

# A review: intelligent fertilizers & pesticide advisory system using IOT and android

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## ABSTRACT

As India is known for Agriculture. It is the main occupation in India Economy. Around 70 Percentage of Indian survive on the agriculture occupation. The farmer for high rates of crop use excess amounts of a parameter such as fertilizers, pesticides, and chemicals. This overuse of all parameters results in the depletion of the growth of crops. The climate also plays a crucial role in the cultivation of crops. Nowadays there is no proper cycle and routine of the season. This is also the reason behind the bad result in the quality of the crop. In proposed system focus is on the parameters such as climate, temperature, pesticides, and fertilizers. This system will be based on IoT and Android domain. methodology is with the help of IOT The system help the farmer to do the cultivation of crops in a proper way. As The system include some sensor for sensing the climate, checking the temperature and PH level of the soil. This system will be very helpful in the domain of agriculture. The farmer would also get the best quality of crop with the proper amount of all parameters.

## Keywords

Wireless Sensor Network; Internet of Things; Soil Moisture Sensor; Wireless Data Transmission; GPS tracking; Weather Prediction.

## 1. INTRODUCTION

Agriculture plays a significant role in the Indian economy. Over seventy capitalize on Indian population depends on agriculture for his or her living. It is discovered that there's not abundant crop development within the agriculture sector. There the quantity of elements which are in charge of this, it might be because of water squander, low soil fruitfulness, manure manhandle, environmental change or maladies, and so on. Climate viewpoint is the best approach to recognize the states of the air for a given area and time. Climate figures unit made by gathering quantitative data concerning the present condition of the atmosphere at a given place and time. There is uncertain changes in current temperature, humidity and soil condition. These are the factors into consideration to make advice to the farmer. Human input remains required to decide the effective achievable decisions based on the forecast involves pattern recognition skills. The standard of prediction is due to the disordered nature of the atmosphere, the large procedure power required to resolve the equations that describe the atmosphere, The blunder associated with an activity. The initial conditions, incomplete understanding of part processes. Hence, forecasts withdraw correct as a result of the excellence between the current time and so the time that the forecast is being created (the vary of the forecast) can increase. The employment of ensembles and model accord facilitate slim the error and decide the foremost probably outcome. This can be added the rationale behind the unhealthy lead to the standard of the crop. In planned system focus is on the parameters like climate, temperature, pesticides, and fertilizers. Methodology is based on IOT. We'll help the farmer to try and do the cultivation of crops in a very appropriate method. Some sensing element for sensing the climate, checking the temperature and pH level of the soil [1]. This strategy will be frightfully helpful inside the space of horticulture. The agriculturist would also get the best nature of product with the correct amount of all parameters.

## 2. LITERATURE SURVEY

Due to excessive use of fertilizer and pesticides the quality of crops is affected. Also it is hazardous to human health. To recover this problem various systems are proposed a Advisory System using sensor network in IoT domain, Which suggest the appropriate amount of fertilizer and pesticides to be applied on particular crop on certain weather and soil condition.(Prof.K.A.Patil 2016)[1] This paper presents planned a model for good agriculture to develop a time period observation system for soil properties like temperature, moisture, and pH to implement call support consolatory models for blighter warning, Crop sickness identification exploitation image process and SMS based mostly alerts. It'll even be doable to manage numerous operations of the sector remotely from anyplace, anytime by mobile yet as net application. [2]The author of second paper delineated that They observation the crop field by exploitation the temperature detector, humidness detector, Soil wet detector and Automatic Irrigation for the farm that helps to automatic management of pump on the sector there's no got to manual management for providing water to the crops. The information

