LITERATURE SURVEY

- Ravi, Yerroju, ShubiSahu proposed a system by which one can reduce yield loss due to change in weather conditions.[1] LPWAN technology works best for IoT systems therefore the applications can get rid of power, bandwidth and integration barriers which arethe prominent barriers to other wireless devices. In the farmer sector, the LoRa protocol instead of LPWAN provides more extra benefits such as scale, robustness and security in the development of IoT devices. According to them, a smart farm surveillance model is developed. This project uses the LPWAN communication method to transmit sensor values such as humidity (%),temperature (° C) and soil moisture (%) collected from the transmitter node to the receiving point. The Wi-fi hotspot use MQTT resources to evaluate data on the IBM IoT platform and save the collected data on the IBM cloud database Server.

- Balakrishna and Nageswara Rao proposed that Internet of Things [2] is re-engineering, agricultural business that empowers farmers with a wide range of approaches like accuracy based on coping with farm challenges. IO redesign helps to collect data on climate, humidity, temperature, and soil fertility, online crop monitoring by the farmer to enable weed control, water quality, pest detection, organic disturbances in the field, pruning development, and cultivation. IoT helps farmers to integrate with their farm 24/7 from anywhere in the world. Remote sensor systems help to monitor agricultural land conditions and small scale scanners help to control and create home forms. Remote sensing such as photo and video, remote cameras used. A state-of-the-art mobile phone allows the farmer to stay up-to-date with the latest developments in his or her home country with the help of IoT 24/7 from anywhere in the world. Innovative Internet of Things design can decrease costs and improve the efficiency of conventional planting.

- Peerasak, Nuttapan and Nitagan Proposed a smart technology that can monitor things to increase the yield and overall quality of farms. [3]Hence, the current study aims to develop a smart farm monitoring app offered by the IoT. By this study, an

intelligent capsule prototype has been developed to measure humidity in paddy bags stored at various locations within the warehouse. This smart capsule used the ESP8266 and SHT21 sensor that can transmit data to a Blynk Datastore via Wi-Fi. Arduino IDE helps to write CPP code for a smart controller. The Blynk Integrated mobile app helps to monitor and visualize humidity data collected from a sensor with a digital display. Moisture data obtained was then analyzed and used to improve the upcoming paddy storage system. Moreover, while these capsules loseconnection with the server, a notification is delivered to the respective persons in a periodic manner. Analysis results have shown that clever pesticides and Blynkapp can work well and be considered suitable for smart farming.

- According to Sreekantha and Kavya , IoT technology has the ability to gather data about farm conditions such as climate, humidity, heat and soil fertility, Online monitoring of Crops helps to detect weeds, water quality, insect detection, animal entry, growth of crops and agriculture.[4] IoT helps farmers to connect to their land all the time from any place.Wireless networks with sensors are used to monitor agricultural land's conditions and small controls are used to perform farm processings. To remotely view situations using a photo and video cameras are used. The smart mobile phone gives the farmer the ability to abreast the conditions of his farm using Internet of Things at 24/7 and from anywhere in the world. IoT can decrease costs and improve the productivity of traditional farming.

- Rahul, Sudarshan, Meghana, Nandan, Kirthana, and Sure found high labor charge and water scarcity as two major problems of farming. [5] Considering the huge availability of solar power in India, this paper describes the development of an automated solar based Agricultural bot using IoT that does irrigation work and can helps in distance farming technology. This bot is deployed using the Arduino controller. It reaps sun's energy if it does not irrigate. While doing irrigation work, it moves in a predetermined way for a selected farm, and detects soil humidity level and heat level in normal areas. At all hearing point, information obtained from all the sensors is analyzed temporarily to determine the need for water draining and according to that the land is irrigated. In addition, his bot acts as a transmitter node and forward the data gathered from every sensor to a remote server with the help of a Wi-Fi network. On a remote server, these information is processed using

signal analysis functions such as compression, filtering and prediction. Ideally, the final information is visualized with the help of an interactive dashboard, as per the farmer's need.

