

# Smart Farm Management

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**Abstract:-** The Smart farm agriculture is a popular machine which makes use of Internet of things technology. This specific machine will increase the amount and pleasant of agricultural products. IoT gadgets offer records approximately the character of farming fields after which take movement relying on the consumer input. In this paper, we have taken a IoT which is primarily based on total superior answer for investigating the soil situations, environment and quality for the green crop increment which is presented. This evolved machine is able to be tracking temperature, humidity, soil moisture degree the use of NodeMCU and numerous artificial intelligence sensors linked to them. Also, a message with inside the shape of SMS might be despatched to the consumers telecellsmartmobile the use of Wi-Fi approximately the environmental situation of the farm.

**Keywords:-** IoT, NodeMCU, agriculture, sensors.

## I. INTRODUCTION

Agriculture is a number one career in Bharat India and also spine of the Indian financial machine. Agriculture offers job possibilities to rural poor humans on a huge scale in the developing and growing nations further to supplying meals. It's also a system of manufacturing food products, fibre, and lots of different favoured merchandise via way of means of the cultivating and elevating of home animals. Agriculture is a number one supply of wellbeing for approximately 58% of India's population. Climatic modifications may have a widespread effect on farming via way of means of growing water call for and restricting crop productiveness in regions wherein water supply is maximum required. Irrigation structures, rain-fed agriculture, groundwater irrigation is a number of strategies added which provide more healthy plants which won't use water source correctly. In order we have to apply water correctly in a clever machine is established. In this machine farmers want now no longer have to make water pass through the farm manually, however this machine mechanically does that correctly. These conventional strategies practised via way of means of humans might also additionally bring about big sum of waste water. Therefore, the idea of robotized agriculture using a combination of IoT has been established. Technological improvements started to boom the performance of manufacturing thus, makes it a dependable machine. The expertise of residences of soil takes in charge of the water deliver to be pushed into the field in clever manner. The exercise of cultivating in a clever manner allows to

accumulate expertise of soil and environmental conditions. Establishment of clever agriculture and usage of IOT based totally on structures now no longer simplest will increase the manufacturing however additionally neglects the wastage of water. The soil moisture sensor, humidity and temperature sensor constantly video display units the climatic conditions, and transfers the stay information to a cellmobilephone thru cloud service. While drizzling or raining, the moisture content material might also additionally boom numerous times. A rain-drop detecting sensor signals the controller about rainfall, inflicting the water deliver a lessen or forestall relying on the moisture content material on that present situation. The crop necessities including quantity of humidity, temperature and moisture content material are to be studied and may be hooked up once more withinside the machine to satisfy its possible outcomes. In this project, the machine makes use of some sensors which offer the quantity of moisture withinside the soil, the humidity and temperature of the region, and a rain detecting sensor which may be utilized in determining whether or not the crop is appropriate for cultivation. All those sensors alongside NodeMCU are related to the net and a cell mobile phone.

## II. LITERATURE SURVEY

There are various examples of flexible IoT utility-oriented research in the literature. In , an instance of manage networks and statistics networks integration with IoT era has been studied primarily based totally on an real state of affairs of agricultural production. A faraway tracking machine combining net and wi-fi communications is proposed. Furthermore, contemplating the machine, an extra statistics control sub-machine is designed. The amassed statistics is supplied in a shape appropriate for agricultural studies facilities. In their paintings Liu Dan et al. take a CC2530 chip because the middle and gift the layout and implementation of an Agriculture Greenhouse Environment tracking machine primarily based totally on ZigBee connectivity. Additionally, the wi-fi sensor and manage nodes take CC2530F256 as a middle to govern the surroundings statistics. This machine accommodates front-quit statistics acquisition, statistics processing, statistics transmission and statistics reception. The ambient temperature is actual-time processed with the aid of using the temperature sensor of the terminal node and is despatched to the intermediate node via a wi-fi ZigBee primarily based totally network. Intermediate node aggregates all statistics, after which sends the statistics to the PC via a serial port. At the equal time, body of workers can also additionally view, and examine the statistics, and garage of the statistics on a PC is likewise supplied. The actual time

statistics is used to govern the operation of fanatics and different temperature manage gadget and gain automated temperature manage withinside the greenhouse. Kun Han et al. proposed the layout of an embedded machine improvement platform primarily based totally on GSM communications. Through its utility in hydrology tracking control, the authors talk problems associated with verbal exchange reliability and lightning protection, advise distinctive solutions, and additionally cowl the layout and awareness of middleware software.

Greenhouse era turned into began out with the aid of using Dr APJ Abdul Kalam with the assist of Swaminathan. It turned into first began out in Leh Ladakh to develop greens for defence for the duration of excessive climatic situations. A greenhouse (additionally known as a glasshouse) is a shape with partitions and roof made mainly of obvious material, together with glass, wherein vegetation requiring regulated climatic situations are grown.

