

AUTOMATIC TRACKING SOLAR POWERED PANEL FOR AGRICULTURE USING WIRELESS SENSOR

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ABSTRACT

Maintaining an agricultural field is a tedious process because heavy manual work is involved in it. The farmers have to visit the field daily for watering the crops and he will be checking the humidity of the soil often. This will be his routine work and he might not be able to concentrate in other works. In order to avoid these problems, automation is done using Wireless sensor network. Precision Agriculture is utilized to improve the productivity and efficiency of limited agricultural resources by monitoring the relevant data in the field. The main objective of this study is to deploy a low-cost sensor system, gather field data, and display the data. Sensors such as rainfall, barometer and pH were used for data acquisition and the RF transmitter and receiver, acting as a local server, was used for data processing and transfer.

KEYWORDS: Precision agriculture, Rainfall sensor, Barometer, Ph sensor.

1. INTRODUCTION:

The decrease in nourishment security represents a noteworthy concern. What was once utilized as fields for farming are currently taken up for business purposes, for example, shopping centre, townhouses, and so forth . As of the second quarter of 2015, the horticulture area of the Philippines encountered a downturn of 0.37 percent [1]. Different strategies had been produced by ranchers to answer the said issue, for example, trim turn and water system frameworks. These methods have been demonstrated useful however the likelihood for development still exists. The rising requests for agribusiness creation in the Philippines have picked up the enthusiasm of numerous scholarly foundations in the nation. A large number of the grounds once in the past used for horticulture were gradually changed over to business and private terrains. With this, proficiency of agrarian generation needs to enhance to make up for lost time with the request. Beside cataclysmic event caused issue, negligence in horticulture, for example, finished preparation that prompts soil corruption is a typical issue in conventional cultivating. Poor basic leadership with respect to natural condition likewise prompts bring down proficiency regarding creation.

Accuracy Horticulture is produced as an answer for these issues experienced by neighbourhood agriculturists. Its improvement has additionally come about into a few applications which incorporate yield checking frameworks. As of late, Remote Sensor Systems (WSNs) is utilized as a part of harvest checking. They secure exact information through sensors that measure unmistakable soil properties that influence plants' development.

2. PROCESS:

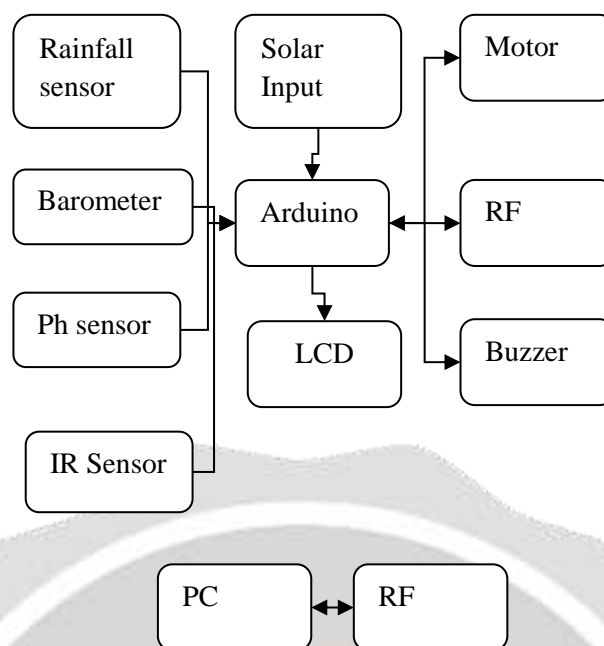


Fig 1 Block Diagram

INPUT:

Solar panel is used to provide the power supply for the system. Solar energy is one of the prominent renewable energy sources. Because of using solar power we need not to give external power source for power supply to the arduino. Solar energy is eco-friendly power supply. There is no wastage of power. Here 12v power supply is need for arduino which is produce by solar panel.

SENSING:

The sensors which are used to sense the atmospheric changes in the environment are pH sensor, barometer, Rainfall sensor and barometer. It has been detect by the sensors the messages will be indicated by them and messages will be send to the user. The IR sensor is used to detect the movement of an animal, insects and human when they get entered into the fields. The pH sensor is used to detect the acidic and basic nature of the soil. The rainfall sensor is used to detect the moisture content of the environment. The barometer is used to detect the possibility of rain.

TRANSFORMATION:

The sensed information are get collected through the arduino and transferred to the user. When any object is detected the buzzer will get alarmed immediately and the message will be sent through GSM to the user. When the water level decreases or the field become dry we can operate it from the user place. Here we used to transfer the data via RF transmitter and receiver.

RF TRANSMITTER AND RECEIVER

- Data rate of up to 250Kbps are possible using RF.
- RF uses 2.4GHz frequency for data communication.
- In general up to 256 devices can communicate in a RF network.
- PAN – Personal area networks can be implemented using RF

3. EXPERIMENTAL RESULT

The result of proposed system is accurate and it gives the exact result. The results gathered for rainfall, barometer, IR and Ph sensor are met the desires. When testing began, the entire framework kept running individually without human mediation. The framework responsiveness was tried through the utilization of manure blended in water to the dirt in various interims.

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COMM
RAIN FALL LEVEL 7
PASSLITY OF RAIN FALL 72
632 MOVEMENT NOT DETECTED
PH 7
RAIN FALL LEVEL 7
PASS632 MOVEMENT NOT DETECTED
633 MOVEMENT NOT DETECTED
PH 6
RAIN FALL LEVEL 7
PASSLITY OF RAIN FALL 72
632 MOVEMENT NOT DETECTED
PH 7
RAIN FALL LEVEL 7
PASSLITY OF RAIN FALL 72
632 MOVEMENT NOT DETECTED
PH 7
RAIN FALL LEVEL 7
PASSLITY OF RAIN FALL 74
632 MOVEMENT NOT DETECTED
PH 7
RAIN FALL LEVEL 8
PASSLITY OF RAIN FALL 72
632 MOVEMENT NOT DETECTED
PH 7
RAIN FALL LEVEL 8
PASSLITY OF RAIN FALL 72
632 MOVEMENT NOT DETECTED
PH 7
RAIN FALL LEVEL 8
PASSLITY OF RAIN FALL 72
632 MOVEMENT NOT DETECTED
PH 7
RAIN FALL LEVEL 8
PASS632 MOVEMENT NOT DETECTED
LITY OF RAIN FALL 72
0 MOVEMENT DETECTED
0 MOVEMENT DETECTED
Autoscroll No line ending

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4. CONCLUSION

This examination exhibits the improvement of a Remote Sensor System application as a maintainable and exact arrangement in checking diverse ecological parameters that would influence edit advancement. Temperature and mugginess of the environment, notwithstanding the dirt dampness, pH and electrical conductivity, ought to be much of the time observed and cultivating choices ought to spin around the procured sensor esteems. The sensor hub which comprises of all the hardware of the sensors including the Arduino and Xbee was developed and intended to be shoddy, sturdy and effective with a specific end goal to permit minimal effort and manageable propagation. The primary server could house all information and show them in a way that empowers its clients to envision the status of the earth and soil around their harvests. With the direction of this framework the agriculturists will have the capacity to take fitting activities that will result to a more noteworthy product yield.

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