© 2017 IJSRSET | Volume 3 | Issue 2 | Print ISSN: 2395-1990 | Online ISSN : 2394-4099
Themed Section: Engineering and Technology

Intelligent Integrated Agriculture System

Bhagyashree Dhore*[1], Kajal Dandge*[2], Ritu Tekwani*[3], Shravan Paralikar*[4], Gaurav Purwar*[5]
[1,2,3]Department of Information Technology, Shegaon, Maharashtra, India
[4,5]Department of Electronics and Telecommunication, Shegaon, Maharashtra, India

ABSTRACT

Due to uneven natural distribution of rainwater it is very crucial for farmers to monitor and control the equal distribution of water to all crops in the whole farm or as per the requirement of the crop. In agriculture, there are many parameters which need to be controlled and monitored on a regular basis. Also some cash crops need precise atmosphere. Keeping all these problems in mind, we have come up with the idea of smart farming. In this proposed system, we are going to use ARM controller for controlling various parameters like moisture, temperature, humidity, etc. The proposed system is an integrated solution to the problem of

- ✓ Monitoring
- ✓ Controlling

This paper will enhance the quality and the productivity of crops. It will provide flexibility and ease of use to farmers. The system is fully automated and do not require any human intervention. The future scope of this project includes connecting controller to the server and controlling through cloud computing.

Keywords: Crucial, Precise Atmosphere, Cloud Computing, Greenhouse Precision Agriculture, Bluetooth, Internet Of Things,Embedded Technologies.

I. INTRODUCTION

To meet the requirements in real-time, reliability and sustainability for crop-growth environment monitoring in greenhouse precision agriculture, the proposed system is designed for monitoring and controlling system which is based on bluetooth and embedded technologies, in order to achieve intelligent control on the farm. The system is based on bluetooth wireless network, using temperature and humidity sensors, moisture sensors for real-time detection of environmental factors. This involves a careful system design, since requirements are very strict, battery life-time maximization, robustness, recovery strategies, network flexibility and reconfigurability. This proposed system implements bluetooth based wireless sensor network in agriculture such as monitoring of environmental conditions like soil moisture content, temperature, and humidity. The aim of this system is to monitor and maintain the farm from any part of the world through internet. Monitoring is done with the help of wireless sensor networks and all the controlling process is done with the help of the ARM7 microcontroller. Monitoring parameters of temperature, moisture and humidity is an important means for obtaining high-quality environment. Remote monitoring is an effective method in order to avoid interference and improve efficiency. In the proposed system a farm is constructed in a technical method with low cost power saving wireless sensor network and it can be monitored remotely by logging into a farming website. The integration of traditional methodology with latest technologies as Internet of Things and Wireless Sensor Networks can lead to agricultural modernization. Keeping this scenario in our mind we have designed, tested and analyzed an 'Internet of Things' based device which is capable of analyzing the sensed information and then transmitting it to the user. This device can be controlled and monitored from remote location and it can be implemented in agricultural fields, grain stores and cold stores for security purpose.

II. METHODS AND MATERIAL

1. **Problem Statement**

Complexity involved in monitoring climatic parameters like humidity, soil moisture, temperature, etc which directly or indirectly govern the plant growth. Investment in the automation process are high, as today's greenhouse control systems are designed for only one parameter monitoring (as per GKVK research centre); to control more than one parameter simultaneously there will be a need to buy more than one system. The modern proposed systems use the mobile technology as the communication schemes and wireless data acquisition systems, providing global access to the information about one's farms. But it suffers from various limitations like design complexity, inconvenient repairing and high price and low reliability. This proposes a wireless monitoring and control system for greenhouses and polyhouses for solving the problems such as poor real time data acquisition, excessive man power requirement and to overcome the shortcoming of the wired system such as complex wiring. This will enhance the quality and the productivity of crops. It will provide flexibility and ease of use to farmers The system is fully automated and do not require any human intervention.

2. Design Goal

A. To gather and transmit generated data:
The obtained data from the sensors will be given to the server through Bluetooth module.
B. To monitor and control the parameters remotely:
To interface different sensors that will sense the different environmental parameters and suitable action depending upon the received information will be taken.
C. To provide security:
The IR sensors are used to detect the motion of wild animals in the farm.
D. To reduce human intervention:
As the process of sending, receiving of data and taking the corrective measures is fully automated hence the human intervention is reduced to a great extent.

3. Block Diagram

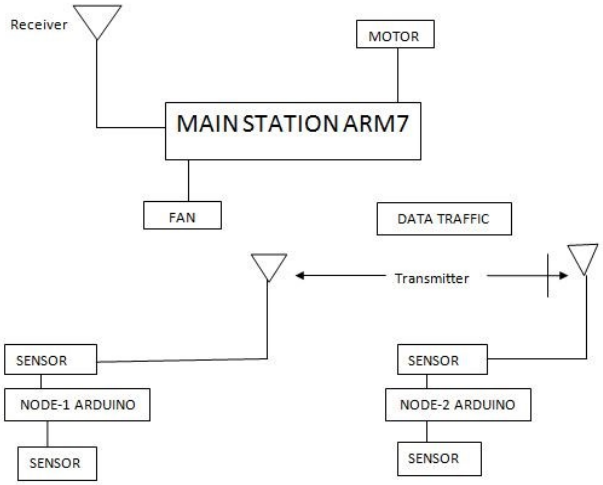

Figure1. Block diagram of main station ARM7

III. RESULTS AND DISCUSSION

Working

[1] Here ARM7 works as a main station and Arduino works as a substation.
[2] Sensors like Moisture sensor, DHT11 sensor will be connected to the Arduino. These sensors will calculate the parameters like temperature, humidity, moisture content and send it to the Arduino.
[3] Arduino also has a connection of bluetooth device this Bluetooth device will send data to the ARM7 controller and database of website through Bluetooth connection.
[4] The controlling action will performed by the ARM7 ,if any calculated parameter value goes below /above threshold value it will automatically on/off the water pump to maintain the desired condition.
[5] Same action can be performed by the website also manually as well as automatically. Also message sending action will be performed through wedsite to inform to user.

