ABSTRACT

There are many factors that affect the decline in the quality of freshness, including the temperature at storage. Inining its quality, it is very important to keep the fish at low temperatures. The research aims to design and develop a system that can detect the freshness of lily meat quickly and accurately. The system uses a TCS3200 sensor to measure the colour of lily meat and a MQ-137 sensor to detect ammonia gas. The Arduino Uno R3 is used as a microcontroller to process data from both sensors. The methods used to develop the prototype include sensor calibration to provide consistent and accurate readings. In addition, programming was done to process data on the sensor and determine the freshness of the lily meat based on the color parameters and ammonia levels detected. The test results showed that the prototype was able to detect color changes and ammonia levels in the meat of the lily with high accuracy. With an average accuracy of 92.36% and a 7.62% sensor error for the TCS3200 sensor, the MQ-137 sensor achieves an average of 82% with a sensor error of 18%. Therefore, the system can be used as an effective tool to monitor and evaluate the freshness of lele meat quickly and non-destructively. In addition, the prototype could also be further developed as part of a product quality monitoring system in the fisheries and food industries.

Keywords: Arduino Uno R3, ESP-01, Meat Freshness, MQ-137, TCS3200.