**LITERATURE SURVEY**

**Domain** : Internet of things

**Topic** : Smart former-IOT enabled smart farming application

**1.Internet of Things (IoT) based Smart Agriculture Aiming to Achieve Sustainable Goals**

**Author** : Dewan Md Nur Anjum Ashir , Dr. Md. Taimur Ahad, Manosh Talukder , Tahsinur Rahman

**Abstract**

Despite the fact, a handful of scholars have endorsed the Internet of Things (IoT) as an effective transformative tool for shifting traditional farming to smart farming, relatively little study has addressed the enabling role of smart agriculture in achieving sustainable agriculture and green climate. Researchers are more focused on technological invention and model introduction rather than discussing societal or global development goals. Sustainable development goals (SDGs) designed by United Nations (UN), therefore demand discussions as SDGs targets have a closer implication of technology. To fill this gap, in this study a model of smart agriculture is developed and centring the model we investigated how the model addresses SDGs targets. The investigation suggests that smart agriculture supports targets mentioned in Goal 6, 7, 8, 9, 11 and 12 of SDG. This research is very important, both for developing and developed nations since most of the nations are moving more towards industrialization and aiming to achieve the SDG goals This research is expected to provide a path to the IT practitioners, governments and developing agencies on how technological intervention can provide a more sustainable agricultural world.

**Keywords**: IoT, Smart Agriculture, SDG. SAS, WSN, RFID, Zigbee 5.8, SDGs, United Nations (UN).

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<file:///C:/Users/ELCOT/Documents/Downloads/2206.06300.pdf>

**2. IoT Based Smart Farming System**

**Author :** G. Nisha, J Megala, Vaishali. S, Suraj S, Vignesg.G, Divya.S and Udhayakumar.S

**Abstract :**

Farming is backbone of economy and it is the fundamental method for occupation. The large population of world depends on farming for living day to day life. Around 70% of Indian population depends on cultivation. Most of the cultivation cannot be productive only by physical activities so have to be handled by innovative technologies. Therefore, we use IoT innovation and SMS notification to address the critical part of farming. The past method of incorporating keen water supply system with smart idea. This undertaking is a follow up to a past method whose highlight features incorporates keen water system with excellent control and insightful basic leadership in terms of exact continuous field information which regulates temperature, moisture and soil dampness of a particular crop. Controlling of every one of these activities will be monitored by PC with Internet and the tasks being performed by interfacing sensors and Arduino. With the observation results decision

**Refer link :** <file:///C://PR3258%20Iot%20Based%20Smart%20Farming%20System%20Mushtaqulla%20Baig%20_%20Shivram%20B%20Singh%20_%20Pradeep%20B%20_%20Unnathi%20J%20Ms.%20Reshma%20P%20Eldho-Aug-2021.pdf>

**3.** **IoT-Enabled Smart Agriculture: Architecture, Applications, and Challenges**

**Author :** Vu Khanh Quy 1 , Nguyen Van Hau 1 , Dang Van Anh 1 , Nguyen Minh Quy 1 , Nguyen Tien Ban 2 , Stefania Lanza 3 , Giovanni Randazzo 4 and Anselme Muzirafuti 4,\*

**Abstract**  :

The growth of the global population coupled with a decline in natural resources, farmland, and the increase in unpredictable environmental conditions leads to food security is becoming a major concern for all nations worldwide. These problems are motivators that are driving the agricultural industry to transition to smart agriculture with the application of the Internet of Things (IoT) and big data solutions to improve operational efficiency and productivity. The IoT integrates a series of existing state-of-the-art solutions and technologies, such as wireless sensor networks, cognitive radio ad hoc networks, cloud computing, big data, and end-user applications. This study presents a survey of IoT solutions and demonstrates how IoT can be integrated into the smart agriculture sector. To achieve this objective, we discuss the vision of IoT-enabled smart agriculture ecosystems by evaluating their architecture (IoT devices, communication technologies, big data storage, and processing), their applications, and research timeline. In addition, we discuss trends and opportunities of IoT applications for smart agriculture and also indicate the open issues and challenges of IoT application in smart agriculture. We hope that the findings of this study will constitute important guidelines in research and promotion of IoT solutions aiming to improve the productivity and quality of the agriculture sector as well as facilitating the transition towards a future sustainable environment with an agroecological approach.

Keywords: sustainable agriculture; food security; green technologies; Internet of Things; natural resources; sustainable environment; IoT ecosystem

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**4. IoT Based Smart Agriculture Monitoring System**

**Author :** Harika Pendyala1 , Ganesh Kumar Rodda2 , Anooja Mamidi3 , Madhavi Vangala4 Sathyam Bonala5 , Keerti Kumar Korlapati6

**Abstract :**

In every country agriculture is done from ages which are considered to be science and also art of cultivating plants. In day today life, technology is updating and it is also necessary to trend up agriculture too. IoT plays a key role in smart agriculture. Internets of Things (IoT) sensors are used to provide necessary information about agriculture fields. The main advantage of IoT is to monitor the agriculture by using the wireless sensor networks and collect the data from different sensors which are deployed at various no des and send by wireless protocol. By using IoT system the smart agriculture is powered by Node MCU. It includes the humidity sensor, temperature sensor, moisture sensor and DC motor. This syste m starts to check the humidity and moisture level. The sensors are used to sense the level of water and if the level is below the range then the system automatically stars watering. According to the change in temperature level the sensor does its job. IoT also shows the information of humidity, moisture level by including date and time. The temperature level based on type of crops cultivated can also be adjusted.

