

E-Agriculture: Irrigation System Based on Weather Forecasting

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Abstract: *The Internet of Things (IoT) is an emerging area to assist agriculture-related applications. Applications such as smart gardening, water maintenance, other equipment automatic installations based on human actions, etc., can be implemented using IoT. In this project, a wireless sensor-based networking system is proposed to address the water pumping system to crop. The first problem is to automate the process of pumping the water to crops in a garden. Atmospheric Pressure, Temperature and humidity sensor are used to monitor the temperature to initiate the water pumping system, while soil moisture sensors are used for sensing the water level and initiating the process of pumping the water to the crops in the garden. The rain sensor is used to check the rain, if rain is coming it is going to stop all the motors. The data collection is applied to collect and store the information in the server for further processing. Proposed systems are deployed and demonstrated using open-source hardware such as microcontrollers, GSM etc.*

Keywords: E-Agriculture, Weather forecasting, Remote accessing of data.

I. INTRODUCTION

In this digital world, we need every possible thing around us to be automatic which reduces human effort. There are increasing electronic circuits that make today's life easier and simple. Nowadays, energy crises and water crises are the big problems faced by everyone. So, there is a need to conserve water. The aim of this is to make an irrigation system to irrigate the field automatically. Imagine how helpful it will be when you are busy doing your next task and your field is being irrigated automatically at a low cost.

II. LITERATURE SURVEY

Sensor-based Automated Irrigation System with IOT mentioned using sensor-based irrigation in which the irrigation will take place whenever there is a change in temperature and humidity of the surroundings. The flow of water is managed by a solenoid valve. The opening and closing of the valve are done when a signal is sent through the microcontroller. The water to the root of the plant is done drop by drop using a rain gun and when the moisture level again becomes normal the sensor senses it and sends a signal to the microcontroller and the valve is then closed. The two mobiles are connected using GSM. The GSM and microcontroller are connected using MAX232. When moisture of the soil becomes low moisture sensor sense it and sends a signal to the microcontroller, then the microcontroller gives the signal to the mobile and it activates the buzzer. This buzzer indicates that the valve needs to be opened by pressing the button in the called function signals are sent back to the microcontroller. The microcontroller used can increase System Life and lower power consumption. Their system is just limited to the automation of irrigation systems and lacks extraordinary features.

III. PROBLEM STATEMENT

In India, agriculture is the need of most Indians livelihood and it is one of the main sources of livelihood. Agriculture also has a major impact on the economy of the country. The consumption of water increases day by day which may lead to the problem of water scarcity. Nowadays not only crops outdoor plants in the home becoming quite difficult for them.

IV. PROPOSED SYSTEM

In the Proposed System the user has sufficiently used the technology in the agricultural sector. Here in this system, we are using the Moisture Sensor to identify the moisture content in soil and the DHT11 sensor to monitor the Humidity and

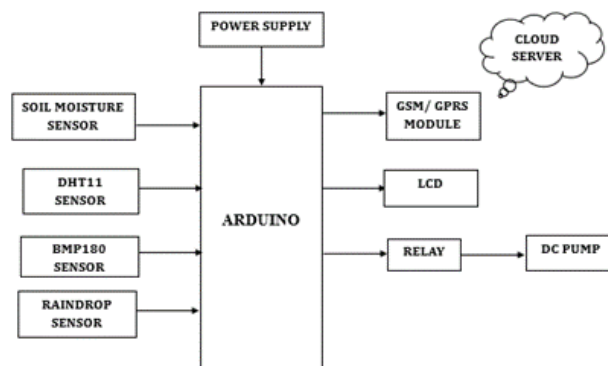
Temperature levels [1] in the Fields. The Data of these Sensors is directly displayed on the LCD this user can easily have the Climatic, Moisture Conditions in the Fields.

V. METHODOLOGY

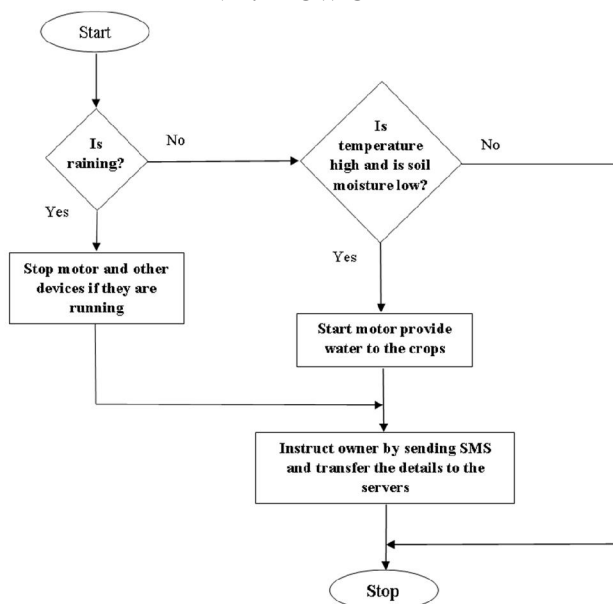
- The scope of agricultural censuses can vary depending on the resources available, the importance of agriculture, the traditions in census organization and country priorities.
- Although the main aim of an agricultural census is to provide primary data on the structure of the agricultural sector such as the size of holdings, land use, land tenure, etc., which does not change quickly over time, it must be conceived as part of an integrated system of agricultural statistics.

