International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 06 Issue: 08 | August - 2022 Impact Factor: 7.185 ISSN: 2582-3930

AGRICULTURE AND GREENHOUSE CONTROLLING USING IOT

Mrs . Devika[1], P.Venkataramanamma[2], N. Vishnu Chandana[2],P.Praveena[2], U.Sravani[2].

[1]Professor, Department of ECE, Narayana Engineering College, Gudur, AP, 524101.
[2]UG Student, Department of ECE, Narayana Engineering College, Gudur, AP,524101.
[1]drpr1197@gmail.com, [2]venkataramanammapottela@gmail.com

Abstract – Plants are grown in greenhouse like a building or complex. This structure varies from small size to big sized buildings. The moderately closed environment of a greenhouse has its own particular kind of management necessities, compared with open air irrigation reproduction system. In order to have desirable production in a Green-house, it is necessary to regulate the artificial microenvironment. The fundamental idea is to increase the growth of different varieties of crops with good quality in a closed environment usually a Greenhouse.

Software Tools:

- Arduino IDE
- Embedded C

Hardware Tools:

- Arduino Micro Controller
- Sensors
- Power Supply
- Water Motor
- LCD Display
- Light
- Relay

***Key Words*:** Internet of Things, Low power microcontroller, MQ135 Sensor, FC 28 SensorBH1750 Sensor, ESP8266 Wi-Fi module.

1.INTRODUCTION:

Greenhouse Automation System is the technical approach in which the farmers in the rural areas will be benefited by automatic monitoring and control of greenhouse environment. It replaces the direct supervision of the human. Greenhouse is a building where plants are grown in a controlled manner. Nowadays due to urbanization and lack of land availability there is a great need to construct the Greenhouses which will be reserved mainly for growing crops. With the advancement of technology, we can control and monitor the multiple Greenhouses using IOT from the central location. Greenhouse farming is a technique that enhances the yield of crops, vegetables, fruits etc. Greenhouses control environmental parameters in two ways; either through manual intervention or a proportional control mechanism. However, since manual intervention has disadvantages such as production loss, energy loss, and labor cost, these methods are less effective. A smart greenhouse through IOT embedded systems not only monitors intelligently but also controls the climate. Thereby eliminating any need for human intervention. Greenhouse farming is a technique that enhances the yield of crops, vegetables, fruits etc. Greenhouses control environmental parameters in two ways; either through manual intervention or a proportional control mechanism. However, since manual intervention has disadvantages such as production loss, energy loss, and labor cost, these methods are less effective. A smart greenhouse through IOT embedded systems not only monitors intelligently but also controls the climate. Thereby eliminating any need for human intervention. India economy is mainly dependent on the agriculture product. Agriculture is the main role job in India. Increase the food production technology in India is important in this situation. But due to isotropic climate conditions lack of water reservoir, wind and excessive solar radiation reduce the agriculture product. Lot of energy and water also wasted by agriculture purpose. Growing plants is both an art and a science. About 95 percent of plants, either food crops or cash crops are grown in open field. Since time immemorial, man has learnt how to grow plants under natural environmental conditions. In some of the temperate regions where the climatic conditions are extremely adverse and no crops can be grown, man has developed methods of growing some high value crop continuously by providing protection from the excessive cold, which is called as Greenhouse Technology. So, Greenhouse Technology is the technique of providing favourable environment condition to the plants. It is rather used to protect the plants from the adverse climatic conditions such as wind, cold, Precipitation, excessive radiation, extreme temperature, insects and diseases. It is also of vital importance to create an ideal micro climate around the plants. This is possible by erecting a greenhouse / glass house, where the environmental conditions are so modified that one can grow any plant in any place at any time by providing suitable environmental conditions with minimum labour.

.

