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Monitoring Organism of Well-Groomed Crop Growing with the use of Internet of Things (IoT)

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Abstract: Crop cultivation is vital resource of livelihood People in India. It plays most significant role in financial system of country. But now days due to resettlement of people from rural to metropolitan there is interference in agriculture/crop cultivation. Monitoring the ecological aspect is not the absolute way out to increase the yield of crops. There are no of factors that reduce the output to a great extent. For this reason automation is required to be implemented in agriculture to conquer these troubles. The mechanical irrigation system thereby saving time, funds and power of cultivator. The time-honored Farm land irrigation techniques need manual involvement. With the computerized technology of irrigation the human involvement can be minimized. Continuous sensing an monitoring of crops by convergence of sensors with Internet of things (IOT) and making farmers to awake about crops development, return time occasionally and in turn making high output of crops and also ensuring correct delivery of harvest to end, consumers at right place and right time. So to conquer this crisis we go for Monitoring organism of well-groomed crop growing with the use of Internet of things. Farming is an important part of Indian cost-cutting measure. Over all 60% of Indian people based upon farming/agriculture and 1/3 of the returns of population arises from agricultural practices. Hence it plays a very important part in the development of the country. The number of variety group of issues are associated to farming is endlessly hampering the development of the country. Probable answer for these tribulations is to opt for modernized cultivation that comprises of contemporary trends. Hence, cultivation can be made elegant using IoT and other technologies. Smart agriculture increases crop yield, decreases water consumption and unprovoked use of fertilizers.

1. Introduction

Agriculture is most important source of income for the biggest population in India and is major provider to Indian financial system. It can be noticed that, in the earlier period decade, no large amount of crop development is there in agriculture segment. Food prices are constantly increasing for the reason that crop rate declined. There are number of things which are accountable for this, it may be owed to low soil fertility, Fertilizer abuse, climate change, diseases, water waste, etc., it is very important to make useful interference in agriculture and the resolution is IOT in integration with wireless sensor network.

Internet of things (IOT) is a method of connecting everything to the internet- it is connecting object or things(such as car, home, electronic devices, etc. ...) which are previously not connected with each other main purpose of IOT is ensuring delivery of right information to right people at right time. In agriculture irrigation is the significant factor as the monsoon rain falls are unpredictable and uncertain. Internet of Things (IoT) is the interconnection or network of physical devices that is unified computing devices, digital and mechanical machines, people or animals, objects that can sense, accumulate and transfer data over web without any human being contribution. The whole thing is provided with only one of its kind identifier. It is a progressed assessment and mechanized frameworks which uses detecting, organizing, massive information and man-made awareness innovation to convey total framework for an administration.

Basically IoT is about extending the supremacy of internet beyond Computer system and smart phones. IoT has changed today's world. Smart cities, smart car, smart homes everything around us can be bowed into a smart device with the help of IoT. It also has applications in agriculture, business sectors, healthcare, transport and logistics.

There are four main components of IoT –

- Low power embedded system-high performance and less battery consumption are the contrary factors that take part in the significant role in design of electronic system.
- Cloud computing- Data collected from devices is stored on reliable storage servers so here cloud computing comes into action.
- Availability of Big Data- As IoT is highly dependent on sensors that are real time. So the convention of electronic devices is spread throughout every field that is going to trigger a huge change of data.
- Network connection- For communication, internet connectivity is necessary where each physical object is assigned by an IP address. A network connection is put together between the devices with the help of these addresses.

Technology today has not reached its 100% competence. So the advantages and disadvantages of this technology are given as-

1.1Advantages of IoT

1. Utilization of Resources Efficiently
2. Minimization of Human Efforts
3. Time-saving
4. Increase Data Collection

1.2 Disadvantages of IoT

1. Security
2. Privacy
3. Complexity

2. Literature survey

Experts have analyzed collected data for finding correlation stuck between environment work and yield for standard work. They are concentrated on crop monitoring, information of temperature and rainfall is collected as initial spatial data and analyzed to diminish the crop losses and to get better the crop production. An IOT based Crop-field monitoring an irrigation automation system explains to monitor a crop field. A system is developed by using sensors and according to the decision from a server based on sensed data, the irrigation system automated. By using wireless transmission the sensed data forwarded towards to web server database. If the irrigation is automated then that means if the moisture and temperature fields fall below the potential range. The user can monitor and control the system remotely with the help of application which provides a web interface to user.

Prof. K.A.Patil and Prof. N.R.Kale propose a wise agricultural model in irrigation with ICT (Information Communication Technology).The complete real-time and historical environment is expected to help to achieve efficient management and utilization of resources.

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IOT Based Smart Agriculture Monitoring System develops various features like GPS based remote controlled monitoring, moisture and temperature sensing, intruders scaring, security, leaf wetness and proper irrigation facilities.

Mahammad shareef Mekala, Dr.P.Viswanathan demonstrated some typical application of Agriculture IOT Sensor Monitoring Network Technologies using Cloud computing as the backbone.

