

DESIGN AND DIAGNOSIS OF AUTOMATED CROP MANAGEMENT SYSTEM FOR ORGANIC AGRICULTURE

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Nowadays automated systems are applied at different fields in the globe. Due to lack of labour and prevailing high labour rates there is an urgent need to create strategies for sustainable organic food production based on advance science and technology. Hence, this study aimed to design a basic structure for an automated crop management system and diagnose the efficiency of the same. The system was designed with wireless sensors network (WSN) and placed in root zone of the plants. This system carries multi sensors to diagnose the soil moisture, light intensity and water availability. In addition, this automated organic garden gives the sensor information, triggering signals to the actuators and also transmits the data through cloud storages with android application to the beneficiary. This controlling or level maintaining programming concept was developed with the set values of light intensity, and soil moisture which were programmed into a microcontroller based system to manage the plant growth. A Node MCU was used to transmit about the condition of crop along with various sensor to firebase cloud real-time database. The study was carried out at 5 locations in Jaffna district, for 3 months as a preliminary investigation to evaluate performance of this automated system. As a starting technology, short duration crops such as leafy vegetable was used to assess the working principles of this system. The study concluded that the automated system was well adapted to agriculture crops without manual monitoring. Merits of the system were automated maintenance, less space requirement and production of healthy produce hence system has the potential to be used in urban areas.

Keywords: crops, development, eco-friendly unit, urban agriculture, WSN