

# **IoT-based Kale Plant Growth Monitoring and Controlling System**

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## **ABSTRACT**

The increasing demand for food presents a significant challenge for farmers, necessitating innovation and creativity. Water spinach is one of the nutritious food sources supporting the 4 Healthy 5 Perfect, whereas vegetables are essential for human nutrition. One of the advantages of cultivating water spinach is the ease of care required for the plants. However, negligence can occur in the maintenance of water spinach, such as inadequate watering or failure to provide sufficient water supplies to support their growth. Therefore, the research on the IoT-Based Plant Growth Monitoring and Control System aims to reduce the likelihood of negligence in the care and maintenance of water spinach plants. This research employs the waterfall method, which involves a sequential flow of analysis, design, coding, and testing. Each stage is interconnected. With this research, the process of caring for water spinach plants will become more organized and efficient. The hardware utilized includes the ESP8266 and ESP32-CAM as microcontrollers, along with several soil moisture sensors for humidity measurement. Additionally, the project employs Visual Studio Code, Arduino IDE, XAMPP, and Telegram, utilizing HTML, CSS, and JavaScript Programming Languages.

**Keywords:** ESP32Cam, ESP8266, IoT, Kangkung, Vegetables, Telegram, and web