# Chapter 28
# Sustainable Smart Farming for Masses Using Modern Ways of Internet of Things (IoT) Into Agriculture

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## ABSTRACT

*Modern technologies are revolutionizing the way humans have lived. The world's population is expected to reach 9.6 billion by year 2050 and to serve this much population, the agricultural industries and layman farmers need to embrace IoT and e-agriculture or ICT in agriculture. Feeding the global population is the biggest problem of the world. The terminology has advanced from IIoT (Industrial Internet of Things), IoFT (Internet of Farm Things), IoSFT (Internet of Smart Farming Things), etc. The agriculture industries are open for ideas, advances, and technically trained workforce to help sustain ever increasing needs of food and allocate better choices of resources. Smart farming is less labor intensive and more capital intensive. Smart farming is furthering the Third Green Revolution around the globe by using various ICT technologies in agriculture.*

## INTRODUCTION

Adapting to farming and meeting its requests are extremely challenging in today's time. Farming fills in as the core of Indian economy and half of the populace in India survives on the basis of agriculture. Adapting to farming and meeting its requests are extremely challenging in today's time. Farming fills in as the core of Indian economy and half of the populace in India survives on the basis of agriculture. The technological acceptance in Indian Farming activities is confined to many reasons which may in-

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clude lack of skilled labor, less trust on technology, etc but IoT is an easy innovation which fills in as an answer for the various issues in agricultural scenarios. It utilizes different sensors which are associated through web and furthermore with the coordination to the satellites it does monitoring of all segments. It is as easy as using smart phones now-a-days. Sometimes the implementation and maintenance cost is also high due to which farmers producing at low scale may hesitate to introduce new technology for farming. IoT has wide range of components comprising of features like high precision, high accuracy, mobility etc. which farmers can use as per need at lower costs (Khattab, 2016). It additionally utilizes different conventions by empowering the IoT to become faster in processing and monitoring capabilities.

The Internet of Things has opened up to a great degree profitable approaches for agriculturists and cultivators to develop soil and raise animals with the utilization of simple to-introduce sensors and a wealth of keen information they offer. Succeeding on this productive develop of the Internet of Things in horticulture, brilliant cultivating applications are making strides with the guarantee to convey day in and day out perceivability into soil and harvest wellbeing, apparatus being used, capacity conditions, animal behavior, and vitality utilization level. The open-source IoT Platform is a significant middleware innovation that permits strolling securely into the IoT enables farms and fields. IoT based smart farming bonds and entwins distinctive sensors, associated gadgets, and cultivating offices by streamlining the advancement of keen cultivating frameworks to the greatest degree conceivable (Kviesis, 2015). This likewise empowers high accuracy crop control, valuable information accumulation and automated cultivating methods. IoT conveys its capacity to improve the scene of current cultivating strategies is completely noteworthy.

IoT sensors are fully equipped to submit agriculturists data about harvest yields, pest infestation, and soil sustenance are significant to generation and offer exact information which can be utilized to enhance cultivating strategies overtime. With a future of proficient, information driven, profoundly exact cultivating techniques, it is certainly to call this kind of cultivating smart. We can expect IoT will always show signs of change the way we develop to grow food with newly generated methods. Regarding natural issues, IoT based smart farming can serve many awesome advantages including more productive water use, or enhancement of available resources. In IoT-based smart farming, a framework is maintained for checking and monitoring the field with the assistance of sensors (temperature, soil moisture, humidity and so on.) and computerizing the agricultural framework (Azaza, 2016). The agriculturists can inspect the farms from their mobile devices. Smart farming based on IoT is profoundly effective when contrasted with traditional approach.

The uses and application domain of IoT based smart farming is not confined to the large cultivation activities but also extends to inspire other developing basic patterns in horticultural as in organic farming, small space cultivation like kitchen gardening, preservation of quality crops and also helps in upgrading the straightforward cultivation processes. IoT based smart cultivation process can give incredible advantages to deal with natural issues, including more productive water utilization, or streamlining of information sources and optimized treatments. Presently, the talk of town is all about the significant contribution and utilizations of IoT based smart farming that are revolutionizing the conventional way of monitoring farms and increasing income in agri-businesses.