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AGRICULTURE DIET

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Abstract- *Monitoring and control of greenhouse environment play an important role in greenhouse production and management. To monitor the greenhouse environment parameters effectively, it is necessary to design a measurement and control system. The objective of this project is to design a simple, easy to install, microcontroller-based circuit to monitor and record the values of temperature, humidity, soil moisture that are continuously modified and controlled in order optimize them to achieve maximum plant growth and yield. The controller use AT89S52 for communicates with the various sensor modules in real-time in order to control the light, aeration and drainage process efficiently inside a greenhouse by actuating a cooler, fogger, dripper and lights respectively according to the necessary condition of the crops. An integrated Liquid crystal display (LCD) is also used for interfacing with microcontroller. This makes the proposed system to be an economical, portable and a low maintenance solution for greenhouse applications, especially in rural areas and for small scale agriculturists. In efficient management of nutrient inputs has put a large constraint on the environment and human's health. Indiscriminate use of nitrogen and phosphorus fertilizers has led to ground water pollution. So the farmer has to pay close attention to nutrient management and incorporate the concept of balanced plant nutrition into their farming techniques.*

Keywords: sensors, GSM, power supply, relay driver circuit

1. INTRODUCTION

In today's life, everyone gives importance to time. Time does not wait for anybody. Everything should be performed in time. In world, the agriculture plays very important role in the economy and development of the country. We are experiencing a growing interest in the field of agriculture using the latest technologies. The continuous increase in population of India the food requires the rapid improvement in food production technology. In a country like India, Where the economy is mainly based on agricultural. For agriculture, the main reason is the lack of rains. Another very important reason of this is due to unplanned use of water, due to which some amount of water goes waste. In the modern irrigation systems, the most significant advantage is that water is supply near the root zone of the plants drip by drip due to which a large quantity of water is saved. At the present area, the farmers have been using irrigation technique in India through the manual control in which the farmers irrigates the land at regular intervals. This process sometimes consumes more water or sometimes the water reaches late due to which the crops get dried. Water deficiency can be detrimental to plants before visible wilting occurs. Slowed growth rate, lighter weight fruit follows slight water deficiency.

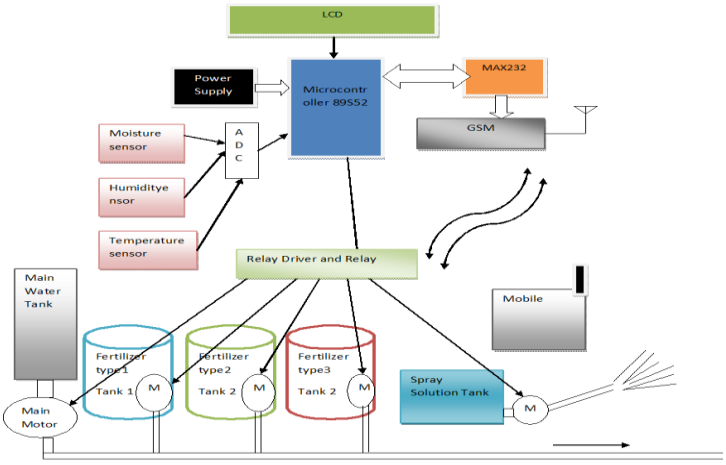
In the field of agriculture, use of proper method of irrigation is important and it is well known that irrigation by drip is very economical and efficient. In the conventional drip irrigation system, the farmer has to keep watch on irrigation timetable, which is different for different crops. The project makes the irrigation automated. With the use of low cost sensors and the simple circuitry makes this project a low cost product, which can be bought even by a poor farmer. This project is best suited for places where water is scares and has to be used in limited quantity. Also, third world

countries can afford this simple and low cost solution for irrigation and obtain good yield on Crops

Again Preserving environment in farming is now becoming main concern since use of inputs like fertilizers & pesticides has been widely employed. Site–specific application of agricultural chemicals is an effective way of resource saving and environmental protection. Precise farming implementation is now gaining popularity and widely accepted as one of smart solutions to sustain agriculture production without ignoring environment. In appropriate nutrient inputs has affected environment and human's health. Indiscriminate use of nitrogen and phosphorus fertilizers has led to ground water pollution. So the farmers has to pay attention to nutrient control into their farming techniques.

Micronutrients are essential elements that are used by plants in small quantities. Yield and quality of agricultural products increased with micronutrients application, therefore human and animal health is protected with feed of enrichment plant materials. Each essential element only when can perform its role in plant nutrition properly that other necessary elements are available in balanced ratios for plant.