- Vaishali, Manish, Kaurav, Vishal and Rohit developed a hardware-integrated application where the farming people can look after and control some major farming parameters and perform real-world monitoring. [6] It provides weather channel research and monitoring of mobile data entry. A brief discussion of smart farm management using IoT and their connections are described. In the 1800s, they owned elevators, a mechanical plow, a chemical fertilizer, and an old tractor that uses gas. Then, in the late 1900's, people began using satellites to organize activities on farms. Internet of Things is likely to enter the next era of agriculture which will lead to a successful path. Modern clever farm is increasingly spreading among cultivators, and technology embedded cultivation is rapidly gaining popularity.The major reason is modern advances in farming in the area of automation, robots and ICI. Many IoT systems are available for agricultural use and agricultural purposes. The use of IoT would help the agricultural area in the future to deploy and produce more advantages. This article provides data on multi-media equipment, data transfer protocol sand sensor systems, that are widely implied to take care of cultivating and specific processes used for this purpose.

- Pravin, A Jacob, T.P. and Asha find a solution to solve the water scarcity problem. [7] to get rid of manual irrigation, it can also be done automatically. The power of the IoT in this sector would help to decrease water loss. In order for temperature and humidity to be measured, sensors are used and based on the results obtained from further analysis. They developed a system that can collect each and every data about the earth and its temperature from various sensors. The data you hear would be sent to the Node MCU and depending on the results, the warning notification will be sent and correct ratio of water will be irrigated to the plant. As well as other data regarding the amount of fertilizer and their serious crop invasion would be detected in the system. The main benefit of this project would be to find out the state of soil at present, moisture and crop condition and the related data would be sent to the farmers as soon as possible.

- Dhoshi and Kumar said that the Internet of Things is the future of agriculture that affects all the farmer's life by automating everything. [8]A collection of networked devices makes

a connection of their own. The new Smart Farming development with the help of Internet of Things, per day changes the method of older convention farming but also insisting it more efficient but also by saving costs for cultivators and decreasing the crop losses. The main goal is to develop the technology that can generate notifications in different areas to intimate the farmers. This product will guide the farmers with real time data (humidity, temperature, soil moisture, UV and IR) collected from farms by that they can take the required steps to be able to cultivate wisely by improving their crop outcome and conserving requirements (fertilizer, water). This proposed product uses Node MCU, DHT11 Temperature sensor, Bread board, Humidity Sensor, SI1145 Digital UV Index / IR / Visible Light Sensor, Soil Moisture Sensor, Jumper cables and real time data feeds that could be monitored on digital display with the help ofBlynk. This would enable the farmer to control his crop during the new planting season.

- Balaji, Nandhini, Mithra, Priya and Naveena proposed that to improve crop production, it is important to keep track of the natural conditions in the field area.[9] Limits to be carefully considered to improve yield characteristics of the soil, weather conditions, humidity, temperature, etc., IoT would help in a few real-time applications.Application of IoT and sensory networks in the farming industry improve the method of cultivation. Remote Crop Management using IoT supports farmers to keep touch with their field 24/7 from any part of the world. Different sensors could help to monitor and gather data about agricultural land conditions. As a whole, the entire farm status is updated to the farmer via GSM.

- Lokhande, Bhongade, Meshram, Khope, Kothe, Seganwar, Wanjari, Gayakwad, Dhole developed a project that proposes and demonstrates an arduino-based and economically less and fully managed irrigation product [10]. This system is designed to address different environmental things such as humidity, amount of water and temperature needed by plants with the help of sensors such as water flow detecting sensor, heat detecting sensor and humidity sensor. Data is gathered and received by the microcontroller that could be connected to a collaborative dashboard that shows current prices and standard ranges for a various features needed by the crop. That would permit the user to monitor remote water pumps on the site and meet standard prices that can help the farmer harvest more high valued crops. In India, cultivation is done in the ancient way, the cultivator’s crop grows crop without any knowledge of the content of the land and the quality of the soil. This will

enable the farmers to not to get enough profit from farming. Because of human intervention, there is a possibility of manual error so that cultivators can get the wrong information. Resulting in a need for a fully automatic soil tester and yield production system.