APPLICATION OF IOT-BASED AUTOMATIC SOIL MOISTURE MONITORING AND IRRIGATION SYSTEM FOR CHILI PLANTS

Name	: M. Ali Rais
Student Identification Number	: 6103201435
Supervisor	: Supria, M.Kom

ABSTRACT

The process of monitoring soil moisture and watering chili plants is still done manually by farmers. This leads to issues with uneven soil moisture levels and irrigation, resulting in inadequate overall soil moisture in the range of 60%-80%. The IoT-based Automatic Soil Moisture Monitoring and Irrigation Application for Chili Plants is developed using NodeMCU ESP8266, Soil Moisture Humidity Sensor, DHT11 Temperature Sensor, and Relay to perform automatic irrigation when soil moisture is <60% and the temperature is <=32.5°C. Drip irrigation with PE Hose is utilized for even watering distribution.The soil moisture, temperature, and irrigation process can be monitored through a web application built using HTML, CSS, PHP, Firebase Realtime, and MySQL Database. The Monitoring Website Application displays the irrigation process, soil moisture, temperature, and provides information about the irrigation schedule and soil moisture conditions for the chili plants. There are three monitoring page views: the home page for real-time data monitoring, the history page showing the last 20 data records, and the detailed history page displaying the complete history data with the option to export data to an xls file.The IoT system and the Monitoring Website Application undergo testing using the Black Box testing method, which evaluates the functionality of the IoT system and website.

Keywords : *Applications, Monitoring, Chili, Soil Moisture, Drip Irrigation*