2. Block Diagram:



A. Parts of the System:

Software

1. Keil uVision4
2. ISIS Professional
3. Flash Magic

Hardware

1. Microcontroller 89S52 board
2. Power Supply
3. GSM
4. Humidity sensor
5. Moisture sensor
6. Relay
7. Solenoid Valve
8. ULN relay driver
9. Fertilizer Discharge motors
10. Fertilizers tank
11. Mobile with android

a. Flow of Working

i. In this system the Centralized Part is developed using Microcontroller 89S52. The required suitable power supply is designed on board. The various sensors including Temperature, humidity moisture are interfaced and the value of the all sensors is displayed on the display. The system will be placed at the user field. The all sensor data is sent to the User mobile APP.

ii. In this case the based on the data received actually from the field the user will be able to plan of watering. He will be able to set the watering plan on the Application developed and simultaneously depending on the needs user will be able to set the quaintly of the various fertilizers which are kept in the particular tanks.

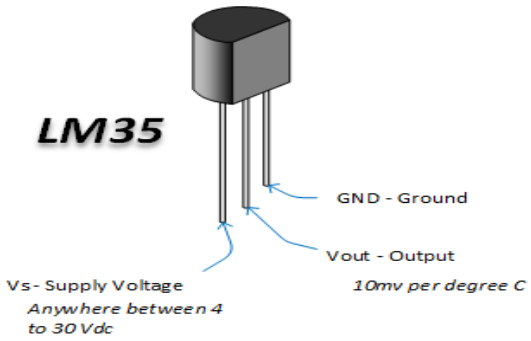
iii. In the situation where due to load shedding and the very odd night times for the availability of the Electricity the user efforts will be reduced and the effective use of water and fertilizers management will be achieved.

3. HARDWARE DESCRIPTION

Moisture Sensor

Most moisture sensors are designed to estimate volumetric water content based on the dielectric constant. The dielectric constant can be thought of as the soil's ability to transmit electricity. The dielectric constant of increases as the water content of the hydrotone increases.. Thus, measurement of the dielectric constant gives a predictable estimation of water content. When the probe is inserted into hydrotone, it generates a small amount of voltage (typically a few hundred milli-volts to a couple of volts). The more water in the soil, the higher the generated voltage.

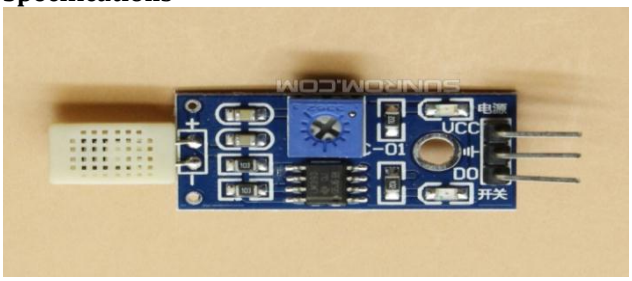
Temperature sensor



The LM35 is precision integrated-circuit temperature sensor, whose output voltage is linearly proportional to the Celsius (Centigrade) temperature. It can be used with single power supplies, or with plus and minus supplies. +5V supply is provided by using 7805 regulator IC. When IC senses the temperature, it gives linear voltage as +10.0mV/°C at the Vout pin of IC. This Vout pin is connected to the +V(IN) of A/D Converter.

Humidity sensor

Specifications

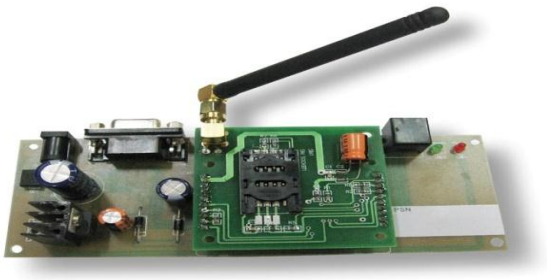


- Operating Voltage: 3.3V to 5V DC
- Operating Current: 15ma
- Humidity Range: 20 to 95%RH
- Output Digital - 0V or 5V, Adjustable trigger level from preset
- LEDs indicating output and power

GSM technology

GSM (Global System for Mobile Communication) is a public service available at no cost to the user. Nowadays mobile hand set is not new to the farmers. Everywhere farmers can be seen using mobile phones and they are very much conversant with mobile hand set. There is no extra cost of communication equipment's. Using GSM technology, a motor can be controlled and monitored from every corner of the world .It has no bar of distance like Infrared, Bluetooth, Radio waves etc.