collection from sensors is transferred to central server. The server uses JSON format for encryption to maintaining the information. If the soil wet gets decreases then pump is mechanically started. conjointly the notification alert is send to the farmers mobile, farmer will monitors the farm from everyplace on his mobile. The parameters used area unit Temperature and humidness sensor- DHT11, Soil wet detector and NRF24L01 is employed as net server. MySQL is used to storing the information. [3] This paperdescribed as, Wireless detector Network is employed to see the weather and these gathered info is hold on in server. Aim of those paper is to see the adequacy of thought of routing protocols in Associate in nursing energy unnatural atmosphere. Objective of this paper is to see the practicableness of exploitation wireless detector network in agricultural land through simulations exploitation documented proactive and reactive routing protocols for wireless networks that has DSDV, DSR, AODV and AOMDV protocols System.[4] This paper experimented the potential utility of an affordable camera observation system known as crop descriptive linguistics sound system that is as an alternate approach for the observation of yield development condition. The arranging investigated the accessibility of daytime introduction esteems recorded inside the header area of organized jpeg documents by RGB and cameras and arranged exploitation vegetation indices, ev-NDVI, ev-SR, and ev-CIgreen that were calculated from the mixture of daytime exposure values. The study found that ev-VARI worked the best for maize and ev- CIgreen for soybeans once estimating in experience was all things considered the best in assessing unpracticed leaf biomass in maize and soybean. This camera-based vegetation index has the chance to estimate a large selection bio-physical parameters, a selection for high-frequency observations at several locations of vegetation. [5] This paper is aimed to own 2 totally different sections or blocks, and a central laptop or mobile application to manage and monitor the complete system. Every of those blocks/nodes contains of various sensors and devices and that they area unit any connected to 1 central server via wireless ZigBee modules. The central device sends and receives info from user finish exploitation web property. Parameters employed in system area unit Temperature detector, humidity detector, moisture detector, AVR Microcontroller and ZigBee Module.[6]In this IoT in environmental observation helps to understand concerning the air and water quality, temperature and conditions of the soil, and conjointly monitor the intrusion of animals in to the sector. IOT may also play a big role in exactness farming to boost the productivity of the farm. Wireless detector networks area unit used for observation the farm conditions and microcontrollers area unit accustomed management and automatize the farm processes. To look at remotely the conditions within the style of image and video, wireless cameras are used. A smartphone empowers farmer to stay updated with the continuing conditions of his agricultural land exploitation IOT at any time and any a part of the globe. IOT technology will cut back the value and enhance the productivity of ancient farming. [7] This analysis proposes a brand new dynamic bunch and information gathering theme for harnessing the IoT in agriculture. During this paper, Associate in nursing pilotless Aerial Vehicle (UAV) is employed to find and assist ground IoT devices to make themselves in cluster formation then establishes a reliable transmission communication backbone for information transmission. Use of multifrequency, multi-power transmission and mobile sink build it doable to scale back power utilization of IoT devices the maximum amount as doable.[8] The feature of this paper includes observation temperature and humidness In agricultural field through sensors exploitation CC3200 single chip. Camera isInterfaced with CC3200 to capture pictures and send that photos through MMS to Farmers mobile exploitation Wi-Fi. Within the system users will register their sensors, produce streams data of knowledge of info and method information. IoT area unit applicable in numerous methodologies of agriculture.Applications of IoT area unit good Cities, good atmosphere, good Water, good Metering, Security and Emergency, Industrial management, good agriculture, Home Automation, e-Health etc. Internet of Things' relies on device that is capable of analyzing the perceived info so transmission it to the user. [9] During this paper, a tendency to surveyed some typical applications of Agriculture IoT detector observation Network technologies exploitation Cloud computing because the backbone. This survey is employed to know the various technologies and to make property good agriculture. Simple IoT agriculture model is self-addressed with a wireless network. With facilitate of exactness, agriculture method will simply monitor or observe of crop growth supported collected info (soil condition and weather information) from a product territory. This mechanism conjointly known as-as satellite farming or site specific crop management (SSCM), manually can't ready to collect environmental info as a result of it's a difficult task. New farmers area unit setting out while not data of soil characteristics as a result of inadequate soil testing labs properly not offered within the states of the country. [10] During this paper, a meteorological observation post was designed Associate in Nursinging deployed in an Edam me farm, and its meteorological information area unit compared with the industrial in at the constant farm. The results show that the lab-made weather observation system is equivalently economical to live numerous weather parameters. Weather stations facilitate to know the interactive influence of climate and management factors on crop yield. The utilization of time period Weather observation system is one amongst the foremost effective ways in which to equip farmers with timely environmental condition info and data for higher crop management.

### 3. PROBLEM STATEMENT

The crops quality get affected due to the overuse of medicine and fertilizers. The high dosage of fertilizers, pesticide, and chemicals affects the soil quality. This proposed system for smart agriculture is to develop a real-time monitoring system for soil properties like temperature, moisture, fertilizers and to implement decision support advisory models. It will also be possible to control various operations of the field remotely from anywhere, anytime by mobiles.

### 4. METHODOLOGY

Proposed system consist of three levels Data Acquisition, Database and Decision Making approach. In first phase Temperature sensor, Moisture sensor and Humidity Sensor Sense the weather Condition and send data to Arduino. In the second phase the data is Stored in Database Accordingly to the condition of weather suitable information will be provided to Farmer from the Database Third stage consist of a process of Decision making With help of Sensor appropriate quantity of fertilizers and pesticides will be suggested

to the farmer after Decision Making Final Result For User is produced.

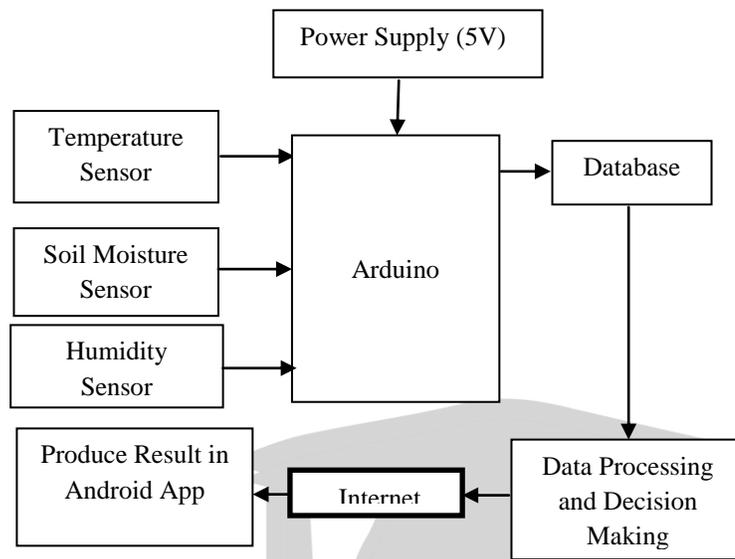


Fig 1: Architecture Diagram of Intelligent Fertilizer and Pesticides Advisory System

