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AGRICULTURAL MANAGEMENT SYSTEM (AMS) USING IOT - A SURVEY

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ABSTRACT:- *Agriculture is the primary occupation in our country for a long time. In India, approximately 70% of populace relies upon farming and one 0.33 of the nation's capital comes from farming. But, due to migration of humans from rural to urban there is dilemma in agriculture to triumph over this hassle. To overcome this issue, advanced agriculture strategies, the usage of IOT is employed. The internet of things (IOT) is transforming the agriculture allowing the farmers with the wide range of strategies together with precision and sustainable agriculture to face demanding situations in the subject. IOT permits the gadgets to be sensed and controlled remotely across current community version. The paper comprises of sensors that feel the sector parameters including temperature, humidity, moisture and fertility within the farm. The sensed values are verified and later dispatched to the Wi-Fi module and from wireless module the confirmed statistics are sent to the farmer's cellular or computer the use of cloud. The farmers are also notified by means of SMS, if the sphere wishes a care. An algorithm is advanced with threshold values of temperature, humidity, moisture and fertility that are programmed right into a node MCU to control water amount. Farmer can automate the motor from everywhere inside the global. In this paper, we have elaborately investigated and reviewed the existing methodologies used for Agricultural Management System (AMS).*

Key words: temperature, humidity, moisture and fertility and node MCU

INTRODUCTION:

The world is inclining into new innovations and its applications it is far basic to form up the Cultivation Industry too. Consistently, enormous quantities of inquires about were accomplished in the field of agricultural whereas most of the projects imply utilizing Wireless sensor accrue Measurements from uncommon sensors conveyed at different hubs and transfer it utilizing the Wireless convention. The collected insights give the records roughly the various natural elements. Following the natural variables isn't the whole answer for increment the yield of vegetation. There are number of different components that lower the profitability to a greater amount. Thus robotization must be connected in horticulture to defeat those issues. In this way, with an end goal to offer technique to every single such issue, it's far critical to build up an included framework to have the capacity to deal with all variables influencing the efficiency in each stage. Anyway entire computerization in farming isn't performed as a result of assorted issues. Despite the fact that it's far actualized inside the examination level it isn't given to the ranchers as an item to get profited from the assets. Therefore, this paper offers around creating knowledge agriculture utilizing IOT and given to the agriculture. On this paper, IOT age empowers in gathering data roughly conditions like temperature, humidity, temperature and oversee engine the use of microcontroller. IOT use agriculture to get associated with his farm from anyplace and each time. Rural yield checking and supervise can be accomplished utilizing Arduino. Remote sensor systems are utilized for following the farm conditions and miniaturized scale controllers are utilized to oversee and robotize the farm forms. This paper is valuable for agriculturists in upkeep and controlling of harvest generation. As the world is drifting towards new advancements and usage it is a vital objective to incline up in farming as well. Numerous looks into are done in the field of farming and the greater part of them connote the utilization of remote sensor organize that gather information from various sensors sent at different hubs and send it through the remote convention. The gathered information gives the data about the different natural variables. Observing the ecological variables isn't the entire answer for increment the yield of products. There are number of different variables that decline the efficiency. Thus, robotization must be realized in farming to defeat these issues. With the end goal to give answer for such issues, it is important to build up a coordinated framework which wills enhance profitability in each stage. Be that as it may, finish computerization in farming isn't accomplished because of different issues. Despite the fact that it is executed in the exploration level, it isn't given to the ranchers as an item to get profited from the assets. Thus, this paper bargains about creating knowledge agriculture utilizing IOT and given to the farmers. In a

current framework they have concentrated just on patient observing, in our proposed work it will be centered on the horticulture. By utilizing the equivalent existing the mud's pH rate, Temperature, water level can be checked utilizing the remote sensors. Soil can screen their pH rate, temperature consistently. The observed report of their property can get to this data from their mobiles by means of remote system and can check their pH rate at their very own time. On the off chance that they see variations from the norm, they can instantly see their property and utilize pesticides to beat the anomalies. This task points in structuring a framework which is equipped for following the dirt asset level and observing PH rate, water level and temperature cautions through SMS to predefined numbers. The late improvement in data and correspondence advancements has enabled ranchers to obtain a tremendous measure of site-particular information for the fields. The principle exercises included are information accumulation, preparing, and variable rate of utilization of sources of info. We can decrease a considerable measure of manual work in the field of agribusiness utilizing automation. The significant issue looked in numerous horticultural zones is that absence of motorization in farming exercises. In India rural exercises is completed by physical work, utilizing ordinary instruments, for example, furrow, and sickle and so on. Our Smart Farming System lessens the manual work and computerizes the rural exercises. The ground water is contaminated because of the utilization of manufactured composts and pesticides. In smart cultivating, they are supplanted by natural manures and by utilizing it the dirt structure is improved. This paper is structured as follows.