GSM SIM 900 Module:



This GSM Modem can accept any GSM network operator SIM card and act just like a mobile phone with its own unique phone number. Advantage of using this modem will be that you can use its RS232 port to communicate and develop embedded applications. Applications like SMS Control, data

transfer, remote control and logging can be developed easily.

The modem can either be connected to PC serial port directly or to any microcontroller through MAX232. It can be used to send and receive SMS or make/receive voice calls. It can also be used in GPRS mode to connect to internet and do many applications for data logging and control. In GPRS mode you can also connect to any remote FTP server and upload files for data logging.

4. ADVANTAGES

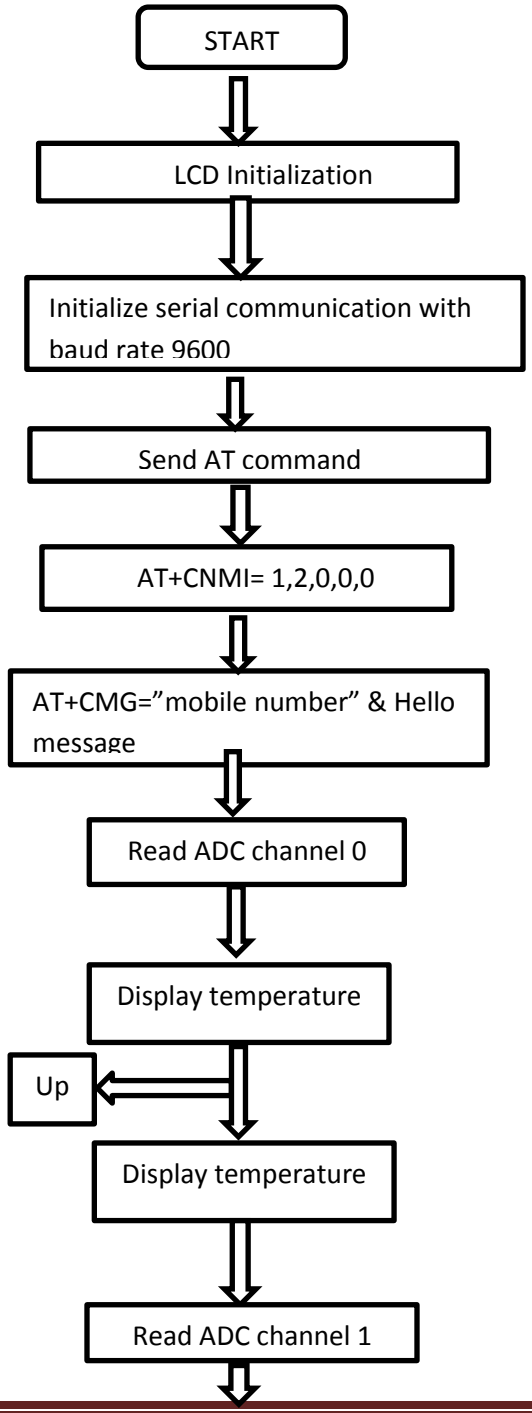
1. It saves time
2. Less man power is required
3. It is accurate.
4. Reduce Time-consuming
5. It increases profit to farmers.
6. Relief to farmer.
7. Not depend on MSEB supply.
8. Increase quality of production.
9. Easy to handle

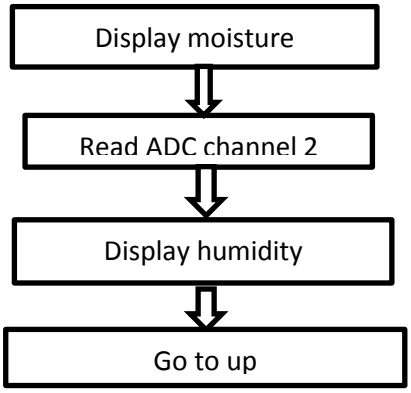
5. CONCLUSION

A step-by-step approach in designing the microcontroller based system for measurement and control of the three essential parameters for plant growth, i.e. temperature, humidity, soil moisture, has been followed. The system has overcome quite a few shortcomings of the existing systems by reducing the power consumption, maintenance and complexity, at the same time providing a flexible and precise form of maintaining the environment.

The continuously decreasing costs of hardware and software, the wider acceptance of electronic systems in agriculture, and an emerging agricultural control system industry in several areas of agricultural production, will result in reliable control systems that will address several aspects of quality and quantity of production. Further improvements will be made as less expensive and more reliable sensors are developed for use in agricultural production. Although the enhancements mentioned in the previous chapter may seem far in the future, the required technology and components are available, many such systems have been independently developed, or are at least tested at a prototype level.

6. RESULT-





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