ABSTRACT

Ensuring food safety and quality in cold storage environments is paramount in post harvest management. This project proposes an innovative approach utilizing Internet of Things-based control (IoT-BC) to address key challenges faced in maintaining optimal conditions within modified cold storage rooms (MCSRs). We aim to design and evaluate an IoT-BC system capable of remotely managing, alerting about risks, and monitoring crucial parameters including microclimate variables (temperature, CO2, C2H4, and light intensity), operational metrics (compressor temperature, electrical current, and energy consumption), and the status of power management components (solar panel and battery). The IoT-BC system integrates multipurpose sensors to collect real-time data and control actuators for adjustments as needed. Additionally, a user-friendly web console provides stakeholders with comprehensive insights into the MCSR's status for informed decision-making. Through this project, we seek to enhance postharvest quality management, mitigate risks associated with cold storage, and optimize energy consumption, ultimately contributing to improved food safety and reduced losses in the supply chain. Evaluation of the system's efficacy will encompass performance analysis and comparison with conventional methods, emphasizing its potential to revolutionize cold storage management practices.