**LITERATURE SURVEY**

Agriculture is the main source of food production in our country. In India, agriculture contributes 18% of the country’s Gross Domestic Product (GDP) which employs more than half of the total population. The Indian government has stressed and highlighted the need of innovations to be in above mentioned criteria in agriculture, thus seeks an indication of technology exposure and innovative implementation practices to enhance the productivity. **Smart farming** based on **IoT** technologies enables growers and farmers to reduce waste and enhance productivity ranging from the quantity of fertilizer utilized to the number of journeys the **farm** vehicles have made, and enabling efficient utilization of resources such as water, electricity, etc. Relative humidity is the ratio of actual moisture in the air to the highest amount of moisture that can be held at that air temperature. Irrigation is the fundamental need of agriculture, there are three classic irrigation methods channel irrigation, sprinkler irrigation and Drip Irrigation according to the need of crops these three methods are being used. Sensors are used to collect information from a physical environment. For implementation of wireless communication, industrial areas are necessary because of inaccessibility to remote location, to transmit the information gathered by the sensors and controlling them is not possible every time from a remote location.

Internet Of Things (IoT)is a shared network of objects which can interact with each other provided the Internet connection. IoT plays an important role in agriculture industry which can feed 9.6 billion people on the Earth by 2050. Smart Agriculture helps to reduce wastage, effective usage of fertilizer and thereby increase the crop yield. In this work, a system is developed to monitor crop-field using sensors (soil moisture, temperature, humidity, Light) and automate the irrigation system. The data from sensors are sent to Web server database using wireless transmission. This system will be more useful in areas where water is in scarce. This system is 92% more efficient than the conventional approach.

Climate changes and rainfall has been erratic over decade. Due to this, climate-smart methods called smart agriculture is adopted by many farmers. In the existing system, village farmers may have planted the same crop for centuries, but over period, weather patterns and soil conditions and epidemics of pests and disease have been changed. By using the proposed system approach, which senses the local agricultural parameters, identify the location of sensor, transfer the data crop fields and crop monitoring. Recent researches hypothetically shown the potential of Internet of Things (IoT) to change major industries for a better world, which includes its impact towards the agriculture industry. Farming industry must grasp IoT to feed 9.6 billion of global population by 2050. Challenges such as extreme weather conditions and rising climate change shall be overcome to fulfil the demand for food. Smart farming based on IoT technologies will enable growers and farmers to reduce waste and enhance productivity ranging from the quantity of fertilizer utilized. In this paper, the hardware and software of the IoT for smart farming will be presented besides sharing the successful results.

With the advent of Internet of Things and Digital transformation of rural areas, these technologies can be leveraged to remotely monitor soil moisture, crop growth and take preventive measures to detect crop damages and threats to provide new insights and improved decision making there by enabling farmers to perform “Smart Agriculture”. A solar powered remote management and automation system for agricultural activities through wireless sensors and Internet of Things comprising, to connect with a user device and accessed through the internet network. The data collection unit comprises a set of wireless sensors for sensing agricultural activities and collecting data related to agricultural parameters. This paper is a study and proposal paper which discusses the factors and studies that lead towards this patent pending invention.

Active soil moisture monitoring is an important consideration in irrigation water management. A permanent and readily accessible record of changes in soil moisture can be used to improve future water management decision-making. Similarly, accessing stored soil moisture data in near-real-time is also essential for making timely farming and management decisions, such as where, when, and how much irrigation to apply. Access to reliable communication systems and delivery of real-time data can be affected by its availability near production fields. These IoT systems were designed using low-cost hardware components and open-source software to transmit soil moisture data sensors.

This smart agriculture using IOT system is powered by Arduino, it consists of Temperature sensor, Moisture sensor, water level sensor, DC motor and GPRS module. When the IOT based agriculture monitoring system starts it checks the water level, humidity and moisture level. It sends SMS alert on the phone about the levels. Sensors sense the level of water if it goes down, it automatically starts the water pump. If the temperature goes above the level, fan starts. This all is displayed on the LCD display module. This all is also seen in IOT where it shows information of Humidity, Moisture and water level with date and time, based on per minute. Temperature can be set on a particular level; it is based on the type crops cultivated. If we want to close the water forcefully on IOT there is button given from where water pump can be forcefully stopped. From the control room, data is uploaded into the cloud using ESP8266 Wi-Fi module and after analyzing data, it is sent in the mobile app.