PROJECT PROPOSAL
Smart Agriculture Via IOT

Summary:

Internet of Things (IoT) plays a crucial role in smart agriculture. Smart farming is an emerging concept, because IoT sensors capable of providing information about their agriculture fields. The paper aims making use of evolving technology i.e. IoT and smart agriculture using automation. Monitoring environmental factors is the major factor to improve the yield of the efficient crops. The feature of this paper includes monitoring temperature and humidity in agricultural field through sensors using CC3200 single chip. Camera is interfaced with CC3200 to capture images and send that pictures through MMS to farmers mobile using Wi-Fi**.**

Technologies and IoT have the potential to transform agriculture in many aspects. Namely, there are five ways IoT can improve agriculture:

- Data, tons of data, collected by smart agriculture sensors, e.g. weather conditions, soil quality, crop's growth progress or cattle health. This data can be used to track the state of your business in general, as well as staff performance, equipment efficiency, etc.
- Better control over the internal processes and, as a result, lower production risks. The ability to foresee the output of your production allows you to plan for better product distribution. If you know exactly how much crops you are going to harvest, you can make sure your product won't lie around unsold.
- Cost management and waste reduction thanks to the increased control over production. Being able to see any anomalies in the crop growth or livestock health, you will be able to mitigate the risks of losing your yield.
- Increased business efficiency through process automation. By using smart devices, you can automate multiple processes across your production cycle, e.g. irrigation, fertilizing, or pest control.
- Enhanced product quality and volumes. Achieve better control over the production process and maintain higher standards of crop quality and growth capacity through automation.

  As a result, all of these factors can eventually lead to higher revenue.

Introduction

India is a country of village and Agriculture play an important role of development of country. In our country, agriculture development on the monsoon which is insufficient source of water. Show the integration is used in agriculture field. In Irrigation system depending upon the soil type water is provided to plant. In agriculture true things are very important first to get information of about the fertility Of soil and second to measure moisture content in soil. Nowadays, for irrigation, different techniques are available which are used to reduce the dependency of rain. And mostly this technique is driven by electrical power and on/off scheduling. In this technique, water level indicator placed in water receivers and soil moisture sensors are placed root zone of plant and near the module and gateway unit handles and sensor information and transmit data to the controller which is turned the control of the flow of through the valves.

Area of utility:

- The primary focus of the project to help the farmers and reduce their work.
- This module can be implemented in perennial plant irrigation land and gardening land.

Problem Statement:

- Sometimes form of overflood the land and for rest of time it is left dry. This leads to low water retention capacity.
- Because of the information gap the format can't get the latest weather news the leads to irregular irrigation.
- Selection of fertilizer and pesticide is not done due to lack of knowledge of soil nutrients.
- Some fertilizers Need Water and due to lack of knowledge it is not just properly.
- And the last and most important fact is that unawareness about which crops the soil supports.

Smart Solution:

Solution 1:

So...to tackle with the lack of awareness about ideal framing, we will use IOT devices which will itself operate without any human intervention. So now no prior knowledge of farming required.

- The data collected by the IOT will automatically share the information of the conditions of the field, such as temperature, humidity, sunlight etc.
- And then in accordance with that the IOT will decide which task to be performed.