Prathibha S.R., Anupama Hongal Jyothi M.P. Created monitoring temperature and Humidity in agriculture field through sensor using CC3200 Single chip. Camera is interfaced with CC3200 to capture images and send that pictures through MMS to farmers mobile using Wi-Fi.

- IoT empowers simple congregation and the executives of massive amounts of information which is gathered from sensors used and with the help of joining of disseminated evaluating administrations such as cloud storage, farming field maps and more information can be retrieved from any place and everywhere which enables live monitoring and connectivity which is end to end.
- IoT is viewed as an essential segment for smart farming because with specific use of sensors and also the smart gadgets, farmers could make bigger the output by 72% upto year 2050 as delineated by specialists.
- By the use of IoT creations operating cost could be diminished to an amazing dimension that would thus enlarge productivity and survivability.
- By the use of IoT efficiency level would be further extended as far as consumption of water, soil, fertilizers, pesticides etc.

3.Role of IoT in Agriculture

Agriculture is done in every country from ages. Agriculture is the science and art of cultivating plants. Agriculture was the key development in the rise of inactive human civilization. Agriculture is done manually from ages. As the world is trending into new technologies and implementations it is a necessary goal to trend up with agriculture also.

IOT plays a very key role in smart agriculture. IOT sensors are capable of providing information about agriculture fields. We have proposed an IOT and smart agriculture system using automation. This IOT based Agriculture monitoring system makes use of wireless sensor networks that collects data from different sensors deployed at various nodes and sends it through the wireless protocol. This smart agriculture using IOT system is powered by a specific technology; it consists of different components.

IoT is here to decrease the manual labour involved in collecting these critical agricultural data. If manual labour is involved we have to deploy several thousands of personnel to different agricultural sites to collect the tedious readings every single day and there will be no assurance in the data integrity since we are humans we may get inert and may manipulate the data which could push the expert conclusions in wrong direction.

Using IoT we can directly send the collected data to a central server in real time. Since we have automated the date collection, the data integrity is assured and since the data processing is done using computers, experts may get advanced analytical software tools to draw most accurate predictions.

Agriculture area unit controlled space atmosphere to grow plants, so as to become conscious most plant growth, the constant watching and controlling of environmental parameters like temperature, humidity, soil moisture, intensity level, soil pH, etc. area unit necessary for a greenhouse system.

In today's agriculture, observation and controlling of the many parameters square measure compulsory for the enormous quality and productivity of plants. On the other hand to bring the specified result some parameters like temperature, humidity, soil wet, intensity level, and soil PH square measure necessary for privileged plant growth.

IoT in Agriculture Internet of Things has ability to make over the lives of people in the world in an well-organized manner. The ever rising population would touch more than 5 billions in few years. So to provide for such an immense population, agriculture industry need to squeeze the IoT. The insist for more food has to deal with challenges that consist of unwarranted climate conditions, weather change and dissimilar environmental affects that results from farming practices.