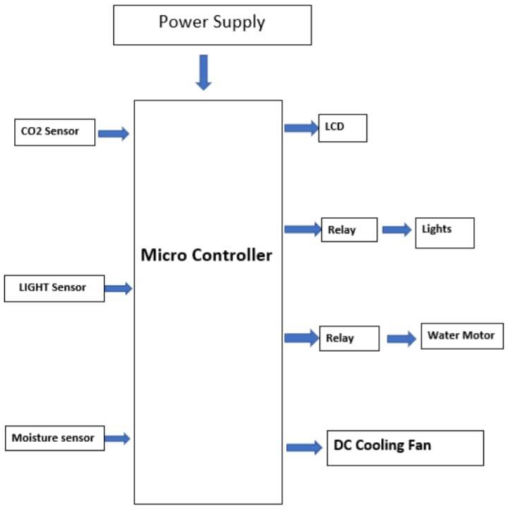
2.AIM AND OBJECTIVE:

To gain more productivity of plants using IOT at a low power microcontroller (ATMEGS328p) .To cultivate the seasonal crops throughout the year with no usage of pesticides and all .To control the loads like water, carbon-di-oxide , light automatically with no usage of man power.

3.LITERATURE SURVEY:

Internet of Things (IOT): One of the buzzwords in the Information Technology is Internet of Things (IOT). The future is Internet of Things, which will transform the real world objects into intelligent virtual objects. The IOT aims to unify everything in our world under a common infrastructure, giving us not only control of things around us, but also keeping us informed of the state of the things. In Light of this, present study addresses IOT concepts through systematic review of scholarly research papers, corporate white papers, professional discussions with experts and online databases. More over this research article focuses on definitions, geneses, basic requirements, characteristics and aliases of Internet of Things. The main objective of this paper is to provide an overview of Internet of Things, architectures, and vital technologies and their usages in our daily life. However, this manuscript will give good comprehension for the new researchers, who want to do research in this field of Internet of Things (Technological GOD) and facilitate knowledge accumulation in efficiently.

4. BLOCK DIAGRAM:



ARDUINO UNO:

Arduino UNO is the best board to get started with electronics and coding. If this is your first experience tinkering with the platform, the UNO is the most robust board you can start playing with.The UNO is the most used and documented board of the whole Arduino family.

Arduino UNO is a low-cost, flexible, and easy-to-use programmable open-source microcontroller board that can be integrated into a variety of electronic projects. This board can be interfaced withother Arduino boards, Arduino shields, Raspberry Pi boards and can control relays, LEDs, servos, and motors as an output.

SPECFICATIONS:

ATMEGA328P Microcontroller
Operating Voltage 5 V
Input Voltage (recommended) 7-12 V
Input Voltage (limits) 6-20 V
Digital I/O Pins 14 (of which 6 provide PWM output)
Analog Input Pins 6

LCD:

A liquid-crystal display (LCD) is a flat-panel display or other electronically modulated optical device that uses the light-modulating properties of liquid crystals combined with polarizers. Liquid crystals do not emit light directly,[1] instead using a backlight or reflector to produce images in color or monochrome.[2] LCDs are available to display arbitrary images (as in a general-purpose computer display) or fixed images with low information content, which can be displayed or hidden. For instance: preset words, digits, and seven-segment displays, as in a digital clock, are all good examples of devices with these displays. They use the same basic technology, except that arbitrary images are made from a matrix of small pixels, while other displays have larger elements. LCDs can either be normally on (positive) or off (negative), depending on the polarizer arrangement. For example, a character positive LCD with a backlight will have black lettering on a background that is the color of the backlight, and a character negative LCD will have a black background with the letters being of the same color as the backlight. Optical filters are added to white on blue LCDs to give them their characteristic appearance.

BH1750 LIGHT SENSOR:

BH1750FVI Is a Digital Light sensor , which is an digital Ambient Light Sensor IC for I2C bus interface. This IC is the most suitable to obtain the ambient light data for adjusting LCD and Keypad backlight power of Mobile phone. It is possible to detect wide range at High resolution.(1 - 65535 lx).. Light sensor is a device that detects light. It generates an output signal that is proportional to intensity of light. A light sensor measures the radiant energy present in the wide range f frequencies in the light spectrum. spectrum. Some of the common frequencies are infrared, visible and ultraviolet.

