DEVELOPMENT OF REAL-TIME MONITORING SYSTEM EQUIPPED WITH SMS REMOTE ACTIVATION AND NOTIFICATION FOR CLSU-CRRDC SEED COLD STORAGE

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ABSTRACT

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Agriculture provides the primary necessities of life in the form of food products. As the population worldwide increases rapidly, improvements in agricultural facilities like storage are essential to maintaining the quality of farming materials such as seeds. Seeds are the main ingredient in producing products like food for humans, animals, and other living things. Cold storage is used primarily to maintain the condition of seeds up to the maximum period before they start to deteriorate. Many aspects of daily life have been simplified and streamlined as new technologies have been developed. Real-time data from various applications, devices, or tools can be collected using a real-time monitoring system.

Central Luzon State University Crop and Resources Research and Development Center has a seed cold storage. The existing seed cold storage facility requires seed cold storage personnel's labor time and effort to monitor. The personnel monitoring the seed cold storage and disposing the water from the dehumidifier manually, which can lead to an increase in temperature, relative humidity. During weekends and holidays, the cold storage is left unmonitored. When there is a power drop, the seed cold storage buzzer continuously buzzes until the cold storage personnel turn it off. and when the power is restored, personnel are needed to come into the seed cold storage to off the buzzer and reset the system.

This study focused on solving this problem by designing and fabricating a real-time monitoring system that can help to monitor the seed cold storage. The components of the real-time monitoring system are assembled and arranged, including the temperature and Relative Humidity sensors, Voltage sensors, Relay modules, Buck converters, Sim modules with Sim cards, LCD, Lead Battery, and Battery charger. Calibrated temperature, relative humidity and voltage sensor were used to have accurate data. The controller notifies the seed cold storage personnel every hour, including the number of SMS received, temperature and relative humidity readings from calibrated sensors, and the voltage. The cost of the real-time monitoring system was computed to be PhP 12,715.00. Based on the results of this study, the calibrated sensors are vital to have accurate and true value readings produced by the controller. After the real-time monitoring system was installed, it notifies the users every hour including the temperature, relative humidity and the voltage. The controller also turns off the buzzer when there is a power drop, and it can recover the cold storage system so it can lessen the labor time of personnel. The developed real-time monitoring system equipped with SMS remote activation and notification for seed cold storage is highly recommended for seed cold storages and other cold storages to maintain the good qualities of seeds and other agricultural products.

Keywords: sensors, voltage, temperature, relative humidity, calibration

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