DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

IBM NALAIYA THIRAN PROJECT

IDEATION PHASE

Date	19 September 2022
Team ID	PNT2022TMID03479
Project Name	IoT Based Smart Crop Protection System for Agriculture
Maximum Marks	2 Marks

Customer Problem Statement

The demands of modern agriculture, which demands high-yield, high-quality, and efficient output, are incommensurable with those of traditional agriculture and its linked sector. In order to estimate the best possible productivity and crop suitable for the very specific land, it is crucial to modernise existing methods and use information technology and data collected over a period. Access to high-speed internet, mobile devices, and dependable, low-cost satellites (for images and positioning) are only a few of the major technologies defining the precision agriculture trend. One of the most well-known IoT applications in the agricultural industry is precision agriculture, and many companies are using this method globally.

Manufacturing, healthcare, and the automotive industries have all seen significant IoT adoption. When it comes to food production, transportation, and storage, it provides a wide range of solutions that can increase India's per capita food availability. sensors that provide data on the condition of the soil's nutrients, pest infestation, moisture levels, and other factors that can be utilised to gradually increase crop yields.

Here are few problems for the agricultural and associated industries where the Internet of Things will be useful:

- *Tea Industry*
  - Tea production is rejected if pesticides and fertilisers are used in excess of what is necessary.
  - Plucking coarse leaves will lower the quality of the tea that is produced.
  - Tea plants are frequently pruned to maintain their perfect shape. However, excessive pruning causes the plant to die.
- *Livestock*

  IoT applications can help large farm owners gather information about the whereabouts, comfort, and health of their cattle. They can use this information to identify unwell animals and separate them from the herd to stop the spread of disease. As ranchers can locate their cattle with the use of IoT-based sensors, it also reduces labour costs.

- *Eco-Harvester for fruits*

  In order to minimise harvesting loss, the Eco-harvester injects an artificial PME enzyme activator that enables only the mature fruits to be detached from the branches of the tree, leaving the immature ones behind and giving them time to mature. To monitor when and which area of the field is prepared for the procedure, IoT applications may be employed.

- *Smart Greenhouses*

  A technique that aids in increasing the yield of fruits, vegetables, and other crops is greenhouse farming. In greenhouses, the environmental variables are managed manually or using a proportional

control system. IoT applications can be very helpful to farmers that employ greenhouse technology and can simplify and ease their labour.

- *Cold Chain*

Agriculture produce waste can be considerably decreased by using improved storage monitoring systems and cold chain monitoring tools. IoT applications can be used to enhance storage and delivery procedures while extending the produce's shelf life. There is not much need for human involvement in doing this.

- *Fish-farming and breeding*

The consumption of fish in Assam is very high. But the fish-farming and breeding techniques haven't improved much to meet the growing demand of fish in the region. To increase the productivity and reduce input cost, IoT application to monitor dissolved oxygen, pH indicator, Ammonium nitrate indicator as well as automatic fish feed system can help reduce manpower and improve quality & quantity.

We need to find a proper solution for our problem and work in team to solve the tough situations faced by our farmer brothers.