### III. METHODOLOGY

The paper proposed uses a NodeMCU which has a Wi-Fi module (ESP8266) over it. Smartcellmobilephones with software (blynk app) are used as a customer interface. Soil moisture sensor, humidity and temperature sensor (DHT11) and rain detection sensors alongside facet DC motor and deek robotic machine are used. This DC motor is connected to a water pumping machine which operates the pumping of water to the flora even as the DC motor is switched ON. The soil moisture sensor works and recollects the moisture diploma withinside the land. Now on basis of the quantity of moisture, microcontroller( NodeMCU )involves a selection whether or not or now no longer to water the crop or now no longer . By the usage of appropriate competencies and the conditional statements withinside the written instruction(code) for the microcontroller operation, watering of the flora starts off evolved with the resource of the usage of NodeMCU which in return turns ON the DC motor even as the moisture content material cloth is underneath a point price and is made turned OFF even as there can be more moisture thing material cloth withinside the farmland. The humidity and temperature sensor gives their respective values of the environment conditions in return it will decide whether or not or now no longer the farmland is useful for cultivation of particular crop. These florae increase best especially climatic conditions and these produce top yield which is of a selected temperature range. The raindrop sensor operates and calculates the intensity of the water from rainfall. If there is enough content of rainfall that to be provided to the farmland which requires water, the flora is not pumped with water. Even after the rainfall, if the flora is having insufficient water, then pumping of water is to be done with the resource by turning ON the motor. This Data is transferred to the the blynk app through cloud from NodeMCU through Wi-Fi module which is placed on microcontroller. The analytical figures then goes to the website on the telecellsmartphone wherein the consumer can go through the humidity, temperature, soil moisture stages and get the notifications about the climatic situation i.e. rainfall and if the DC motor is ON. From this website, the consumer can able to operate the DC motor through several functional unit buttons and

switches. When the microcontroller (NodeMCU) gets the command from the website then the specific assessment is carried out and the DC motor is operated. The analytical figures yet again are being travelled through a sever and yet again withinside the similar manner.

