

LITERATURE SURVEY

[1] Establishing a Scientific Basis for Fertilizer Recommendations for Wheat in China, Limin Chuan, Wheat (*Triticum aestivum* L.) is one of the important cereal crops in China, and fertilizers have played a critical role in increasing wheat yields. However, in pursuing food security in China, the over-application of N fertilizer has become a common practice in wheat production systems, which has led to nutrient imbalances, inefficient fertilizer use, and large losses to the environment (Ju et al., 2009). Having access to a science-based fertilizer recommendation method is critical to improving fertilizer use efficiency in a high-yielding wheat crop, especially for smallholder farmers in China. Nutrient Expert® for Wheat (NE) is a decision support system that has been developed by the International Plant Nutrition Institute (IPNI) to support advisers who make fertilizer recommendations to farmers. The science behind this fertilizer recommendation method is based on yield response and AE. This is an alternative approach developed for use when soil testing is limited or not available. The method uses soil indigenous nutrient supply in an attempt to avoid excessive nutrient accumulation in the soil and has been applied with success in rice, maize, and wheat crops in some Asian countries (Witt et al., 2007; Buresh et al., 2010; Pampolino et al., 2011). This is a unique approach as it also considers N, P, and K interactions. The determination of fertilizer N requirements from NE has been modified to use a target AE and an estimation of yield response to applied N (Witt et al., 2007; Pampolino et al., 2011).

Problem Identified: Inappropriate application of fertilizers has become a common phenomenon in wheat production systems in China. This has led to nutrient imbalances, inefficient fertilizer use, and large losses to the environment

[2] CNN-based Leaf Disease Identification and Remedy Recommendation System, Suma V, this paper aim to help the farmers to protect their farms from any kind of pests and disease attacks and eliminate them without disturbing the decorum of the soil and untouched parts of other plants.[4] Mostly in India, farmers use manual monitoring and some apps which have huge database limitations and are only bound to the detection part. Since Prevention is better than cure, this paper aims to detect attacks of pests/diseases in the future thereby making farmers prevent such attacks. Technology has laid its influence on developing farms and agro-based industries. Today, it is possible to grow crops in deserts by using technology. Technology has dived into depths in the agriculture sector. Automation technology is the present most demanded tool in agriculture. Many companies have come up with the latest solutions in Machine Learning, Artificial Intelligence transforming agriculture into Digital Agriculture, etc. Many tests have proved that deploying the technology on farms, will increase crop yield and farmer's revenue thereby. This paper discusses and tests Deep Learning technology implementation in agriculture.

Problem Identified: Farmers lack the knowledge of disease and hence they produce less production. Kisan call centers are available but do not offer service 24*7 and sometimes communication too fails. Farmers who are unable to explain the disease properly on call need to analyze the image of the affected area of the disease.

[3] Prediction of Crop Yield and Fertilizer Recommendation Using Machine Learning Algorithms,

Devdatta A. Bondre, Mr.Santhosh Mahaganokar, This paper proposed and implements a system to predict crop yield from previous data. This is achieved by applying machine learning algorithms like Support Vector Machine and Random Forest to agriculture data and recommending fertilizers suitable for every particular crop. The paper focuses on the creation of a prediction model which may be used for future prediction of crop yield. It presents a brief analysis of crop yield prediction using machine learning techniques. It aims to improve the yield of the crop in several ways and recommends fertilizer suitable for every particular crop. Any farmer is interested in knowing how much yield he is about to expect. In the past, yield prediction was performed by considering a farmer's experience on a particular field and crop. The yield prediction is a major issue that remains to be solved based on available data. Machine learning techniques are the better choice for this purpose. Different Machine learning techniques are used and evaluated in agriculture for estimating the future year's crop production.

Problem Identified: Nowadays, modern people don't have awareness about the cultivation of crops at the right time and the right place. Because of these cultivating techniques, the seasonal climatic conditions are also being changed against the fundamental assets like soil, water, and air which lead to insecurity of food.

[4] Coconut Disease Prediction System Using Image Processing and Deep Learning Techniques,