FC 28 Soil Moisture:

Soil moisture sensors measure the volumetric water content in soil. Since the direct gravimetric measurement of free soil moisture requires removing, drying, and weighing of a sample, soil moisture sensors measure the volumetric water content indirectly by using some other property of the soil, such as electrical resistance, dielectric constant, or interaction with neutrons, as a proxy for the moisture content

MQ 135 Co2 Sensor:

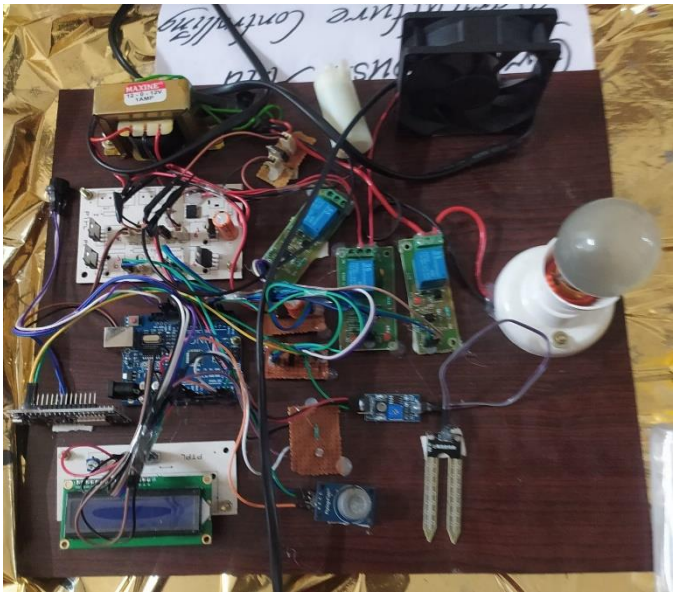
A carbon dioxide sensor or CO2 sensor is an instrument for the measurement of carbon dioxide gas. The most common principles for CO2 sensors are infrared gas sensors (NDIR) and chemical gas sensors. Measuring carbon dioxide is important in monitoring indoor air quality, the function of the lungs in the form of a capnograph device, and many industrial processes.

Relay:

A relay is an electrical switch that opens and closes under the control of another. electrical circuit. In the original form, the switch is operated by an electromagnet to open or close one or many sets of contacts. A relay is able to control an output circuit of higher power than the input circuit it can be

considered to be in a broad sense, a form of an electrical amplifier.
Relays can be of different types like electromechanical, solid state. Electromechanical relays are frequently used. Let us see the internal parts of this relay before knowing about it working. Although many different types of relay were present, their working is same.

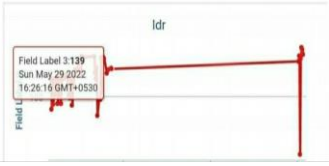
5.RESULTS:



5.1. SOIL MOISTURE SENSOR FIG:

FIG: Output of Soil moisture sensor

5.2. LDR SENSOR FIG:



5.3. CO2 SENSOR FIG:

FIG: Output of CO2 sensor

5.2 .VALUES ON DISPLAY:

5.2.1 SOIL MOISTURE SENSOR:

FIG: Soil moisture sensor value

5.2.2 LDR SENSOR:

FIG : LDR Value

5.2.3 CO2 SENSOR:

FIG : CO2 Sensore value

6. CONCLUSION:

Thus the smart agriculture using IoT will revolutionized the world of farming and it will increase the productivity as well as improve the quality and can save lives of farmer. There is an urgent need for a system that makes the agricultural process gasier and burden free from the farmer's side. With the recemhuncement of technology it has become necessary to increase the annual crop production nutput of our cry fastia an emurelyagro centric economy. The ability in conserve the natural resources as well as giving a splendid boost to the production of the crops is one of the main aim of incorporating such technology imo the agricultural domain of the country. To save farmer's effort, water and time has been the most important consideration

REFERENCES:

[1] TanuSaha, Ashok Verma, "Automated Smart Irrigation system using Raspberry Pi", International Journal of computer applications, Vol 172-No.6, August 2017.

[2] D.Veera Vanitha, S.Nivitha, R.Pritha, J.Saranya, T.Shobika "Automatic Drip Irrigation System using Raspberry PI and Wireless Sensor Networks". IJIRSET 2017.

[3] F. S. Zazueta, and J. Xin "Soil Moisture Sensors" Bulletin 292; University of Florida: Gainsville, FL, USA, 2004.

[4] BhagyashreeK.Chate , Prof.J.G.Rana " Smart Irrigation System Using Raspberry PI", IRJET May,2016.

[5] N.B. Bhandarkar, D.P. Pande, R.S. Sonone, Mohd. Aaquib, P.A. Pandit, and P. D. Patil, "Literature Review for Automated Water Supply with Monitoring the Performance System", International Journal of Current Engineering and Technology, Vol. 4, No. 5, Oct 2014.