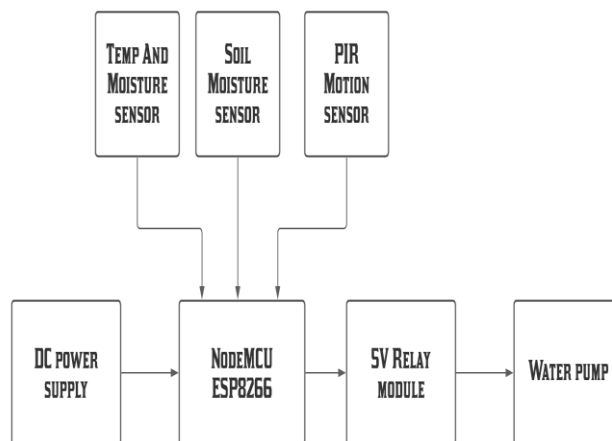


Fig. 1: Block Diagram of Smart Farm Management System

### IV. FLOW CHART

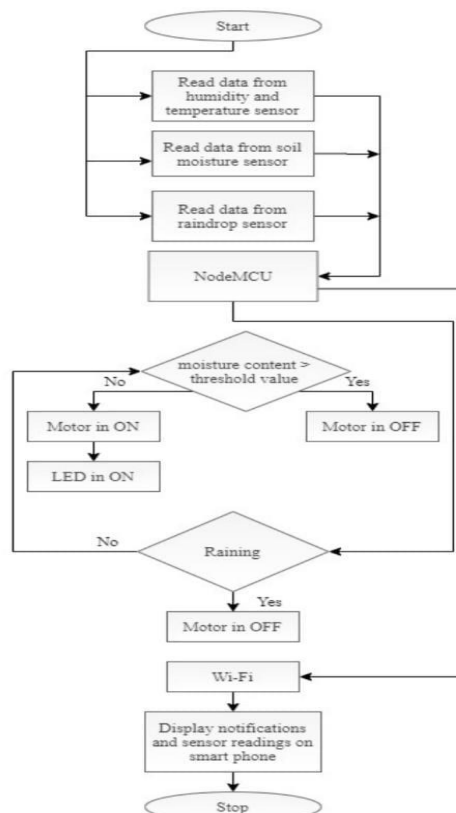


Fig 2: Flowchart of the Proposed System

**V. RESULT**

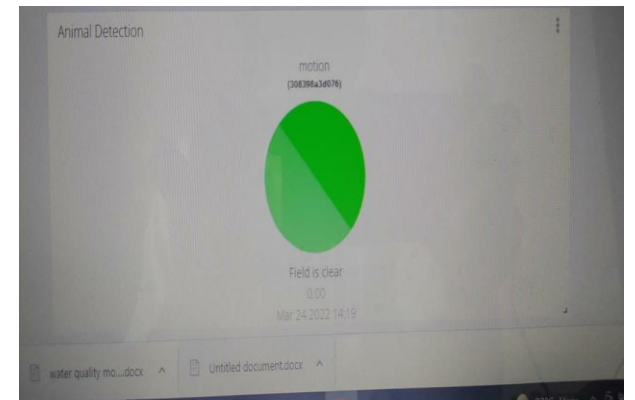
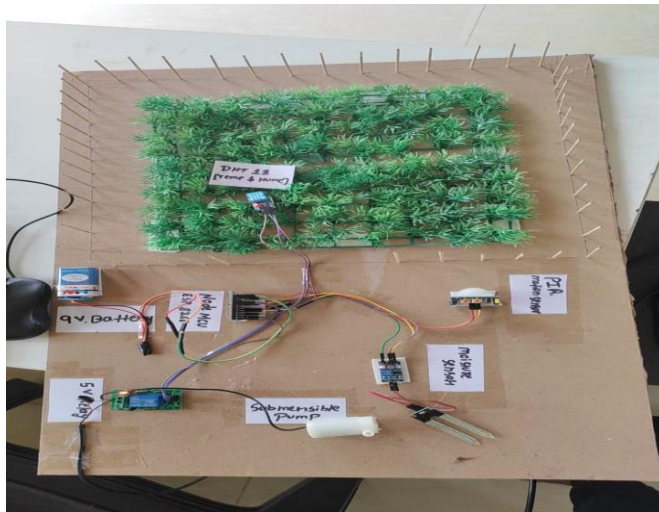


Fig. 4: Results of the Proposed System

Soil moisture content has been updated to webserver from the farm on real time basis. This is the indicator, which detects the wild animals through the help of motion sensors.

**VI. CONCLUSION**

Smart farms can be managed from remote areas using advanced gadgets.

- Smart telecall smartphone structures have an automated irrigation gadget, which water the flowers via way of means of retaining the moisture contents desk within side the shape with no human intervention.
- If the wild animal is detected within side the shape the proprietor of the shape gets the Warning alert message via email.
- Real time temperature and humidity data may be monitored on a regular basis.
- Moisture content material within side the soil may be monitored in any respect factors of time.
- This gadget is absolutely IOT-based So you could reveal the farm from any a part of the sector or any faraway areas because it works on Wi-Fi and would not want your bodily presence in any respect components of the year.

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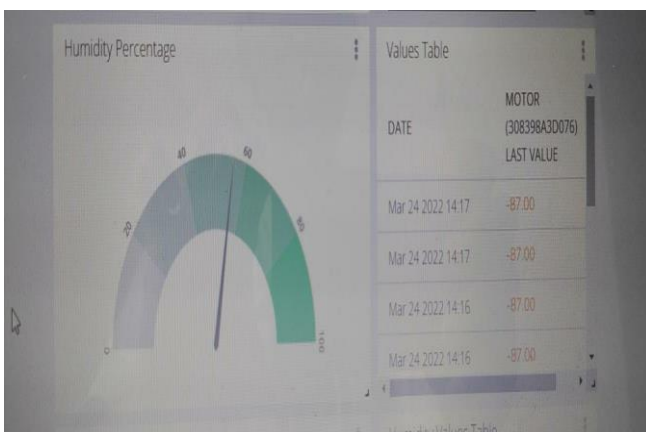
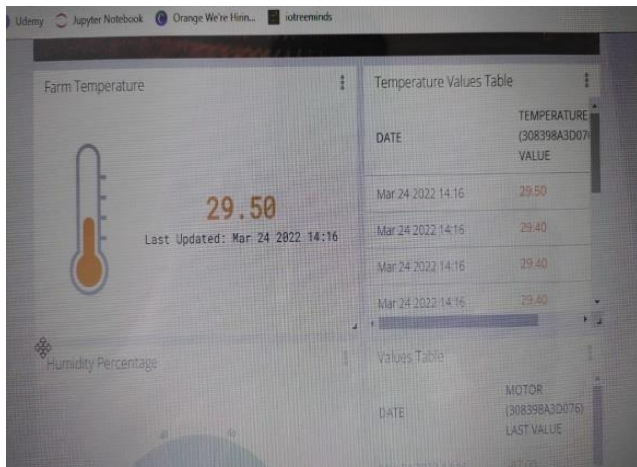


Fig. 3: Results of the Proposed System

Temperature has been read from DHT 11 and updated in real time to ubidots web server this issue brings us the live temperature monitoring of the system The humidity of the farm is read from hardware sensor and it will be shown up on the web browser.

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