for 5 days with a total voltage used of 8.31 Volts. These results indicate that the Arduino Sleep Mode feature is effective enough to increase the efficiency of the power used.

Keywords: Bird pests, Bird Repellent Device, Pulse Width Modulation, Internet of Things, Ultrasonic signals, Arduino Sleep Mode