

## **ABSTRACT**

*The manual determination of melon ripeness by farmers is often subjective and lacks accuracy. This study aims to develop and test a melon ripeness detection system using an Arduino Uno equipped with an MQ-3 gas sensor and a TCS34725 color sensor. The MQ-3 sensor detects ethylene gas as a chemical indicator, while the TCS34725 sensor reads the fruit skin color through RGB values. Ripeness parameters were determined based on validated findings from previous studies: ethylene > 4 ppm, R > 115, G < 105, and B < 40. Out of ten tested samples, five melons met the ripeness criteria. The MQ-3 sensor showed an average error of 1.15%, though it has limitations due to its general design for alcohol and volatile organic compounds rather than ethylene specifically. The system demonstrated a reasonably accurate performance in identifying melon ripeness and can serve as an objective alternative for determining fruit maturity levels.*

**Keywords:** *Arduino Uno, fruit ripeness, ethylene sensor, color sensor, melon*