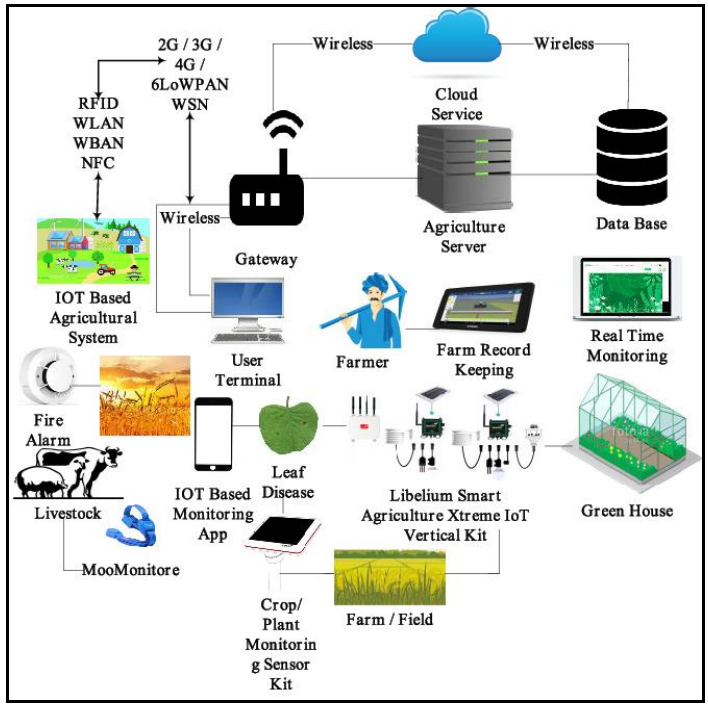

Fig.1: Role of IoT

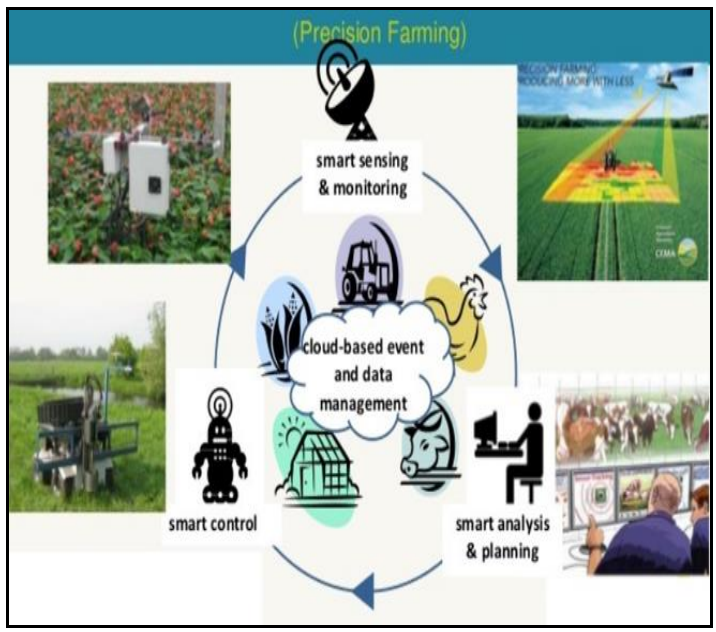

Fig.2: IoT in Smart Farming

The fortune of Indian agriculture must be worked with sympathetic and excessive close down technologies that can increase production and in addition regains the attention of farmers in this industry. Consequently these smart farming techniques would assist farmers to diminish fragment and enhance capacity. It is basically a high tech and capital intensive system for mounting crops in a sustainable manner for masses. This technology can help farmers to monitor field conditions from anywhere with the help of sensors and can also irrigate fields with an automated system. It is the application of Information and Communication Technology into the field of agriculture.

Different kind of troubles faced by the farmers provoked us for the recommended system that is: the Indian farming is on the hitch for the reason that of the limited technical knowhow of the best and

efficient agricultural practices and moreover they are still dependent on conventional methods of agriculture that leads to lesser productivity of crops. So by using forthcoming technology the productivity of crops can be maximized at minimal cost. This also reduces the load of taking up of heavy loans on farmers which they have incurred on themselves in order to sustain their livings or to get good yields of their crops. Apart from these issues shortage of resources also adds up in their problem causing encumbrance or stopping framers from cultivating and hence Indian economy is also additionally getting influenced to large extent as most of the fruitful lands of the nation are being destroyed that forms the vital part of GDP.

IOT based monitoring system in Smart Agriculture Even now different developing countries using the traditional ways and backward techniques in agriculture sector. A little technological advancement has increased the production efficiency significantly. And to increase the productivity the inventive approach is introduced. Smart farming with Internet of Things (IOT) has been designed.

4. Conclusions

This paper describes automated irrigation system using IOT. Internet on things and cloud computing collectively makes a system that control agriculture sector effectively. Internet of Things will help to enhance smart farming. Using IoT we can predict the soil moisture level and humidity. Irrigation system can be monitored and controlled by IoT technology. The crop damage using predators is reduced. IoT works in different domains of farming to improve time efficiency, water management, crop monitoring, soil management, control of insecticides and pesticides. It also minimizes human efforts, simplifies techniques of farming and helps to gain smart farming. Along with these features smart farming can help to grow the market for farmer with single touch and minimum efforts.

References

[1]. P Rajalakshmi, SD Mahalakshmi. IOT Based Crop-Field Monitoring And Irrigation Automation, 10th International conference on Intelligent systems and control (ISCO), IEEE Xplore 11, 2016.

[2]. KA Patil, NR Kale. A Model For Smart Agriculture Using IOT, International Conference on Global Trends in signal Processing, Information Computing And Communication 2016.

[3].NSuma, SR Samson, S Saranya, G Shanmugapriya, R Subhashri. IOT Based Smart Agriculture Monitoring System, International Journal on Recent and Innovation Trends in Computing and Communication, 2017.

[4].MSf Mekala, Pviswanathan. A Survey: Smart agriculture IoT with cloud Computing, IEEE, 978-1- 5386-1716-8/17, 2017

[5]. SR Prathibha, A Hongal, MP Jyothi. IOT Based Monitoring System In Smart Agriculture, International Conference on Recent Advances in Electronics and Communication Technology, 2017.

[6] AC Pusatkar, VS Gulhane. Implementation of Wireless Sensor Network for Real Time Monitoring of Agriculture, International research journal of engineering and technology (IRJET). 3(5), 2016

[7] https://www.iotforall.com/iot-applications-in-agriculture/

[8] Yjie, JY Pei, L Jun, Gyun, X Wei. Smart Home System Based on IOT Technologies, Computational and Information Sciences (ICCIS), 2013 Fifth International Conference on, 1789-1791, 201321-23 .

[9] How the Next Evolution of the Internet is Changing Everything https://www.cisco.com/web/about/ac79/docs/innov/IoT_IBSG _ 0411FINAL.pdf