

ABSTRACT

Urban farming is a solution to address food availability in the future, considering the high increase in population in Indonesia which has exceeded 278 million people. In 2035, it is predicted that 67% of Indonesia's population will live in urban areas, and the impact of urbanization will cause problems, especially related to food availability. The Food and Agriculture Organization (FAO) predicts that food needs will increase by 70% by 2050. Urban farming has obstacles related to irrigation and nutrition for plant growth and development. The condition of agricultural land in cities is very limited and on average has a relatively low fertility level, causing farmers to rely on chemical fertilizers. In facing this problem, the smart urban vertical farming team came up with a solution by cultivating melons that are integrated with the Internet of Things (IoT). However, cultivation is still manual takes more time, and is inefficient, causing parameter data not to be integrated and not real-time between IoT tools and the Antares Cloud Database. This is a problem that the author raised in research to provide a solution. To provide a solution, the author built a melon plant monitoring system which includes a classification system or decision maker, which is implemented in a mobile application to increase the efficiency of monitoring data parameters. This research uses N, P, K, pH, soil moisture, soil temperature, and electroconductivity sensors to monitor greenhouses. To integrate parameter data, the data is sent via a PLC program and stored in the Antares Cloud Database. The data is then managed using machine learning methods to determine the level of soil fertility. By using the API the data is sent to the mobile application. So the output produced in this research is a monitoring system with classification or decision making which is implemented into a mobile-based software application.

Keywords: *Smart Urban Vertical Farming, IoT (Internet Of Things), N, P, K Sensor, Antares Cloud Database, Mobile Application.*