Figure 2. Actual field

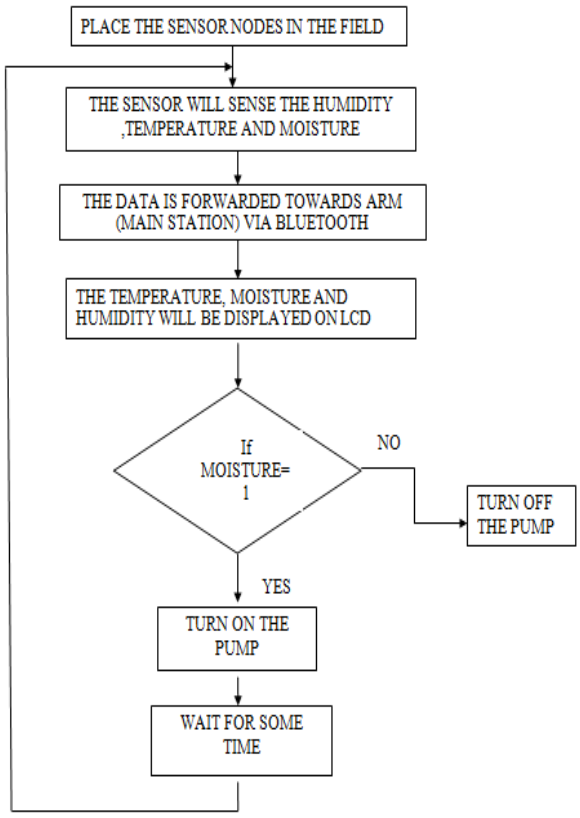

Figure 3. Workflow of Project

Figure 4(a): Website view of project

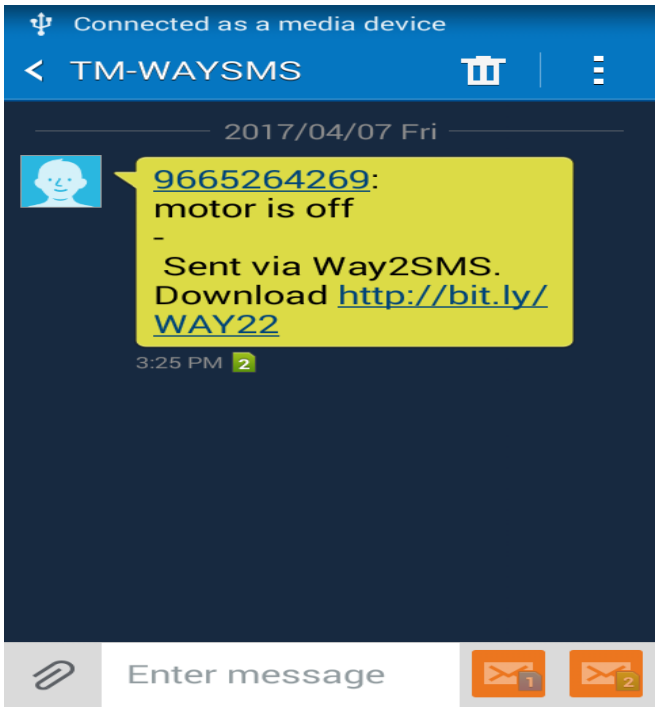

Figure 4(b): Message Sending Mechanism

IV. CONCLUSION

The farm parameters such as temperature, humidity and moisture have been collected and those values or experimental values are used by the farmers to decide the actions to be taken in the farm. This shows that sensors in the farm can reduce the farm work and at the same time increases productivity. A user interactive webpage has been created for the farmers to remotely monitor the farm as well as to control it through Internet. The readings of temperature and moisture can be recorded and timely sent to farmer's mobile enabling him to take the proper action. The proposed system is a low cost system where information is sent to the user via Message Sending Mechanism(SMS Service) and also the android app has been developed for the controlling of motor(Switching ON and OFF) With this, the farmer can switch on/off the motor for irrigation from anywhere far from the actual field. The system is highly beneficial for precise irrigation in farm fields and thus responsible for efficient utilization of water resource and manpower.

V. REFERENCES

[1]. Automated Irrigation System Using a Wireless Sensor Network and GPRS Module Joaquín Gutiérrez, Juan Francisco Villa-Medina, Alejandra Nieto-Garibay, and Miguel Ángel

Porta-Gándara IEEE transactions on instrumentation and measurement
[2]. Energy Efficient Wireless Monitoring System for Agarian Areas in Indian Agricultural System using GPRS module P.Revathi, Member IEEE, C.Rajasekaran, Member IEEE