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AUTOMATIC MUSHROOM GROWTH MONITORING USING IOT

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Abstract:

In India, a massive proportion of the people depends on agriculture. Agriculture tactics were arise gradually. The Wireless device used for cultivation has influence in fashionable days. The employment of wireless sensors in varied cultivation zone have a huge real knock on product, support in expanding the harvest and rescuing the value of the process. Mushroom business is current and small-scaled as correlate to different cultivation business in India. The white button mushroom is extremely widespread completely the planet and is that the maximum vital mushroom of economic implication in Bharat. It may be with success civilized in region wherever the natural surroundings square measure supportive however it's civilized in Northern Bharat in cold season of the year because of supportive surroundings. The mushroom gardening area ought to have proficiency for heat management and sterilization development. The most intent of this project is to reduce the civilizedresponsibility required for the mushroom plant by automating the mushroom cultivation and observe the product space sets standing. With the initiation of IoT, Agriculture production additionally raise. It permits the user to watch the temperature, humidity, carbonic acid gas concentration, and light-weight intensity during an exceedingly in a very mushroom farm on a robot device by the exploitation of the cloud.

Keywords:

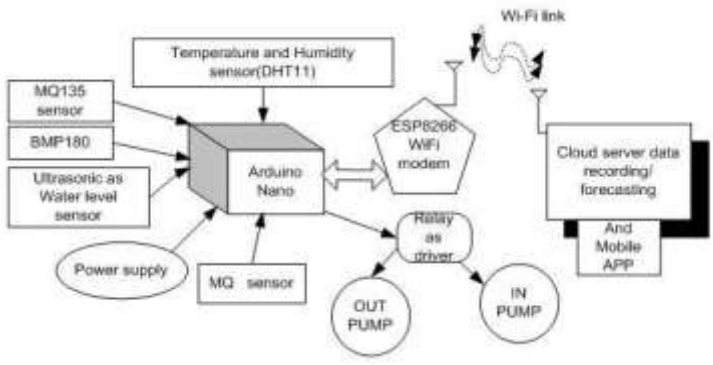
Arduino,Temperature and Humidity sensor,Soil Moisture sensor,Gas sensor,Wifi Module.

Introduction:

Agriculture is the backbone of India nowadays. Having wireless sensors in a variety of cultivation zone have a hugely real result on product, facilitates rising yield and preserving the price of process. The white button mushroom is increasingly popular in India also in the world. These mushrooms have commercial significance in India. They mostly farm in north India as the temperature condition is favorable. These are parameters for mushroom growth, temperature for mycelium production is 22°C- 25°C for fruit body formation 14°C-18°C and

also a significant number of relative humidity. The chief goal of this paper always minimizes the human beings care essential for the mushroom where environmental condition for mushroom farming to control and monitoring system determined by required parameter values. Out of your tender, we design the system which is certainly an natural observe and supervising structure and restrict environmentally friendly surroundings in a very mushroom plantation. It implement the grower to observe temperature and humidity, co2fractional laser concentration level, Atmospheric pressure and quality of air in a mushroom plantation upon an android gadget. The control algorithm can rule equipment in a very mushroom plantation undoubtedly determined by observation from sensors to take care of the surroundings in the best status for mushroom production. The prevailing standing of framework is broadcast into the distant observance location by way of some low potential ESP8266 as Wi-Fi electronic equipment. The program for one's monitor were reported within Arduino programing script, troubleshoot, compiled, and burnt among the microcontroller utilizing the Arduino unified increase atmosphere.

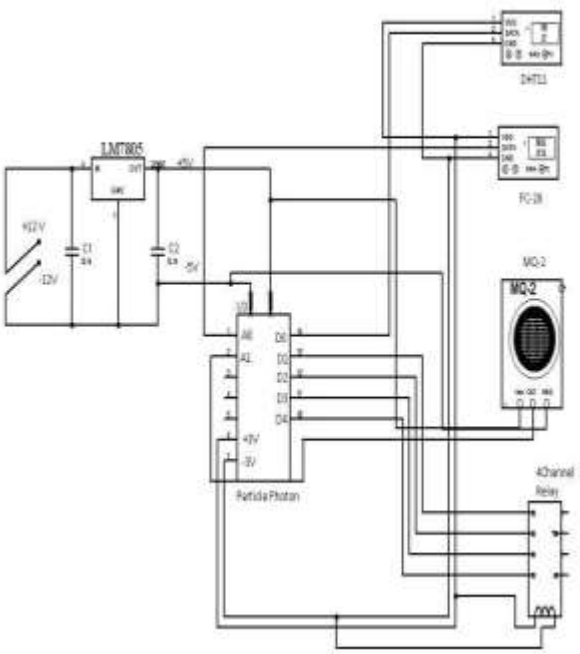
BLOCK DIAGRAM:



The block diagram consists of Arduino, Wifi Module, MQ Sensor, Temperature and Humidity Sensor, Water level Sensor, Soil Moisture Sensor, Gas Sensor, Relay.

The temperature, humidity, MQ3 (Gas sensor) replaced by the MQ6 Gas Sensors, MQ135 (Air quality), BMP180 (Air pressure and attitude) and water level square measure perceived by Arduino Nano by writing acceptable code in Arduino IDE. in keeping with the water level, the pump can ON/OFF. additional information packets can transfer to ESP8266 as Wi-Fi electronic equipment to create it in the cloud. With the assistance of cloud sever and mobile APP, information is going to be a prediction.