COMPONENTS USED IN AGRICULTURE MANAGEMENT SYSTEM USING IOT.

TEMPERATURE SENSOR:

The current work utilizes temperature sensors for observing the soil temperature. For temperature estimation, LM-35DZ sensors have been utilized. The soil temperature is one of the vital ecological factor with a difference in atmosphere, geography, vegetation, soil compose, planting structure and different components. The dirt temperature is firmly related with a few procedures, for example, edit planting time, tillering Growth and wintering security and so forth. The difference in soil temperature straightforwardly effect on soil supplement ingestion and soil dampness keep and game. The dirt temperature assumes a specific job on a considerable lot of the physical procedures of soil. The dirt water and warmth movement is a critical research issue. In this manner, the perception of soil temperature constant and Understanding of variety of soil temperature has essential noteworthiness to agrarian generation and logical research. The temperature sensor LM-35DZ has a yield voltage that is corresponding to the temperature being estimated. The scale factor is 0.01 V/0C. The LM-35DZ does not require any outside alignment or edge and keeps up an exactness of 0.40C at room temperature and ± 0.80C over a scope of 0 0Cto +1000C. Another essential normal for the LM-35DZ is that it draws just 60µ an of current from its supply and has a low self-warming ability, the sensor self-warming causes not exactly 0C temperature ascend in still air.

SOIL MOISTURE SENSOR:

Soil moisture sensor estimates the water content in soil. It utilizes the property of the electrical obstruction of the dirt. The relationship among the deliberate property and soil dampness is aligned and it fluctuates relying upon ecological factors, for example, temperature, soil compose, or electric conductivity. Here, it is utilized to detect the dampness in field and exchange it to raspberry pi with the end goal to make controlling move of exchanging water pump ON/OFF.

PH LEVEL AND CIRCUIT:

The control of pH is essential to stay away from supplement misfortune. In the event that we need to choose one scope of pH, the majority of them require an acidic domain (between 5.5 to 6.0). Be that as it may, the vast majority of them adjust to get by up to the scope of 7.5. The pH is always detailed. There are a few strategies to screen these estimations of hydrogen particle fixation, for example, litmus tests. How-ever, in cultivating, these levels require steady observing and this is accomplished by utilizing pH tests. These gadgets can be interfaced to an Arduino. The real test looked in this stage is the pH module, which is utilized to enhance the yield of the pH test (which is only 59mV for every pH unit). These modules require intensifiers with high information impedance; if this need isn't fulfilled at that point stacking impact on the test will be high. There are assortments of enhancers that can be considered in the structuring some portion of this progression (LMC6001, TL072, and TL062

NODE MCU:

Shrewd Garden incorporates Node MCU as a center point. Node MCU is an open source IOT stage. It keeps running on ESP8266 Wi-Fi SoC from notices if Systems, and equipment dependent on the ESP-12 module accessible at

most reduced expense. It is a Single – board microcontroller comprises of 128kBytes of memory and 4Mbytes of capacity. It was intended to for simple programming and permits simple prototyping for designers. There are basically three different ways to fabricate Node MCU firmware: cloud construct benefit, picture, Linux Build Environment. It comprises of inbuilt Wi-Fi module which enables us to transfer the estimations of the sensors to the firebase incorporates Node MCU as a center. Node MCU is an open source IOT stage. It keeps running on ESP8266 Wi-Fi SoC from Espies if Systems, and equipment dependent on the ESP-12module accessible at least expense. It is a Single – board microcontroller comprises of 128kBytes of memory and4Mbytes of capacity. It was intended to for simple programming and permits simple prototyping for engineers. There are basically three different ways to construct Node MCU firmware: cloud assemble benefit, Dockers picture, Linux Build Environment. It comprises of inbuilt Wi-Fi module which enables us to transfer the estimations of the sensors to the firebase.

LITERATURE SURVEY:

Ananthi et al., [1] suggested a method that farmers can increase the agricultural production. They tested the soil using various sensors like temperature, humidity, Ph using these results farmers can cultivate the crops which suits to the soil. Sensors value can be send through the WI-FI router and also it sends the information to the farmers mobile. If the temperature is high, it captured the crop image and it sends to the farmer. It increases the agricultural production and reduces the time.

