

ABSTRACT

Banana fruit is the most consumed fruit because of its high nutrient and carbohydrate content. The quality level of bananas is influenced by the level of maturity and the parameters of maturity consist of weight, color, aroma and texture. Until now the banana classification method still relies on the five senses, while the current industrial needs require a classification process with a high degree of accuracy and a fast process. In this study designed a banana maturity detector tool based on the level of alcohol content and RGB values of banana peel color using MQ-3 gas sensor and TCS34725 color sensor with fuzzy logic classification method. The system uses the Arduino Mega as the main controller, and the Arduino uno is paired with the TB6600 Motor driver as a conveyor speed controller. The output readings of each sensor are amplified to (0.22-0.30), (0.22-0.99), (0.50-0.99) and ($-\infty$ < 2), (2 < 3), (3- ∞) for each level of maturity (raw, ripe, rotten) on the TCS34725 sensor and MQ-3 sensors in sequence. Based on the test results, the accuracy of the classification method using fuzzy logic is 100%, with the accuracy of the calibration results of TCS 34725 sensors and MQ-3 sensors of 98.21% and 85.36%. The conveyor system has an average classification process speed of 19.75 seconds.

Keywords : Conveyor, Sensor TCS 34725, Sensor MQ 3, Fuzzy Logic