Parameters result in the depletion of the growth of crops. The climate also plays an essential part in the cultivation of crops. These days there is no legitimate cycle and routine of the season. This is additionally the purpose for the awful outcome in the nature of the harvest. The proposed framework concentrate on the parameters, for example, atmosphere, temperature, pesticides, and manures. This framework is be founded on IOT and Android area. System is with the assistance of IOT The system help the agriculturist to do the development of harvests legitimately. As The framework incorporate some sensor for detecting the atmosphere, checking the temperature and pH level of the soil.

Temperature distinguishing ought to be conceivable either through direct contact with the warming source or remotely without organize contact with the source using transmitted essentialness. There are a wide grouping of temperature sensors accessible today including thermocouples assurance temperature locators' rtds thermistors infrared and Semiconductor Sensors. The LM35 can be related adequately comparatively as other composed circuit temperature sensors. It can be followed or set up to a surface and its temperature will be inside around the extent of  $0.01^{\circ}\text{C}$  of the surface temperature. This presumes the surrounding air temperature is just about the same as the surface temperature; if the air temperature were substantially higher or lower than the surface temperature, the real temperature of the LM35 kick the bucket would be at a middle of the road The LM35 does not require any outside adjustment and keeps up a precision of  $\pm 0.4^{\circ}\text{C}$  at room temperature and  $\pm 0.8^{\circ}\text{C}$  over a scope of  $0^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$ . One more huge normal for this sensor is that it draws only 60 microamps from its supply and gains a low self-warming limit Advances usually used to in a roundabout way measure volumetric water

## CONCLUSION AND FUTURE WORK

In this study, we identify the quality of crops decreases day by day because farmers do not have proper knowledge of chemicals or fertilizers, agriculture is the main occupation carried in country. The economy of India majorly relies upon the agronomy sector and plays the significant role in Indian economy. The farmer for high rates of crop use excess amounts of a parameter such as fertilizers, pesticides, and chemicals. This abuse of all parameters brings about the consumption of the advancement of harvests. The atmosphere additionally assumes a pivotal part in the development of yields. These days there is no appropriate cycle and routine of the season. This is likewise the purpose for the terrible outcome in the nature of the harvest. In proposed framework concentrate is on the parameters, for example, atmosphere, temperature, pesticides, and composts. This framework will be founded on IoT and Android space. methodology is with the help of IOT The system help the farmer to do the cultivation of crops in a proper way. As The system include some sensor for sensing the climate, checking the temperature and ph level of the soil. This system will be very helpful in the domain of agriculture. The farmer would also get the best quality of crop with a proper amount of all parameters.

The farmer will get proper information about the crops and the precise amount of parameters required for the growth of the crops. system will help the farmer to make his land and farm usable for best quality of crops. The quality of crops will get better after using



application. This application will help the agriculturist to maintain the good quality of his crops and earn him good money.

## REFERENCES

- [1] Prof. K. A. Patil, Prof.N.R.Kale, "A Model for Smart Agriculture Using IoT", International Conference on Global Trends in Signal Processing, Information Computing and Communication,2016.
- [2] Rajalakshmi P, Mrs.S.DeviMahalakshmi" IOT Based Crop-Field Monitoring And Irrigation Automation",10th International Conference on Intelligent systems and control (ISCO), 7-8 Jan 2016 published in IEEE, Xplore Nov 2016.
- [3] J. Thangaraj, S, Kumari, "Evaluating Feasibility of using Wireless Sensor Networks in the agricultural land through simulation of DSR, AOMDV, AODV and DSDV Protocol", International Conference on Wireless Communication, Signal Processing and Networking, WISPNET 2016, pgs: 301-305.
- [4] SonalVerma, Nikhil Chug, Dhananjay V. Gadre, "Wireless Sensor Network for Crop Field Monitoring", 2010 International Conference on Recent Trends in Information, Telecommunication and Computing.
- [5] ArshiaBhattacharjee, PaboniDas,"Smart Farming Using IoT", International Conference on Intelligent systems and control (ISCO), 2017 published in IEEE Xplore 2017.
- [6] Dr. D.K. Sreekantha, Kavya.A.M," Agricultural Crop Monitoring using IOT- A Study", 2017 11th International Conference on Intelligent Systems and Control (ISCO),pp.134-139, published in IEEE, Xplore 2017.
- [7] M. AmmadUddin, A. Mans, D. Le Jeune, el. Hadi M. Aggoune," Agriculture Internet of Things: AG-IOT", 2017 27th International Telecommunication Networks and Applications Conference (ITNAC),pp.-1-6, published in IEEE, Xplore 2017.
- [8] Prathibha S R, AnupamaHongal, Jyothi M P3, "IOT BASED MONITORING SYSTEM IN SMART AGRICULTURE", International Conference on Recent