CIRCUIT DIAGRAM:



The figure shows hardware style establish with a 220V to 12V DC adapter that is linked to AN IC LM7805 that could be a 12V to 5V regulator. The fiberboard and therefore the device MQ2 is power-driven with the 5V. The alternative sensors are power-driven by the 3v pin that's current within the fiberboard.

WORKING:

A unique algorithm is designed to monitor and automate the farm. The program is written using C language and it is flashed to the particle board with the help of Particle Dev. The vital parameters are set with a threshold value and each of the sensors is made to monitor these parameters if there occurs a variation in the threshold the actuations will be turned on and the notification will be sent through SMS. The sensors are fixed at the appropriate place on the farm. The system is powered on and the microcontroller automatically starts to collect the values from the sensors and will start to transmit the values with the help of a topic. While sending the messages the values are being compared and the local server is set up to receive the message by subscribing to the topic that is being transmitted to by the microcontroller. The planned arrangement will have sensors that are needed to observe the basic specification linked to the microcontroller the actuators are added to the microcontroller. The script is drafted in such the simplest way to observe and to brutalize the plantation. The microcontroller will do both theapproach and can send theinformation from the sensor andalsothe quality of the actuator to the server from the server and controlpannel is advanced to exhibit the quality of the plantation. Natural component like humidity,temperature heat and greenhouseemission that is CO2 withinthe plantation hasgotto absolutely cultivate the improve production. Manually rule these components would be challenging and hence computerized restrict scheme were advancced. The mushroom plantation desire day-by-day adjust in the time of its distinct production step. They accept that these concern may source be accomplish over an automatic result. WSN attempt a active combo of shared sensing, figure out, and transmission. WSN combine the ability of sensors, supervision, digital chain, data cache, and handle. The Orientaldark mushroom observing scheme advanced in the time of this activity known as Smart Oriental black mushroom System (SSMS) would observe temperature, humidity, and CO2 interior the mushroom conservatory. Moreover, the scheme would likewise gather real-time image/video infornation over CCTV cameras and stock the data into a table over an computer network assistant. The implement thickness produce grower desire and exhibit component for the rescue principles of natural specifiaction.

The following table explains the actions taken by the actuator when the threshold value changes:

Threshold	Actuator
Temperature	
>26	Turn on Sprinkler Pump
<26	Turn on Lamp
=26	Turn off Lamp & Pump
Soil Moisture	
<75	Turn on Fogger Pump
>95	Turn off Fogger Pump
=75	Turn off Fogger Pump
Carbon Di Oxide	
>1100	Turn on Exhaust Fan
<500	Turn on Fan

Result Analysis:

The farm where the IMMS was tested had nearly around 100 mushroom bags in it, the IMMSwas tested on a single bag for a period of 30Days and the growth of mushroom was monitored, on comparing it with the traditional method we were able to find that our system was able to give an increase in the production.

CONCLUSION:

The automatic mushroom cultivation system can be installed by any individual type of farm, who doesn‟t have knowledge about mushroom farming. It reduces the trouble and time of farmers. This project makes farming economical and profitable activity. The advantage of this technique over ancient strategies is that we tend to were able to manufacture an honest yield of mushrooms and make a climate for the correct growth of them and even offer a rise within the revenue.

Future Scope:

IoT technology was applied for the mushroom farming project. Weather knowledge from the meteorologic department is used alongside the perceived knowledge to predict a lot of info concerning the longer term which may facilitate farmer set up consequently and promote his support. The assimilation of plantation with IoT will build it far extra economical and commercial enterprise. sensible Greenhouse encompasses a bright scope of future in the agriculture field and it'll produce a revolution within the approach the agriculture is applied in the Republic of India.

References:

[1] ArjunaMarzuki (2017),, Environmental Monitoring and Controlling System for Mushroom farm with online interfeace, International Journal of Computer Science and Information Technology.

[2]L.F.Akyildiz,W.Su, Y.Sankarasubramaniam,E.Cayirci. Broadband and Wireless Networking Laboratory, School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA 30332, USA.

[3] Bahga, A& Madisetti, (2014). Internet of Things. A Hands_on Approach. VPT.

[4]P.Bonnet, J.Gehrke, P.Seshadri, Querying the physical world, IEEE personal communications(2000).

[5] A.Chandrakasan, R.Amirtharajah, S.Cho, J.Goodman, G.Konduri, J.Kulik, W.Rabiner, A.Wang, Design Considerations for distributed micro sensor systems, Proceedings of the IEEE 1999.

[6] I.A.Essa, Ubiquitous sensing for smart and aware environments, IEEE personal communications (Oct 2000).

[7] D.Estrin, R.Govindan, J.Heidmann, S.Kumar, Next century challenges scalable coordination in sensor networks,1999.

[8]P.Johnson, Remote continuous physiological monitoring in the home, Journal of Telemed Telecare-1996.

[9] Libelium communications distribuidas S.L. Wireless sensor networks with waspmote and meshlium. Libelium document-2000.

[10] Mohamed Rawidean Mohdkasssim (2017) Applications of wireless sensor networks in shiitake Mushroom cultivation, Sydney.

[11] Oran Chieochan(2017) IoT for smart farm. A case study of the Lingzhi mushroom farmet Maejo University.

[12] M.Ogawa, Fully automated biosignal acquisition in daily routine through 1 month-2010