Karthikeswari et al., [12] suggested a method that smart system monitoring for agriculture system. Automated Irrigation System used a Wireless Sensor Network and GPRS Module. The method used the embedded system for irrigation to reduce the manual monitoring of the crop and get the information from the GPRS. It monitors the temperature and humidity of soil. The temperature ranges 55 to 150C it monitors the humidity finds the moisture level in the soil but it not shows accurate level. In this paper author used Zigbee device for wireless network. It monitors continuously and send to the cloud to store the data

Shakthipriya et al., [3] suggested a method that Effective Method for Crop Monitoring Using Wireless Sensor Network it monitors the sensor values have many external sensors namely leaf wetness, soil moisture, soil pH, atmospheric pressure sensors attached to it. But in this paper it monitors only the sensor values it doesn't have any automated system.

Mahesh et al., [6] suggested a method in which the soil, water, moisture monitored and updated using IOT. It enabled the soil maintenance and pump the water according to the soil moisture. So, the manual operations required to monitor and maintain the agricultural farms in both automatic and manual modes.

T.Thamaraimanalan et al., [13] suggested a method that not only monitors for the sensor data, like moisture, humidity, temperature and ultrasonic. But also monitors the water level in tank if it reduced to a minimum value of water level then the motor switch is turned on automatically to the water level of the tank reaches the maximum value.

Thool et al., [5] suggested a method that The system designed not only monitors the sensor data, like moisture, humidity, temperature and ultrasonic but also the water level in tank is reduced to a minimum value then the motor switch is turned on automatically to the water level of the tank reaches the maximum value.

Automated Agriculture System based on WSN was proposed by Seong-eun Yoo, Jae-eon Kim, Taehong Kim, Sungjin Ahn, Jongwoo Sung, Daeyoung Kim. [14] Order-based sleep scheme. For low power consumption.

Manish Gird et al., [8] suggested a wireless sensor networks for improved water management and sensors like as temperature, soil, moisture, Co2 and humidity. Wireless sensor network helps to store and utilize the rain water, to increase their crop productivity, it reduces the cost for cultivation.

Sanjukumar et al., [7] suggested that, it monitors the sensors are soil moisture, pumping motor, relay and GSM modem. Soil moisture used to monitor the moisture level in the soil. Based on the moisture level pumping the water automatically and it saves the water and time. LCD is used to display the content then microcontroller is used to controlling the system.

Amar H. Kabashi and J.M.H. Elmirghani', [4] proposed a Technical Framework with zone-based joint topology control and power scheduling mechanism and a parameter-energy-environment aware task scheduling approach were employed to achieve high power conservation, high network reliability and ultimately low initial-and- operating cost. The paper proposes new strategies for topology control, power scheduling,

complementary routing and task scheduling. Node processors like Atmel Atmega128L, 8-bit, 7.37 MHz were used. Zigbee, GPRS, Bluetooth technologies were used.

Sivaranjani et al., [2] suggested the smart system monitoring on soil using internet of things. The author planning a system which is capable of tracking the soil resource level and monitoring PH rate, water level and temperature alerts through SMS to predefined numbers.

Ganesh ram et al., [11] used a smart farming system using the sensors for the agricultural task automation The major problem is lack interest in the agriculture so they used the Smart sensing system provides exact results and the Smart irrigator system manages to spray the necessary nutrients. Based on the moisture content results of the soil, the water was scattered by the irrigator system.

Lav Gupta et al [9], proposed Smart irrigation system with benefits of optimizing the water usage, provides a remote controlling, monitor the system and also it support cloud services and data capture in real time. MATLAB, wireless sensor, IOT technologies were used.

A Non-Linear Analysis of Soil Microwave Heating was proposed by Alessandro Fanti et al., [10] with no support to cloud services. This paper utilized devices like Microwave antennas, electromagnetic heating that provides effective solution

Aniket H. Hade et al [15], proposed an automatic monitoring system model using Wireless Sensor Network (WSN). Soil Moisture sensor, Temperature Sensor, Humidity Sensor Pressure Regulator and Molecular Sensor were used. This paper achieved Preservation of water sources and minimizing the use of inorganic fertilizer.

CONCLUSION:

The remote monitoring of the soil pH rate and its temperature rate has been done with the very minimal cost. The values can be viewed by the farmer's anywhere in the world at any time. Hence this system gives more accurate pH rate and temperature rate of the soil which play vital role in the agriculture. The temperature sensor, Humidity sensor and soil moisture sensor can be interfaced to the microcontroller to assess any further data. A reliable and continuous vital sign monitoring system targeted towards each farmer's land has been successfully built. The resulting system was also low in power and cost, non-invasive and provisional real time monitoring on the agriculture.

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