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GREENHOUSE MONITORING AND CONTROLING USIN IOT

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ABSTRACT: - Focusing on making a smart greenhouse-controlled environment area to grow plants. By using a low cost more efficient programmable module to detect the climatic behavior inside the greenhouse and controlling the parameters according to their crop production need, through various techniques with the use of board ESP8266 Node MCU module. The parameters that need optimization are the water content of the soil, the light intensity coming from the naturalor artificial sources, the temperature and humidity of the field area. The design proposes monitoringby soil moisture sensor, LDR sensor, and DHT22 (temperature and humidity) sensor; all these sensors collected the data and given to the Node MCU module, and then after processing the dataall the parameters are controlled via water pump, motors, exhaust system, and light system as perthe data calculations. With the help of HTTP protocol, the Node MCU module is connected to thewireless internet connection or through IoT platforms like telegram bot. The collected environmentalparameters data sent to smartphones via online mode to the farmers to make the proper overlookon their fields, no matter how far they are just by using the IoT platform. In the field of agricultureand food production, the technology has paced up very quickly and is still furnishing its way, to optimize and achieve maximum plant growth in the field of agriculture. An accurate system would surely bring the change in this world of Android/IDS smartphone applications.

KEYWORDS:- *Smart Greenhouse, microcontroller-ARDUINO, IOT based, Sensors, Web based application.*

1. INTRODUCTION:-

A green house is a structure with walls and roofmade chiefly of transparent material, such as glass, in which plants requiring regulated climaticconditions are grown.A more scientific definitionis a covered structure that protects the plants fromextensive external climate conditions and diseases, creates optimal growth micro environment, and offers a flexible solution for sustainable and efficient year-round cultivation.A modern greenhouse operates as a system; therefore, it is also referred to as controlled environment agriculture, controlled environmentplant production system. Many commercial glassgreen houses or hot houses are high tech production facilities for vegetables or flowers. The glass green houses are filled with equipment including screening installations, heating, cooling, lighting, and may be controlled by a computer optimized conditions for plant growth. Different techniques are then used to evaluate optimality-degrees and comfort ratio of green house micro-climate (i.e.,air temperature, relative humidity and vapor pressure deficit) in order to reduce production risk prior to cultivation of a specific crop. From large free standing buildings to smallwindow-mounted structures, a greenhouse ispossible for almost any property. Although working in an outdoor garden allows you tosoak in the sun,many prefer the controlled indoor environment green house.

2. EXISTING METHOD: -

Currently, there are numerous researches on green house automation. These researches differ depending on the components that can be categorized as communicati on and control infrastructure, embedded system used on greenhouse, sensor s and convertors gaining skillsto system and user-interface. For infrastructure, several communicatio n such as wired data communication-based RS-485, Bluetooth, CAN (Controller Area Network), GPRS (General Packet Radio System), GSM (System for Mobile Communications) and Internet which hinge on system installation cost,distance and data transmission rate have been used.Since it communicates to the client with SMS functionality, the data updating will be extremeslow and the user interface are

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complicated.

3. PROPOSED METHOD: -

Appropriate environmental conditions are necessary for optimum plant growth, improved cropyields, and efficient use of water and otherresources. Automating the data acquisition process of the soil conditions and various climaticparameters that govern plant growth allows information to be collected with this sy stem withless labor requirements.This IOT Green house monitoring systems employs PC or phone-basedsystems for keeping the owner continuouslyinformed of the conditions inside the greenhouse.

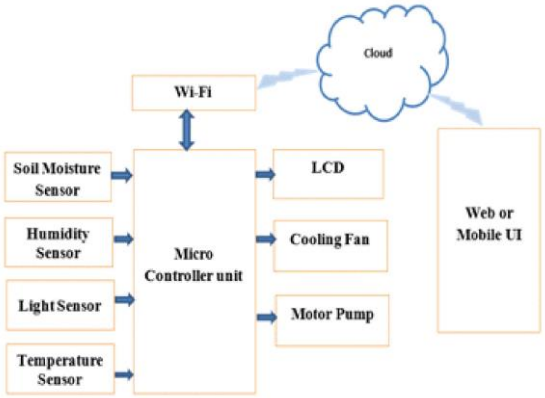

FIG 1:BLOCK DIAGRAM

BLOCK DIAGRAM DESCRIPTION:

Fig1 represents a micro controller-based circuitwhich monitors and records the values of temperature, humidity, soil moisture and sun light of the natural environment that are continuously updated as a login order to optimizethem to achieve maximum plant growth and yield.The parameters are recorded to the open sourcewebserver “Thingspeak”.

An integrated Liquid crystal display (LCD)

is also used for realtimedisplay of data acquiredfrom the various sensors and the status of the various devices. The system constantly monitorsthe digitized parameters of the various sensors.

4. MOISTURE SENSOR(YL69): -

The YL69 is an in expensive soil moisturesensor used to detect the amount of moisture content present in the soil. The operating voltage is 3.3v to 5v and currentis 35mA.This sensor consists of two electrodes which when comes in contact with the soil the voltage fluct uates i.e.theoutput voltage decreases when the moistureis present and the output voltage increaseswhen the soil is dry.

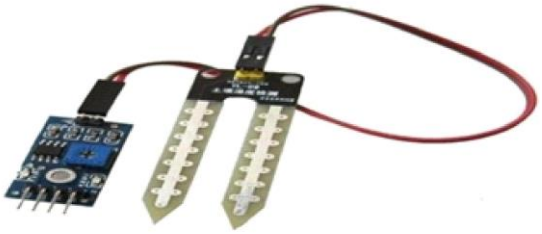

FIG 2: MOISTURE SENSOR(YL69)

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5. Temperature & Humidity Sensor(DHT11):DHT11 is one of the basic affordable digital sensors which canmeasure temperature and humidity. It has an operating voltageof 3 to 5 volts & max-current of 2.5mA.The temperaturerange lies between 0°C to 50°C, while the humidity percentage ranges between 20% to 80%. It consists of a thermistor which employsNegative Temperature Co efficient (NTC) anda humidity sensing component to detect the moisture in the air.

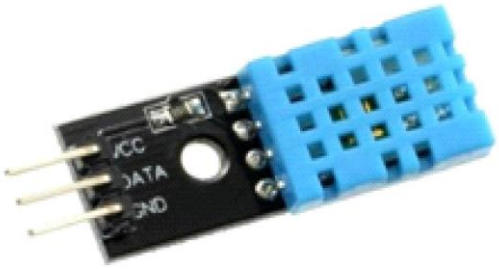

Fig3: DHT11 Temperature & Humidity Sensor

6. CONCLUSION:

A smart green house monitoring system has been implemented successfully using the concept of IoT which can prove to be a boon for agriculture sector. The traditional system greenhouse monitoring is labour-intensive and time consuming. The proposed system saves time, money, and human effort. It providesa controlled environment for the crop and thus increases the overall yield.

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