**Keywords:** IoT, Soil, Moisture and Temperature sensors, Relay, Wi-Fi module ESP8266, Thing Speak

**Refer link :** <file:///C://SE21721180744.pdf>

**5. Smart agriculture management system using internet of things**

**Author :** Kaushik Sekaran1, Maytham N. Meqdad, Pardeep Kumar,Soundar Rajan ,Seifedine Kadry

**Abstract :**

In the world of digital era, an advance development with internet of things (IoT) were initiated, where devices communicate with each other and the process are automated and controlled with the help of internet. An IoT in an agriculture framework includes various benefits in managing and monitoring the crops. In this paper, an architectural framework is developed which integrates the internet of things (IoT) with the production of crops,different measures and methods are used to monitor crops using cloud computing. The approach provides real-time analysis of data collected from sensors placed in crops and produces result to farmer which is necessary for the monitoring the crop growth which reduces the time, energy of the farmer.The data collected from the fields are stored in the cloud and processed in order to facilitate automation by integrating IoT devices. The concept presented in the paper could increase the productivity of the crops byreducing wastage of resources utilized in the agriculture fields. The results of the experimentation carried out presents the details of temperature, soilmoisture, humidity and water usage for the field and performs decision making analysis with the interaction of the farmer.

**Refer link :**

<http://telkomnika.uad.ac.id/index.php/TELKOMNIKA>

# 6. Smart Agriculture Using IOT: A Futuristic Approach

# Author : i, Li, Hu Xiaoguang, Zhao, Ji-chun, et al. TongKe, ,F Talpur, et a

**Abstract :**

In India collecting information like fertility of the soil, weather, growth of crops,

temperature, rainfall and information regarding plantation of seeds, etc. can be

collected with the help of IOT. It helps the farmers to gain information regarding all

agriculture activities. With the help of internet technology, agriculture processes

can be monitored through sensors, smart cameras, mobile applications and

devices like mini chips. Through IOT the automated technology helps the farmers

infrequent ways i.e. best utilization of resources as resources are very scared and

solving their agriculture issues from finding the proper time of seeding to the cutting

of crops.

KeyTerms: Smart objects, Sensors, RFID, ZigBee, IOT.

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In India collecting information like fertility of the soil, weather, growth of crops, temperature, rainfall and information regarding plantation of seeds, etc. can be collected with the help of IOT. It helps the farmers to gain information regarding all agriculture activities. With the help of internet technology, agriculture processes can be monitored through sensors, smart cameras, mobile applications and devices like mini chips. Through IOT the automated technology helps the farmers infrequent ways i.e. best utilization of resources as resources are very scared and solving their agriculture issues from finding the proper time of seeding to the cutting of crops.

**Refer link :**

[**https://www.researchgate.net/publication/339712578\_Smart\_Agriculture\_Using\_IOT\_A\_Futuristic\_Approach**](https://www.researchgate.net/publication/339712578_Smart_Agriculture_Using_IOT_A_Futuristic_Approach)

**7.** **SMART AGRICULTURE USING IOT**

**Author :** Nageswara Rao and B. Sridhar, G. Sushanth and S. Sujatha” Prachi Patil, Akshay Narkhede**,**

**Abstract :**

There has always been a vital role of agriculture in country like India and issues concerning agriculture have become very common these days. Smart agriculture can act as a pillar to the development of the country. The methodology proposed in this paper gives an idea about smart agriculture using Internet of Things (IoT). IoT sensors have capability of providing meaningful information for agriculture making this concept more emerging and attractive day by day. This paper aims in making a technology which is completely automated. The paper takes care of all major factors of agriculture i.e. monitoring, irrigation and security. The methodology used in this system can monitor the humidity, moisture level and can even detect motions. According to the data received from all the sensors the water pump, cutter and sprayer get automatically activated or deactivated. The methodology not only focuses on the crop field but also takes care of the warehouse where all cultivated crops are being stored. The warehouse is embedded with various sensors which help in detection of humidity and theft. Based on the humidity sensor reading heater or cooling fan is automatically turned on. Similar way the motion sensor if detect sany theft then an alarm is turned on to notify the farmer.

KEYWORDS: IoT, Raspberry Pi, Obstacle sensor, Cloud computing.