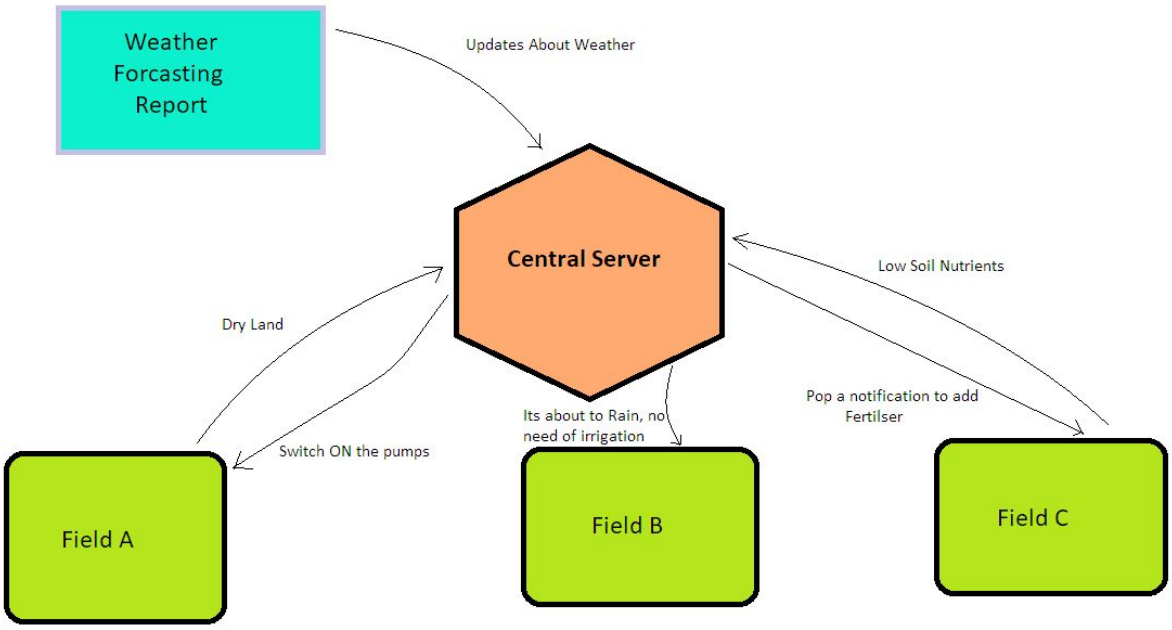

Fig. Overview

Solution 2:

- The problem of over flooding the land and leaving it dry for prolonged time led to low water retention capacity. So to tackle with this the current condition and data of the land will monitored by the IOT devices. And then the right precaution would be taken accordingly.
- For an ideal agricultural soil, it is needed that the composition must be about, 25% Water, 25%Air, 45% Minerals, and 5% others.
- The irrigation will be done by taking both the current data and future prediction of the weather, so that we can use rain water instead of manual irrigation. And by this process we can avoid the unwanted use of fuel and groundwater.
- The irrigation can be done by sprinkler or by underground dripping mechanism to conserve water.

Solution 3:

- The most genuine cause of the poor yield is the bad quality of soil, and is hardly knew by the farmer.
- If the soil is too acidic or basic or lack nitrogenous components, then it directly affects the health of crop. So, if this could be detected by the IOT devices then the proper requirements could be judged.

- As soon as the deficiency is detected, a notification will pop on the land owners device that the field need such requirements. So now it will be easy to figure out the right needs.

Solution 4:

- This is often found that the farmer have their own trend of growing specific crop. So they can't get good yield.
- To figure out this problem the IOT devices can be installed to save data for a duration time (maybe in months). And then by analysing the terrain, it will be listed that which crop will be best supported by the soil. This will not only help to raise yield but also raise the income of the farmer.

Features:

The aim of this project is to introduce the latest technology into the agriculture business and better crop production by collecting real-time status of crop and informing the farmers about it.

The Features are:
1) SMS Notifications
2) Valuable information collection.
3) Detailed Data analysis
4) Cost effective
5) Easy to implement

Tools Used:

Software used for the Project is ARDUINO 1.8.2 and the hardware required for the project is listed below:

1. Arduino Uno
2. Analog Soil Moisture Sensor
3. DHT22 Digital Temperature and Humidity Sensor
4. MQ-135 Air Quality Gas Sensor Module
5. MQ-7 Gas Tester Carbon Monoxide Detecting Sensor Module 4P 180mA 5V DC
6. MQ2 Gas Sensor, Methane, Butane, LPG, Smoke Sensor
7. Ultrasonic sound sensor
8. LCD 16x2 Alphanumeric Display(JHD162A)
9. Jumper Wires Male to Male, male to female, female to female

10. GSM Modem Module for Arduino
11. Batteries
12. Motor
13. Resistances