S.NO	SOURCE	TITLE	YEAR	METHODOLOGY	MERITS/ DEMERITS	OUTCOMES
1	IJESC	"Crop Yield Prediction and Fertilizer Recommendation" Varshini Naresh, Vatsala. B.R , Dr. C. Vidya Raj	2020	The problem of predicting the crop yield is formalized as a classification rule, where Naive Bayes and K-Nearest Neighbor methods are used.	**MERITS:** No need to analyze manually.	This project results with the precise and accurate crop yield and deliver the end user
2	International Journal of Computer Sciences and Engineering (JCSC)	"A Machine Learning Based Crop and Fertilizer Recommendation System" SupriyaM.S. ,Nagarathna	2021	Supervised learning algorithms used for the recommendations such as "Naïve Bayes" and "K nearest neighbour" algorithm.	**MERITS:** Works efficiently, Generates faster results and also work for all formats of data	Recommends suitable Crop and the suitable Fertilizer based on the soil features and environment conditions
3	European Journal of Molecular & Clinical Medicine	"Agro based crop and fertilizer recommendation system using machine learning" Preethi G, Rathi Priya V, Sanjula S M, Lalitha S D, Vijaya Bindhu B,	2020	Crop Prediction Using ArtificialNeural Networks SupportVector Machines Fertilizer Recommendation (Natural Language Processing)	**MERITS:** Helps to predict the crops that can be recommended suitable for the soil. **DEMERITS:** This application is not available in local languages	The selection of the best crop for the soil and the sowing of it to provide the full yield
4	IJIRT	"Crop and Fertilizer Recommendation and Disease diagnosis system using Machine Learning and Internet of Things" taranjeet singh , saurabh anand , anmol sehgal , siddhesh mahajan , prof. pranoti kavimandan	2022	An IOT device that will examine the quality of soil and can also detect crop diseases on scanning the leaves of the crops a device which gives pH value and we will estimate Nitrogen (N), Phosphorus (P) and Potassium (K) from the pH of that soil.	**MERITS:** It detects many diseases in crops and recommends appropriate treatments to help them recover. **DEMERITS:** Accuracy is less.	It gives farmers the vital information about farming techniques to assist them enhance crop productivity

5	IEEE	"Leaf Disease DetectionAnd FertilizerSuggestion" Indumathi.R, Saagari.N, Thejuswini.V, Swarnareka.R	2020	K-Medoid clustering and Random Forest classification algorithms to detect the leaf diseases	**MERITS:** Efficient in finding the disease accurately. **DEMERITS:** Accuracy of about 80%	Health monitoring and disease detection of plant is critical for sustainable agriculture.
6	IEEE	"Farmer's Assistant: A Machine Learning Based Application for Agricultural Solutions" Shloka Gupta, Nishit Jain, AkshayChopade	2022	EfficientNet deep learning model Random Forest model for crop recommendation based on the soil (N, P, K, pH) Rule-based classification system for fertilizer recommendation	**MERITS:** User-friendly web application system	A system which helps farmers detect plant disease, recommend the ideal crop for their soil and recommend fertilizers for them to get the best yield possible.
7	International Journal for Research in Applied Science & Engineering Technology (IJRASET)	"Plant Disease Detection and Fertilizer Suggestion" Apurva Save, Aksham Gupta, Sarthak Pruthi. DivyanjanaNikam, Prof. Dr. Shilpa Paygude	2022	Uses K-Medoid clustering and Random Forest classification methods	**MERITS:** Successfully interprets various Diseases. **DEMERITS:** It is limited to just one crop	This system uses plant leaf images to detect different types of disease in tomato crops, and also provides appropriate fertilizer suggestions
8	International Journal of Engineering Trends and Applications (IJETA)	"Soil Based Fertilizer Recommendation System for Crop Disease Prediction System", Dr.P. PandiSelvi, P. Poornima	2021	Uses ANN and Random Forest classification methods, SVM and Ensembling technique	**MERITS:** Helps the farmer to yield right crop at the right time **DEMERITS:** Limited to specific crops	Recommends suitable Crop and the suitable Fertilizer based on the soil
9	International Journal of Engineering Applied Sciences and Technology	"Prediction of Crop Yield And Fertilizer Recommendation using machine learning Algorithms" Devdatta A. Bondre, Mr.SantoshMahagaonkar	2020	Algorithms like Support Vector Machine and Random Forest on agriculture data and recommends fertilizer suitable for every particular crop are used.	**MERITS:** Recommends fertilizer suitable for every particular crop.	

10	Indonesian Journal of Electrical Engineering and Computer Science	"Predicting fertilizer treatment of maize using decision tree algorithm" Nusrat Jahan, RezviShahariar	2020	Decision tree algorithm for machine learning and ground coverage percentage for fertilizer treatment.	**MERITS:** 93% accuracy	Fertilizer treatment of a maize field based on the ground cover percentage
11	IEEE	"Plant Disease Detection and classification using CNN Model with OptimizedActivation Function" S.YegneshwarYadhav, T.Senthilkumar, S.Jayanthy. J.Judeson Antony Kovilpillai	2020	New mathematical activation function is developed and compared with existing activation function to improve accuracy and performance of the system.	**MERITS:** 95% accuracy	By using K meansclustering the affected area % andthe optimized amount of fertilizers is suggested to improve the crop yield.
12	TEST	"Designand implementationof Fertilizer Recommendation System for Farmers" Dr.S.UshaKiruthika, Dr.S.Kanaga Suba Raja, S.R.Ronak, S.Rengrarajen, P.Ravindran	2022	Soil analysis is done using an IoT based device utilizing NPK sensor and the datas are collected from the sensor	**MERITS:** Nourish the soil for the crop selected. NPK values can be selected	This fertilizer recommendation system opens up new opportunities in the field of robotics to create autonomous mobile robots to spray appropriate fertilizers.
13	International Research Journal of Engineering and Technology (IRJET)	"Plant Leaves Disease Detection" Ayushi Pandey	2021	Introducing a hybrid model to extract contextual information of leaves using CNN and DN.	**MERITS:** Different sizes of convolution can also be used by increasing the number of epochs	RELU Activation function and max pooling are implied and this method effectively recognizes the leaf diseases.

15	IEEE	"d-Crop: A Deep Learning based framework for accurate prediction of diseases of crops in smart agriculture" Vishal Pallagani, Vedant Khandelwal, Bharath Chandra, VenkannaUdutalapally, Debanjan Das	2020	Using computer vision technologies and Deep learning methods for assisting prediction of disease of crops	**MERITS:** 99.2%accuracy Can identify 14 crop species and 26 diseases	A smartphone app is built using the trained disease prediction model and the farmers can capture the crop images using the app, analyze the diseases and thereby demonstrating the feasibility.
19	ResearchGate	Plants Diseases Prediction Framework : A Image – Based System Using Deep Learning	2022	Framework for disease and healthiness detection in plants using SVM, KNN, Random Forest, Logistic Regression, CNN.	**MERITS:** The Random Forest has the highest accuracy of 97.12% among machine learning classifiers.CNN has the highest accuracy of 98.43% among deep learning models.	This framework can be used to display the prediction result in a web or desktop application.
20	IEEE	Leaf Disease Detection and Fertilizer Suggestion	2020	This system uses K-Medoid clustering and Random Forest algorithm to produce more accuracy in the detection of disease in the leaf.	**MERITS:** The accuracy of the system stands high with the ability of detecting the disease. The time taken for computing the disease in the infected leaf is reduced in this system and the memory consumption is also manageable	The system stands for the betterment of farmer's welfare thereby increasing the production and the economy of the country.