

## ABSTRACT

Several control measures have been carried out by farmers, including by gropyokan, composting (fumigation), use predators such as owls (*Tyto alba*), trapping, use rodenticides, and even with the installation of electric fences. Nevertheless, the fact is that until now the success of control carried out by farmers is still has not been consistent and there is no single control program that can overcome it rat pest problems in all ecosystem conditions.

Based on the problems above, the researchers propose the use of a system that will later be regulated to emit ultrasonic sound at a certain frequency which will disturb hearing and repel rat pests so that they no longer damage agricultural land. This tool is also equipped with a power supply in the form of a solar panel which functions to store energy when the day starts at night and is also equipped with a backup battery if the energy from the solar panels is unable to provide energy to the system until morning.

The working principle of this control system is to interfere with the auditory system mice that are in the reach area of the tool, so mice are not comfortable to use are around the land. This system uses an Wemos d1 Mini. The speaker used is piezo 40kHz. The designed rat repellent device is able to produce sound waves from 0 kHz to 50 kHz. Mouse hearing is on frequency range between 5 Khz- 90 Khz. However, the mice were distracted when hear sound in the ultrasonik frequency range  $> 20$  kHz to 60 kHz. Solar cell is installed on the control system to assist the control system get independent electrical energy.

Keyword : Farmers, Rat, Piezo, Frequency, Solar Cell