The practice of agriculture goes way back in the history. It began independently in different parts of globe in in at least 11 separate centres of origin.[7] Over the course of history, the agriculture evolved and now we use mechanized equipment and hybrid seed to get the maximum yield from the land. But still there are losses that occur during the whole process of harvest till getting the product to end user.

The field of artificial intelligence and machine learning has greatly revolutionized the world. From face detection to self-driving cars, use of AI and ML has fast tracked the research and development aspect of applications. In the field of agriculture, machine learning is used for the precision farming and predictive analysis.

Precision Farming is an approach where inputs are utilised in precise amounts to get increased average yields, compared to traditional cultivation techniques [1]. This approach is required as to increase agriculture productivity, prevent soil degradation due to cultivating same crop over and over again, reduce use to chemical application for the crop production, efficiently use the water for irrigation, changing the socio-economic status of farmers and many more.

Predictive analytics is a branch of advanced analytics that makes predictions about future outcomes using historical data combined with statistical modelling, data mining techniques and machine learning. It is employed to find patterns in this data to identify risks and opportunities.[2] for agricultural purposes, it is employed to find the cuts in the cost, improving the efficiency of farming, for sustainable farming, optimizing the supply chain management and many more. This branch of analytics can be game changer for agriculture business as it removes the guess work for forecasting yields and helps in assessing risk.

In this manuscript, we put forward an approach to tackle the issue of using the right amount of fertilizer and pesticide for different crops on a size of land, identifying the pest damage and disease through image detection and suggest proper diagnosis for the same, providing Fertilizer and Irrigation Recommender for different crops, soil predictor to check the fertility of land, cultivation tips with weather report and yield prediction for the crop harvest. For the calculating the right amount of fertilizer and pesticide for different crops, data on **[kaha se data liya aur kese kar rahe ho jo vo likh raha hai isme 2-3 line likh dena idhar bracker ke andar gujju dekh lega].** Images from different **[pichle wale me jese hai vese]** to identify the damage done on the crop by the pests and provide an diagnsos for the same. As different crop requires different amount of water and fertile, dataset of **[pichle wale me jese hai vese]** and in a proper format, the values would be given to the farmer for cultivation. Real time data from the soil would be used and compared with the model made using **[pichle wale me jese hai vese]** and the status of the soil will be shown. From all the previous data and also from the initial data taken about the land would be used to predict the crop yield and lastly a recommendation system about proper farming techniques and weather forecast system would be provided.

The rest of this paper is organized as follows:

**References**

[1] <https://www.downtoearth.org.in/blog/agriculture/why-farmers-today-need-to-take-up-precision-farming-64659>

[2] <https://www.ibm.com/analytics/predictive-analytics>

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[7] Larson G, Piperno DR, Allaby RG, et al. Current perspectives and the future of domestication studies. Proc Natl Acad Sci U S A. 2014;111(17):6139-6146. doi:10.1073/pnas.1323964111