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WSN's Used Smart Agriculture Crop Monitoring and Controlling System

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ABSTRACT: Agriculture is the main essential for human life. Former does not have well knowledge about agriculture to maintain it. So we are introduced a new technology for monitoring and controlling in agriculture field. It has several sensors to employed and detect various parameter such as temperature sensor, moisture sensor, pH sensor, rain sensor, light sensor, ultrasonic sensor, water level sensor and PEF method . Solar power system is used to minimize the E.B power consumption source. The proposed form work involved wireless transmission models (XBeeS2), with the equalization of IOT. We can able to receive current status of agriculture crops.

KEYWORDS: Microcontroller, Solar panel, Battery, Temperature sensor ,moisture sensor, LDR, PH sensor, PEF, LCD display.

I. INTRODUCTION

In India is the major role for maximum earnings income in agriculture sector. The farmer erratic knowledge huge losses were obtained. To overcome this Losses some automation process will be used in proposed system. The EB power demand is increasing day by day for that using solar power system to reduce the EB power demand. For several wireless sensor networks are used to detect the different kind of parameters. Lightsensor using for higher intensity of sunlight to prevent the plant in higher evaporation of water. When we passing more or less water to the Irrigation, the crops are affected. The water level sensor used to give a proper way of irrigation and its help to well growth of plants. To balancing the ratio of fertility of soil, the pH sensor is used to leveling the acidity and basicity of the soil. The temperature sensor is used to find out in the current temperature level at the agricultural field. The ultrasonic sensor is used to determine in the periodically growing level of Plants. The rain sensor sensing the rain and storm time it helps to preventing the crops. By passing electric field through the plants to destroy the insecticides it's called pulse electric field technique

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II. EXISTING SYSTEM

In this paper, an architecture of a ZigBee wireless sensor network for application in smart irrigation system is proposed. After a brief overview of the most important features of Zig-Bee standard related to Wireless Sensor Network (WSN) operation, Arduino-based sensor node for acquisition of soil moisture and air temperature is described. This node is equipped with XBeeS2 communication module in order to be part of the established WSN.

DRAWBACKS

Green roofing cost is high to cover all the farms to maintain it and more motor requirements is needed. Initial cost is high. Using WSN's the advanced communication module is needed to collecting data's from long distance. Due to environmental changes the solar power is difficult.

III. PROPOSED SYSTEM

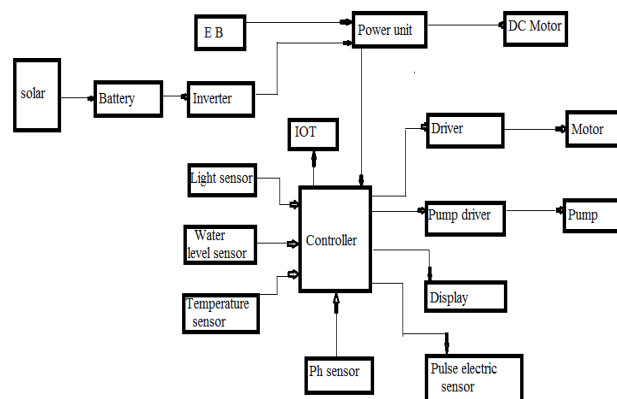


Figure 3:User Section

A block diagram is the total blue print of the proposed project. The total essence and functioning of the project is represented in a single pictorial representation. The block diagram consists of the following components:

- LDR sensor
- Water level sensor
- PH sensor
- Temperature sensor
- Ultrasonic sensor
- Microcontroller
- LCD display
- XBeeS2
- Dc motors
- Battery
- Solar panel

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A. LDR SENSOR

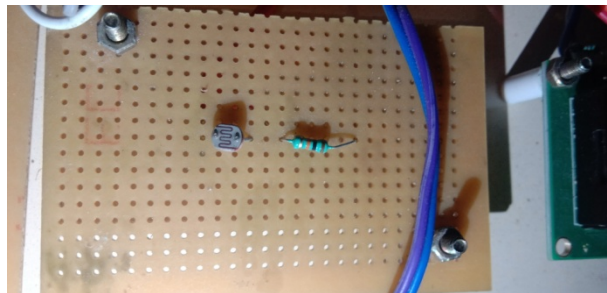


Figure 1:LDR sensor

It is using for higher intensity of sunlight to prevent the plant in higher evaporation of water. To balance the light to allow enter into the roof in a particular intensity to the crops.

WATER LEVEL SENSOR

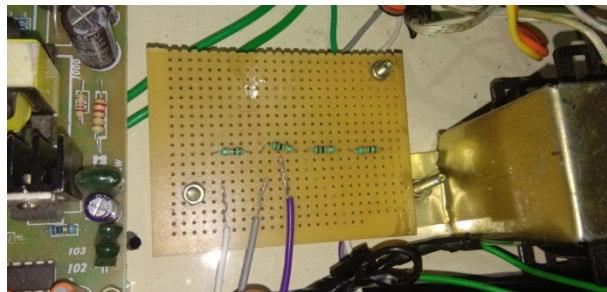


Figure 2:water levelsensor

The sensor used to give a proper way of irrigation and its helps to well growth of plants. When we passing more or less irrigation the crops growth level is affected. so its stabilizing the irrigation to the plants.