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**8.** **Internet of things for smart agriculture**

**Author :** P. Corke, T. Wark, R. Jurdak, W. Hu, P. Valencia, L. Atzori, A. Iera and G. Morabito, S. Bandyopadhyay, M. Sengupta, S. Maiti

**Abstract :**

The advent of Internet of Things (IoT) has shown a new direction of innovative research in agricultural domain. Beingat nascent stage, IoT needs to be widely experimented so as to get widely applied in various agricultural applications. In thispaper, I review various potential IoT applications, and the specific issues and challenges associated with IoT deployment forim proved farming. To focus on the specific requirements the devices, and wireless communication technologies associated with IoT in agricultural and farming applications are analyzed comprehensively. Investigations are made on those sensor enabled IoT systems that provide intelligent and smart services towards smart agriculture. Various case studies are presented to explore the existing IoT based solutions performed by various organizations and individuals and categories according to their deployment parameters. Related difficulties in these solutions, while identifying the factors for improvement and future road map of work using the IoT are also highlighted.

**Keywords**: Internet of things, smart agriculture, precision agriculture

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**9.** **Iot Based Smart Agriculture**

**Author** : M. MANOJ VENKATA SAI, K. SUBBA RAO, N. VAMSI KRISHNA, M. VASANTHA LAKSHMI

**Abstract :**

Internet of Things (IoT) is propagating and

blooming technology, in the present years. IoT is the

collection of the sensor data through embedded system and

this embedded system uploads the data on internet. Fuelled

by machine-to-machine (M2M) communications, the

Internet of Things (IoT) is all about connecting a wide

range of internet-enabled devices – from cars, lighting,

smart meters and more – that generate actionable data. In

the print industry, proactive maintenance and support is

nothing new. Crop farming in India is labour intensive and

obsolete. Farming is still development on techniques which

were evolved hundreds of years ago and doesn’t take care

of conservation of resources. My project is to give cheap,

reliable, cost efficient and easy to use technology which

would help in conservation of resources such as water and

also in automating farms. We proposed use of temperature,

moisture, humidity and pH sensor at suitable locations for

monitoring of crops. The sensing system is based on a

feedback control mechanism with a centralized control unit

which regulates the flow of water on to the field in the real

time based on the instantaneous temperature, moisture,

humidity and pH values. Thus by providing right amount

of water we would increase the efficiency of the farm. As

per the need of crop controller take the decision to make

irrigation ON or OFF using arduino NodeMCU .

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**10.**  **IoT-Based SMART FARMING SYSTEM**

**Author** : Yasir Fahim, Tania Sarkar

**ABSTRACT**

Internet of Things (IoT) technology has brought revolution to each and every field of common man’s life by making everything smart and intelligent. IoT refers to a network of things which make a self-configuring network. The development of Intelligent Smart Farming IoT based devices is day by day turning the face of agriculture production by not only enhancing it but also making it cost-effective and reducing wastage. The aim / objective of this report is to propose IoT based Smart Farming System assisting farmers in getting Live Data (Temperature, Soil Moisture) for efficient environment monitoring which will enable them to increase their overall yield and quality of products. The IoT based Smart Farming System being proposed via this report is integrated with Arduino Technology mixed with different Sensors and a Wifi module producing live data feed that can be obtained online from Thingsspeak.com. The product being proposed is tested on Live Agriculture Fields giving high accuracy over 98% in data feeds.

**Refer link :**

[**https://www.researchgate.net/publication/334131097\_A\_Mini\_Project\_Report\_On\_IoT-Based\_SMART\_FARMING\_SYSTEM**](https://www.researchgate.net/publication/334131097_A_Mini_Project_Report_On_IoT-Based_SMART_FARMING_SYSTEM)

**11.** **SMART AGRICULTURE USING IoT**

**Author :** Jayakumar R, Karthikeyan S N, Naveen Perumal M

**Abstract:**

Due to population growth and demand for

resources, water shortage is a major threat to

agriculture. Determination of soil fertility also plays a

vital role. Also, the major challenge lies in trapping the

field animals such as Rats, Snakes etc. Hence this

project proposes an innovative smart solution using

“SMART AGRI App” which runs on IoT platform and

addresses all the above mentioned issues. The user has

to feed the data about the land area and the type of

crop planted in the app. With the given data we can

calculate the amount of water, fertilizers, pesticides

needed for the given land area. The Ethernet Shield is

used to collect the data and transmit it to the SMART

AGRI APP. The App provides the information about

the soil fertility, humidity, water overflow, field

animals. Using the water level sensor the water level in

the tank can be calculated and based on the data from

humidity and moisture sensor the land can be irrigated

automatically and can detect the overflow in the water

tank. Thus, smart irrigation system helps to improve

the crop yield and thereby meet the demand. This

project remotely measure and monitor water moisture

levels in the soil to ensure that crops are getting optimal

water resources and automatically trigger sprinkler

systems to address low moisture levels in the soil to

prevent crop damage or loss. This idea will improve the

crop yield and manage them.

**Keywords-** Arduino Uno, IR sensor,Ethernet Shield,

Gsm, Humidity and Moisture sensor, Motor driver

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