Dhapitha Nesarajan, Lokini Kunalan, Coconut production is the most important and one of the main sources of income in the Sri Lankan economy. The recent time it has been observed that most coconut trees are affected by diseases that gradually reduce the strength and production of coconut. Most of the tree leaves are affected by pest diseases and nutrient deficiency. Our main intensive is to enhance the livelihood of coconut leaves and identify the diseases at the early stage so that farmers get more benefits from coconut production. This paper proposes the detection of pest attack and nutrient deficiency in the coconut leaves and analysis of the diseases. Coconut leaves monitoring has taken place after the use of pesticides and fertilizer with the help of the finest machine learning and image processing techniques. Rather than human experts, automatic recognition will be beneficial and the fastest approach to identify the diseases in the coconut leaves very efficiently. Thus, in this project, we developed an android mobile

application to identify the pests by their food behaviors, pest diseases, and nutrition deficiencies in the coconut trees. As an initial step, all datasets for image processing technology met pre-processing steps such as converting RGB to greyscale, filtering, resizing, horizontal flip, and vertical flip. After completing the above steps, the classification was performed by analyzing several algorithms in the literature review. SVM and CNN were chosen as the best and most appropriate classifiers with 93.54% and 93.72% of accuracy respectively. The outcome of this project will help the farmers to increase coconut production and undoubtedly will make a revolution in the agriculture sector.

[5] Soil Based Fertilizer Recommendation System for Crop Disease Prediction System, Dr.P. Pandi

Selvi , Agriculture is the main aspect for the economic development of a country. Agriculture is the heart and life of most Indians. But in recent days, the field was going down due to various natural calamities. In order to overcome the problem, various issues in this field need to be addressed. The soil type, fertilizer recommendation, diseases in plants and leaves. All these features need to be considered. Our proposed system was organized in such a way, to analyze the soil type, diseases in the leaves and finally to recommend the appropriate fertilizer to the farmers, that may be of great help to them. Plant disease, especially on leaves, is one of the major factors that reduce the yield in both quality and quantity of the food crops. Finding the leaf disease is an important role to preserve agriculture. Smart analysis and Comprehensive prediction model in agriculture helps the farmer to yield right crop at the right time. The main benefits of the proposed system are as follows: Yield right crop at the right time, Balancing the crop production, control plant disease, Economic growth, and planning to reduce the crop scarcity. Hence to Detect and recognize the plant diseases and to recommend fertilizer it is necessary to provide symptoms in identifying the disease at its earliest. Hence the authors proposed and implemented new fertilizers Recommendation System for crop disease prediction.

Problem Identified: Coconut is one of the most valuable crops for many years. In the past few years, coconut trees have been affected by many diseases which reduce the productivity of coconut cultivation. Several factors were attributed to this situation, including low yield, pests and pest diseases, and nutritional deficiency. Nutrient deficiency is one of the recent problems with coconut trees. Therefore, in recent years, it has been observed that these types of diseases reduce the growth of trees and the economic side of the country. Hence, the planters must find out the ideal solution to protect their growth.

TABLE OF ARTICLES

S.NO	ARTICLE NAME	AUTHOR NAME	PUBLISHED YEAR	DRAWBACKS
1	Establishing a Scientific Basis for Fertilizer Recommendations for Wheat in China	Limin Chuan, Ping He, Mirasol F. Pampolino, Adrian M. Johnston	2013	It deals only with wheat crop diseases prediction
2	CNN-based Leaf Disease Identification and Remedy Recommendation System	Suma V, R Amog Shetty, Rishab F Tated, Sunku Rohan, Triveni S Pujar	2019	It deals only with disease detection for crops
3	Prediction of Crop Yield and Fertilizer Recommendation Using Machine Learning Algorithms	Devdatta A. Bondre, Mr. Santosh Mahagaonkar	2019	It deals with crop yield prediction only using machine learning techniques
4	Coconut Disease Prediction System Using Image Processing and Deep Learning Techniques	Dhapitha Nesarajan, Lokini Kunalan, Mithun Logeswaran	2020	It deals only with coconut crop disease prediction
5	Soil-Based Fertilizer Recommendation System for Crop Disease Prediction System	Dr.P. Pandi Selvi, P. Poornima	2021	It recommends only based on soil type

REFERENCES

1. Limin Chuan, Ping He, Mirasol F. Pampolino, Adrian M. Johnston, Jiyun Jin, Xinpeng Xu, Shicheng Zhao, Shaojun Qiu, and Wei Zhou, (2013). “Establishing a Scientific Basis for Fertilizer Recommendations for Wheat in China”.
2. Suma V, R Amog Shetty, Rishab F Tated, Sunku Rohan, Triveni S Pujar, (2019). “CNN-based Leaf Disease Identification and Remedy Recommendation System”.
3. Devdatta A. Bondre, Mr. Santosh Mahagaonkar, (2019). “Prediction of Crop Yield and Fertilizer Recommendation Using Machine Learning Algorithms”.
4. Dhapitha Nesarajan, Lokini Kunalan, Mithun Logeswaran, (2020). “Coconut Disease Prediction System Using Image Processing and Deep Learning Techniques”.
5. Dr.P. Pandi Selvi, P. Poornima (2021). “Soil Based Fertilizer Recommendation System for Crop Disease Prediction System”