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# SMART Agriculture using IOT

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## I. INTRODUCTION

In India, around 80% of people depends on agriculture for their lively hood. Agriculture is the backbone of Indian economic growth. The basic barrier arises in traditional farming is weather condition. Due to change in weather condition productivity of agricultural goods has decreased tremendously. To minimize the barrier and increase such productivity, modern (smart) way of doing farming needs to be implemented. To boost such farming innovative technology and techniques such as Internet of Thing (IoT) needs to be used.

### *A. Problem Identified.*

Due to frequent changes in weather condition crops are burned or destroyed, scarcity of water due hot weather condition, loss of fertility of farming land, etc. Such thing can be identified and managed by IoT devices.

### *B. Benefit of IoT in Agriculture.*

IoT equipped devices helps in measuring weather condition, maintaining fertility of land, etc.

*1)* Conservation of water.
*2)* Better yielding of crop.
*3)* Minimizing financial loss.
*4)* Maximum utilization of resources.
*5)* Time efficiency.

## II. LITERATURE SURVEY

The scenario of lack water level, unpredictable weather condition, etc., arises need of proper utilization of available natural resources. To cope up with such condition various sensors such as temperature sensor, humidity sensor, motion sensors are used.

## III. ANALYSIS AND METHODOLOGY

During most of the time throughout the year, there is a lack food supply mostly due to change in weather condition which affects the productivity. At some places, extremely hot weather or extremely cold weather which affects the crop's health. Moreover there is uncertainty about fertility of the land due to change in weather condition. Framers have a tendency to yield same crop again and again, hence reducing the productivity and quality. Due to same crop yielding soil depletion occurs. Soil depletion occurs when certain component which helps in maintaining the fertility is been removed but not replaced.
To overcome such challenges, we need to understand factors such as surrounding environment, farm land and weather condition.

### *A. Surrounding Environment*

Surrounding environment will help us to understand the trends of framing, who is doing what, why is he/she doing, how he/she will going to do. This will help in understand of the farm field, farm environment on experience bases

### *B. Farm Land*

Farm land will help in understanding the fertility of the land, which crop to be yield, what amount of water it will require for yielding the crop.

### *C. Weather Condition*

It will plays a major roll for agriculture. It helps in deciding, which crop to yield based weather condition. It also define the existing water level in the canals and rivers which will be used for irrigation. If there is an uncertainty of weather condition precautionary measures can be taken based on uncertainty which will help in maintain the crops health.

### *D. Design and Implementation*

The current constraint is that there are a lot of technologies available in the market, which to use and also budget of the farmer also plays the role.

In such cases IoT devices plays the role of X factor. IoT devices can be integrated with any technology. IoT devices combines various technologies such as temperature sensor, water sensor, motion sensor, etc. The plan is to implement IoT devices to get better results.

1) *Temperature Sensor:* It is used to sense the current temperature of the surrounding environment. It helps in deciding which crop is suitable to the surrounding environment.
2) *Water Sensor:* Water sensor is used to detect the water level, supply of water to the field, which field has been supplied by water and which is been remaining. It helps in maintain the water level and future supply of water on the current level.
3) *Motion Sensors:* It helps in identifying movements in the field. Often seen is that crops are been destroyed by wild animals or stolen by theft. Motion sensor helps to avoid such situation alarming the guard or owner of the land by sending the alarm signal or SMS.
4) *Moisture Sensors:* It helps to identify the moisture of the fertile land also moisture present in the air. Moisture sensor allows farmer to maintain their irrigation, knowing the current level of the moisture in the air and field.

### *E. Smart Agriculture Using IoT*

Climate changes and rainfall has been regular over the past decade. Due to this, climate-smart methods called as smart agriculture is adopted by many Indian farmers. Smart agriculture is an automated and directed information technology implemented with the IOT (Internet of Things).

IoT is developing rapidly and widely applied in all wireless environments. The sensor technology and wireless networks integration of IOT technology has been studied and review. A combined approach with internet and wireless communications, Remote Monitoring System (RMS) is done. Main aim is to collect the real time data of agriculture harvesting environment that provides easy access for agricultural facilities such as alerts through Short Massaging Service (SMS) and on weather pattern, crops. Village farmers may have planted the “same” crop for many years, weather patterns and soil conditions pests and diseases changed. By using the proposed approach, received updated information allows the farmers to cope with and even benefit from these changes. It is really a challenging task. It is really challenging task that needs to provide such knowledge because of highly localized nature of agriculture information specifically distinct conditions. The complete real-time and historical environment information is expected to help to efficient management and utilization of resources.