PH SENSOR

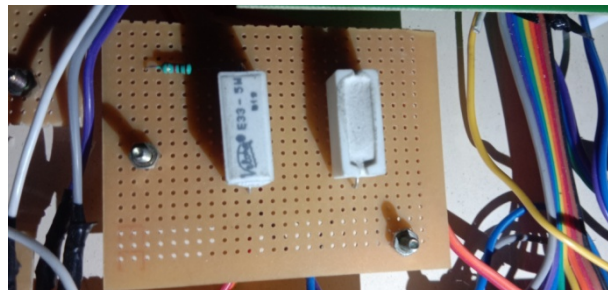


Figure 3:PH sensor

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To analyze the ratio of PH level in the soil that are helps to find the acidity and basicity data's. That would be balance some fertilizer's will be added .PH sensor is used to sense soil nutrition level. If nutrition level goes low then the system indicating to the farmer.

B. TEMPERATURE SENSOR

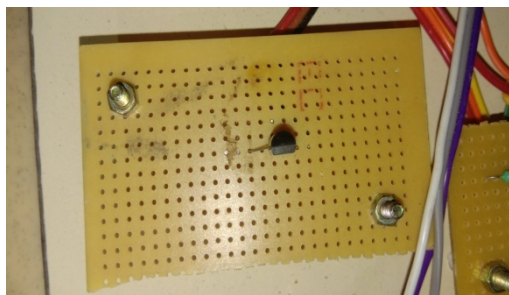


Figure 4:Temperature sensor

Temperature sensor is used to frequently measured environmental quantity .The system are affected by physical,chemical, biological and electric system.This system is fixed in irrigation to controlling the particular temperature obtained in environmental aspects.

C. ULTRASONIC SENSOR

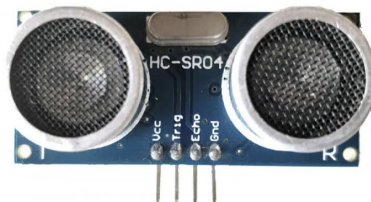


Figure 5:Ultrasonic sensor

Intelligent systems regulate crops insecticides application,monitor irrigation and controlling plant heights.These systems basically enhance farming efficiencies to enable outputs of crops in well yielding.It helps to indicate the farmer about plant condition andheight.

F.XBeeS2



Figure 6:XBee S2

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XBeeS2 module is used for embedded solution providing wireless end point connectivity to devices. In this module as the lowest current employing of any digi-RF product. In this module indoor is 40meters then the outdoor range 120meters. In this XBee wireless device connected to microcontroller through serial port. Data rates in this support 250kbps.

D. MICROCONTROLLER

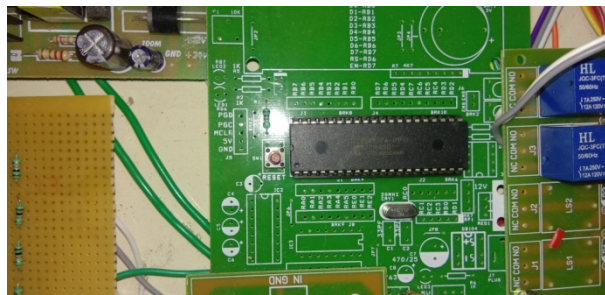


Figure 7: Microcontroller

It is arduino-nano microcontroller in the family of AVR microcontroller. It gives the high accuracy, small in size. Sensors describe the functions and transmit through microcontroller by using XBeeS2 communication module.

H.LCD DISPLAY



Figure 8: LCD Display

A 16x2 LCD has two registers, namely command and data. The register select is used to switch from one register to other. It requires low amount of power supply. The 16x2 translates a display 16 characters per line in 2 such lines.



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Figure 9: Solar panel

In this proposed system 10 watts solar panel helps to store the energy through battery. by using this panels the power demand will be reduced.

J.BATTERY



Figure 10: Battery with Power supply board

12V battery is used in this system. A power supply board is used for power supply control in this system. This board consists of .

K.DCMOTORS



Figure 11: DC motors

This motors are used to pumping the water in irrigation system topassing through plants and sucking the water. When ac supply is given to DC motors in series

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connection of armature winding and field winding it may run, but in parallel condition it won't rotate at all and it will start humming and vibrations.

PROJECT OUTCOME



Figure 12: Kit module

In this project main thing is to reduce the man power of farmer .Farmers are met huge loses for improper knowledge about agriculture.So we implement this project by using IOT automation.its helps to collecting information about conditions like weather ,moisture,temperature and fertility of soil,crop online monitoring enables detection of weed ,level of water, Pest detection crop growth of agriculture .pulse electric field is used to destroy the microbial activities and it uses through the crops in twice a day it send 10ms of electric field.We can monitor all the sensor values using IOT by XBeeS2 communication module.The total system is operated with the help of solar panel in case its will be demand then only the EB source activated.

IV. CONCLUSION

In this paper ,by controlling the agriculture system using WSN's to controlling and monitoring the crops ,that helps to reduce the man power and we known about the current status of field through IOT.That's the functions are green roofing,automatic pumping of water,controlling of light intensity, leveling the PH level in soil. These are all operated by using the supply of solar energy.



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FUTURE SCOPE

The system can be extended to support for more development of irrigation. Different software development strategies and various programming techniques can be exploited to enhance system efficiency.

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