

# Temperature And Control Framework For Mushroom Farming Using Arduino Nano

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**Abstract-** Ecological condition is a critical factor that should be controlled in mushroom generation. Mushrooms can't develop if the temperature is higher than 33°C or lower than 25°C. Along these lines, this work centers around building up a programmed ecological control framework to give ideal condition to mushroom generation house. Natural variables considered in the framework are temperature, stickiness and carbon dioxide. For this, DHT11 temperature dampness sensor and LM35, CO2 sensor are associated with the CC2500 Zigbee module to wind up IoT (Internet of Things) sensors that send enormous measure of information to the web for observing and appraisal. This empower clients to screen the ecological condition anyplace at whatever point getting to the web. In view of the investigation of the information, the framework will consequently on and off the air system framework to put the temperature at an ideal dimension.

**Keywords-** mushroom; IOT ranch; sensor innovation

## I. INTRODUCTION

Ventilation Monitoring and Control (VMC) is the alteration of the regular habitat to accomplish ideal plant development. This execution is essentially required as the interest for sustenance increments quickly. By controlling nature for development, the creation and nature of yields can be expanded as the harvests acquire ideal conditions, for example, temperature, carbon dioxide, stickiness, water, daylight, supplement and pH. This alteration can likewise be connected to any sort of plant-development to expand the developing seasons that empowers plants to develop 7 the year not ordinarily used to plants open field crops. By applying VMC gadgets, the expanding requests for mushroom can be satisfied as the creation rate increments. Ventilation Monitoring and Control is where plants are developed under nursery or creation house with installed programmed frameworks. The earth can be controlled consequently to keep up ideal conditions. All things considered, nearby ranchers are as yet inexperienced with this framework because of absence of learning and introduction. In addition, very few data and research has been done on the impacts and advantages of VMC in Tamilnadu particularly for Milky ,Oyster mushroom. In mushroom creation, for example, Milky mushroom,

temperature is the fundamental factor that should be controlled. This will show up if the mushroom temperature is under 25°C. Different plant was planted utilizing condition control horticulture, for example, tomatoes, cucumber and spinach. For these harvests, the creation has expanded relatively on the grounds that the earth factor was controlled naturally to its ideal condition .The rate of creations and nature of the harvest increments if ideal condition is given to guarantee impeccable development. Utilizing VMC gadget, the information for each natural elements can be dictated by utilizing sensors.

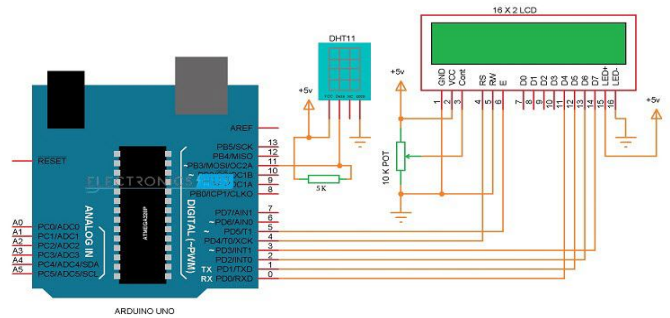
## II. PROPOSED SOLUTION

This undertaking is an execution of brilliant cultivating for mushroom development. Shrewd cultivating is about ongoing information gathering, handling and examination, just as mechanization advancements on the cultivating systems to accomplish enhancement for the cultivating exercises. Web of Things (IoT) detecting and versatile advances has now turning into a day by day partner to various exercises, keen cultivating has likewise improved to another dimension. An IoT advancements has been broadly executed in estimating human activities , savvy network , keen home framework and farming observing framework . Portable applications interfacing with the IoT based farming sensors are presently used to encourage the executives of development. In development exercises, model is such in where an Arduino-based Ventilation Monitoring Control was created with CC2500 Zigbee module as the framework IoT gadget that send ecological sense information to the server for handling. Aside from the CC2500, work being used zigbee innovation to impart the sensors to the server. At that point, choice is made to control the water system arrangement of the development house. Contrasting WIFI module versus the for the most part Zigbee is advanced as having lower control use. Be that as it may, its convention is more confused than WIFI. Since CC2500, whenever arranged legitimately, likewise devour bearable low power, it is a decent pick if WIFI module is to be utilized. Hence, this work will investigate how to ideally execute the CC2500 as the IoT gadget on the VMC. Albeit turned out to be working appropriately, works were expected to work for any nursery natural control framework