VI. DESIGN OF PROPOSED SYSTEM

- In the Proposed System the user has sufficiently used the technology in the agricultural sector.
- Here in this system, we are using the Moisture Sensor to identify the moisture [3] content in soil and the DHT11 sensor to monitor the Humidity and Temperature levels in the Fields.
- The Data of these Sensors [2] is directly displayed on the LCD this user can easily have the Climatic, Moisture Conditions in the Fields.

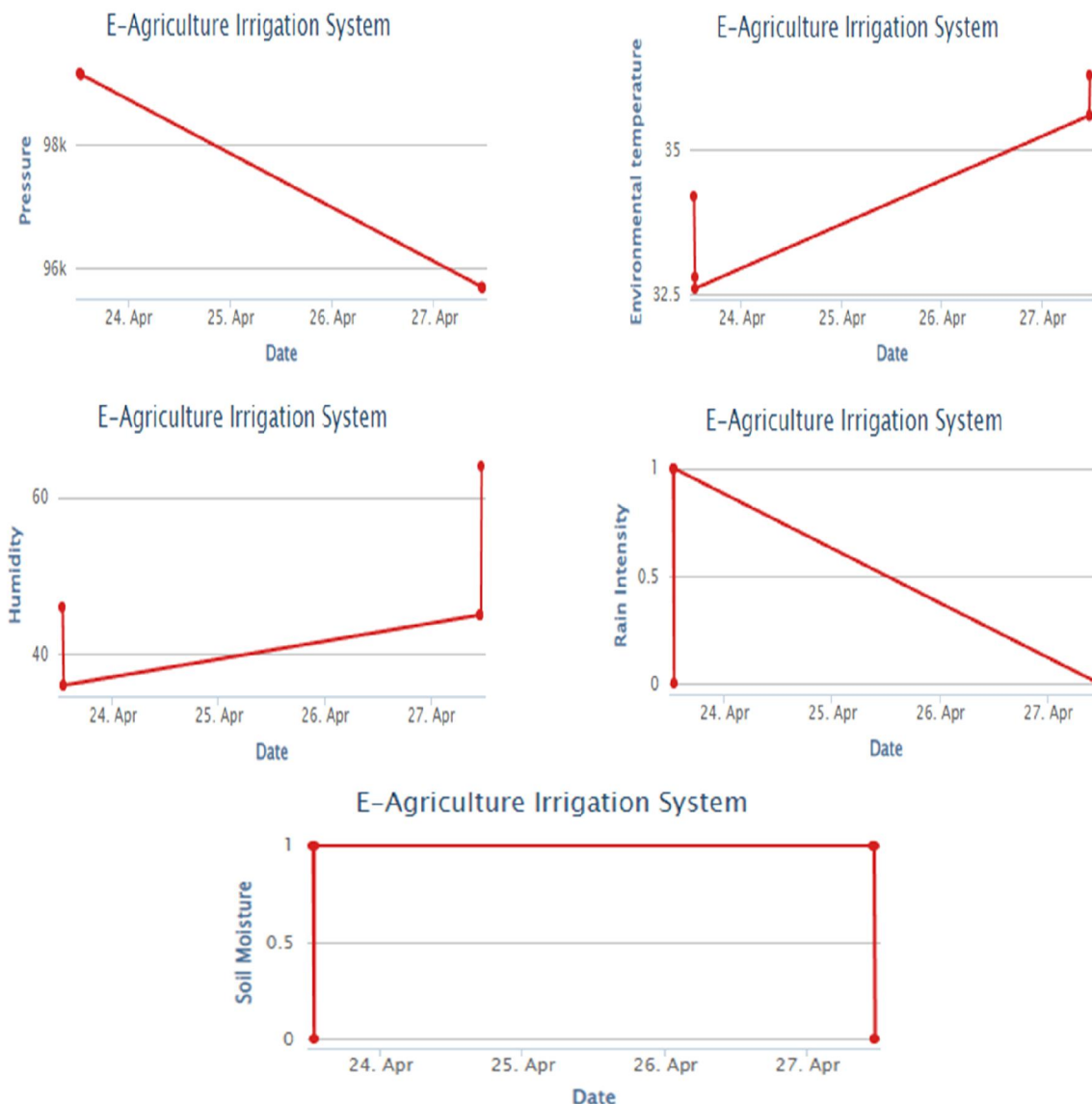


VII. FLOW CHART



- Whenever temperature sensor values are high and soil moisture value is low, an SMS will be sent to the owner of the land as well a motor is turned on to pump the water to increase the water level [4].
- If rain is started this system is going to stop the motor and other devices due to rainfall. The same information about rainfall is transmitted to the server. And at the same time, these values are collected and sent to the server for storing and further processing.

VIII. RESULT



IX. CONCLUSION

This project model considers an alternate source of electric power, automatic control, reliability and low cost. As the system is automatic, it will help the operator to properly irrigate their fields. Also, in this model the water level indicator is used to avoid the dry running of the motor which is helpful for the safety of the motor and saving water [5]. The proposed methodology can be a suitable alternative to overcome the necessity of electricity and the irrigation system for our farmers.

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