



“Crop Management System Using IoT Based Algorithm in India”

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Abstract

India is mainly an agricultural country. Agriculture is the most important occupation for the most of the Indian families. It plays vital role in the development of agricultural country. In India, agriculture contributes about 16% of total GDP and 10% of total exports. Water is main resource for agriculture. Irrigation is one method to supply water but in some cases there will be lot of water wastage. So, in this regard to save water and time we have proposed project titled automatic irrigation system using iot. In this proposed system we are using various sensors like temperature, humidity, soil moisture sensors which senses the various parameters of the soil and based on soil moisture value land gets automatically irrigated by ON/OFF of the motor. These sensed parameters and motor status will be displayed on user android application.

1.Keyword:Internet of things (IoT), Arduino, Temperature sensor ,Soil moisture sensor, And humidity sensor.

Introduction

India is a land of versatile soils. In India economy is mainly based on agriculture and agricultural productivity is depends upon soil type. But the major problem pertaining to the Indian farmers is lack of sufficient knowledge about their soil.

Each soil type has different characteristics i.e. there are various nutrients present in the soil. This system will be used for soil analysis in order to increase crop yield. Soil analysis is done through the sensors. Based on soil analysis report fertilizer will be recommended to the user.

Literature Survey:

“Microcontroller-

based automatic Irrigation System with Moisture Sensor” Abhinav Rajpalet.al, International Conference of Science and Engineering”

This paper proposed a microcontroller based automatic irrigation system which is a combination of hardware and software that provides irrigation control. The system should be easy to troubleshoot in the event of a fault and it is also user friendly because it requires only eight keys for all the operation.

“Water-Saving Irrigation System Based on Automatic Control by Using GSM Technology” K S S Prasad et.al, middle east journal of Scientific Research

Introduced an automatic irrigation system which will have a wireless sensor network for real-time sensing and control of an irrigation system by using GSM technology. It provides uniform and required level of water for the agricultural farm and avoids water wastage.

“Microcontroller based Controlled Irrigation System for Plantation” S R Kumbhar

Proposed a microcontroller based controlled remote irrigation system developed for the agricultural plantation, which is placed at the remote location and required water provides for plantation when the humidity of the soil goes below the set-point value. If the set-point value is high, then the motor is turned ON, otherwise the motor is turned OFF.

“GSM based Automatic Irrigation Control System for Efficient Use of Resources and Crop Planning by using an Android Mobile” Pavithra D S

Proposed an innovative GSM based/Bluetooth based remote controlled embedded system for irrigation to save the natural available resources. It sets the irrigation by continuously monitoring the status of the soil and temperature with the use of sensors, flow of water can be controlled by sending a message from our mobile.

Problem statement

Presently, soil analysis and interpretation of soil test results is paper based. This in one way or another has contributed to poor interpretation of soil test results which has resulted into poor recommendation of crops, soil amendments and fertilizers to farmers thus leading to poor crop yields, micro-nutrient deficiencies in soil and excessive or less application of fertilizers. The system to be designed will enable researchers and farmers with a convenient tool to analyse and interpret soil test data, selecting crops as well as determining the amount of fertilizer application rates required to optimize the yield of a particular crop which has the potential to increase crop yields and results in greater profits for the farmer.

Objectives

- Our method goal is to figure out moisture level in soil. To find temperature level of soil.
- To determine whether or not the water level is low.
- When the water level, moisture level, and temperature level are low, the motor turns on.

Proposed system

This system works through different stages:

If the moisture sensors dry in the line (its locations), the system will be checked by the rain sensor. If there is rain, the system will not work because no need to irrigate at the same time of rain. Otherwise, the system will check the temperature sensor with light sensor. If the temperature is high and the percentage of light is high as well, then the system will not work because it is not the right time for irrigation process because the water will easily evaporate. If the temperature is low and the light is low and there is no rain but the moisture sensor is dry, then it sends signal to controller to open the valve and pump.

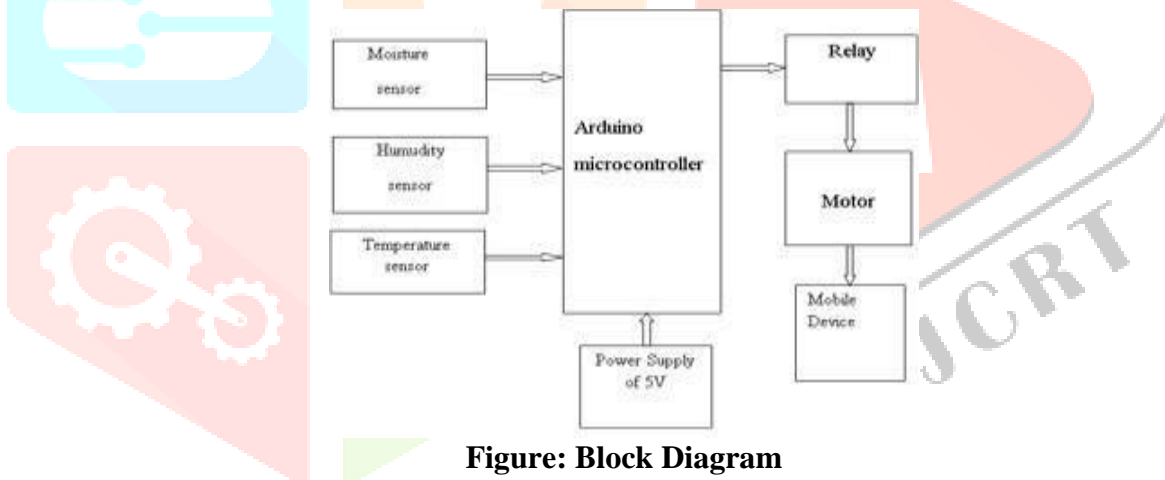


Figure: Block Diagram

Advantages:

- Easy to know moisture level water level and temperature level to user.
- To good crop to farmer
- Increase in productivity
- Reduce Water consumption
- Safe for use
- No man power required
- Require smaller water source

Hardware Requirements:

1. 1PCSystemswithmin4GBRAM
2. Min40GBHDDSpace
3. Sensors and LCD
4. ArduinoMicrocontroller
5. WaterPumpmotor

Conclusion:

All observations and experimental set up proves that this is a complete solution to test the soil health parameter. User can have access to the data and can know if there are any deviations with respect to pH value and soil moisture. Implementing this system will allow users like farmers to monitor and improve the productivity of the vegetables. The coding is done by using Arduino IDE. This work can be extended by adding advanced engineering technologies provided new approaches for soil testing effective manner.

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