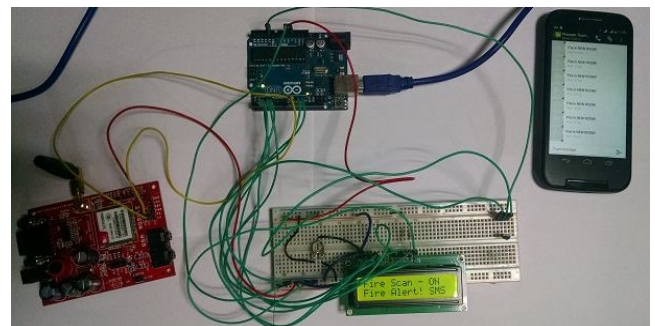
where non, have been actualized at the mushroom development house. Therefore, this work will think about the ecological conduct inside the mushroom development house to ideally control the temperature and stickiness. The reason for the proposed programmed framework is the IoT Wi-Fi module gadget called CC2500 Zigbee ,Arduino nano which is utilized to gather natural information (sensor hub) and send it to the web for information checking and examination. The IoT gadget is likewise utilized as the controller to keep CC2500 the sensor condition at required dimension. This is controlled by VMC and can keep going for couple of months whenever designed legitimately. The stream procedure of the framework is the observing and appraisal process are done through dependent on information gone by the sensor hub. Altogether, six arrangements of the CC2500, each associated with the natural sensors (DHT11 temperature/moistness sensor) Dotnet Application to collect data to store were utilized as the sensor hubs. At that point, another (single unit) will inspire data into the to control CC2500 Zigbee the actuator to accomplish ideal ecological condition. The controller of the framework is associated with the ventilation framework to naturally airing the generation house in controlling its temperature and stickiness to be beneath a required dimension. This framework comprises of ventilating air from inside temperature secured zone and breathe in air from outside into inside ,when it becomes climates changes slightly bit of moistures ,it will automatically trigged a outside air into a mushroom farming with shrouded territory in to drippers and fog hubs, and an air venilating,according to the temperature which its activity is constrained by the controller through association with transfer. As of now mentoined, two sorts of natural sensors are utilized in the proposed framework; the DHT11 and LM35 temperature sensor to peruse inner creation house temperature/stickiness and CO2 focus separately. These three natural variables are picked in light of the fact that these are generally estimated in different exactness farming framework .one of the major important for

temperature and moistness sensor and zigbee for Module for remote correspondence. The framework can identify temperature and dampness and then show by means of an android versatile LCD module. Whenever temperature or mugginess surpasses the exceeds the limited of temperature and get notified.

### III. CIRCUIT DIAGRAM

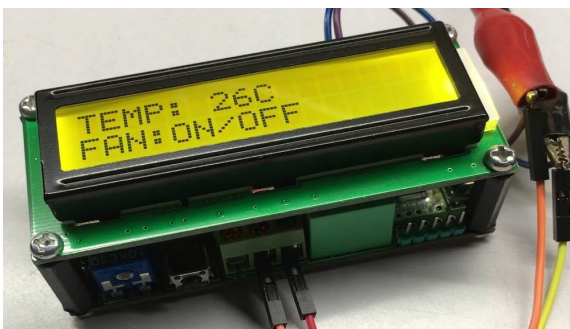


The equipment configuration begins with a 220V to 12V DC connector with IC LM35 which is a 12V to 5V controller. The molecule board and the sensor LM35 controlled with the 5V.The different sensors are fueled by the 3v stick that is available in molecule board. The sensors and the stick arrangements are clarified beneath.



Over view

These system will have sensors that are required to monitor the vital parameters connected to the microcontroller the actuators are attached to the microcontroller. The program is written in such a way to monitor and to automate the farm.



Arduino with CC2500Zigbee

them is a temperature and stickiness observing framework utilizing CC2500 as the controller, DHT11 as



information done manually). Threshold values for climatic conditions like humidity, temperature, moisture can be fixed based on the environmental conditions of that particular region. Moreover, this system can be installed by any individual type of farm, who does n't have knowledge about mushroom farming. It reduces effort and time of farmer and makes farming efficient and profitable activity. The advantage of this system over traditional methods is that we were able to produce good yield of mushrooms and create a climate for the proper growth of them and even provide increase in the revenue. The control system inside the device is automatically triggered if the environmental conditions are not in optimum condition. This system however requires a stable internet connection to ensure that the data is sent to the internet. The combination of this system with air ventilation and mist device, will give better effect to the environmental condition inside the cultivation farm. Other than that, this system has successfully implemented the concept IoT and automated control in the precision agriculture.

## VII. FUTURE SCOPE

This method can also be extended to cultivations that are made in closed areas. Weather data from the meteorological department can be used along with the sensed data to predict more information about the future which can help farmer plan accordingly and improve his livelihood. Integration of farming with IoT can make it much more efficient and profitable activity. Smart Greenhouse has a bright scope of future in agriculture field and it will create a revolution in the way the agriculture is carried out in India.

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