### *F. IoT based Monitoring System*

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. By developing a motor vehicle which can be operated on both automatic and manual modes which can be used for various agriculture activities like cutting, spraying, and weeding etc. The controller will monitor the temperature, humidity, soil fertility, and water management to the field. By using green energy and smart technology the agriculture sector will find a better way to increase the productivity.

## IV. CONCLUSION

Using the IoT devices farmers will be able make better judgement of, what needs to be harvest. Also experience of the farmer will play the vital role in make the decision.

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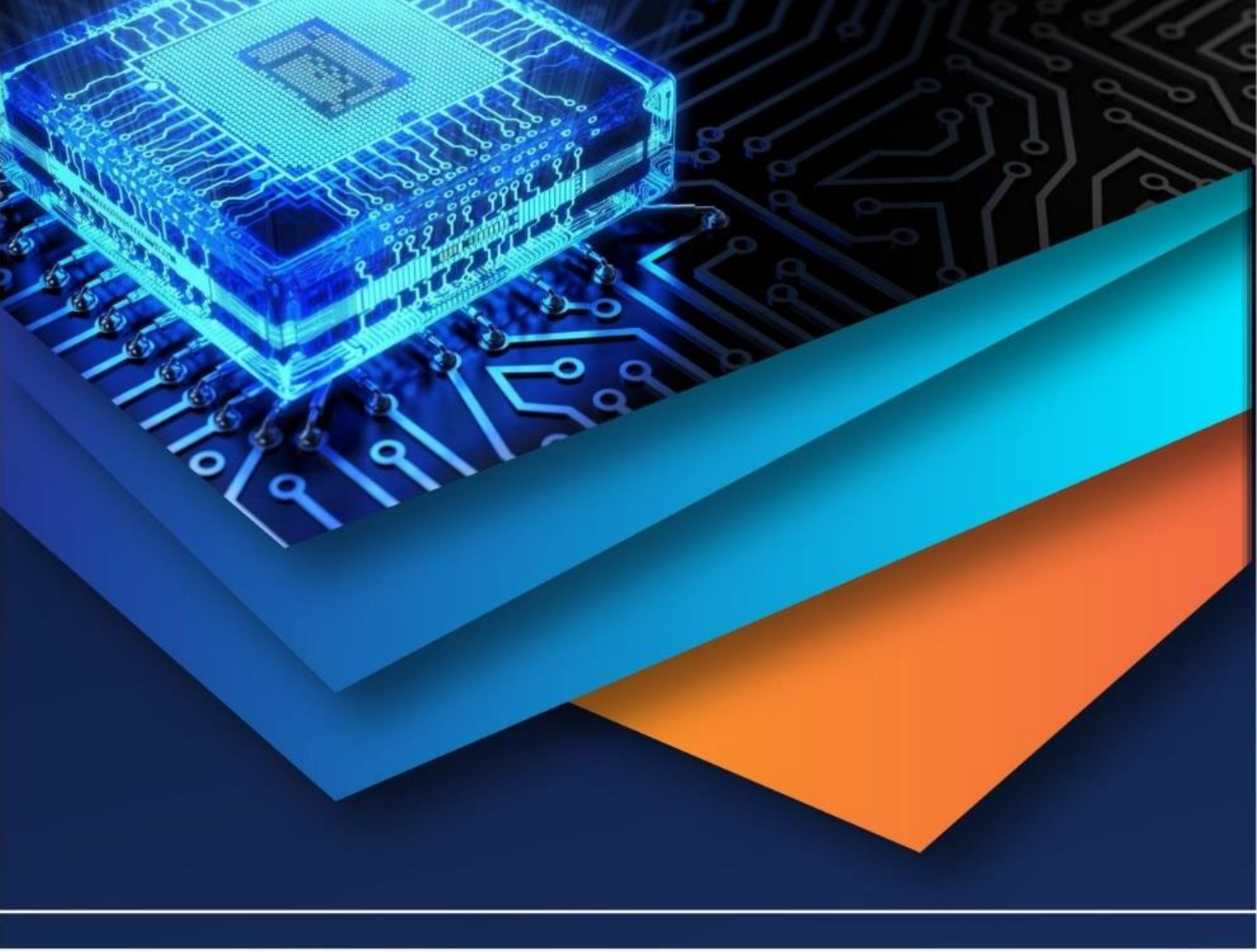

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