FERTILIZERS RECOMMENDATION SYSTEM FOR DISEASE PREDICTION

ABSTRACT

Agriculture is the most important sector in today's life. Most plants are affected by a wide variety of bacterial and fungal diseases. Diseases on plants placed a major constraint on the production and a major threat to food security. Hence, early and accurate identification of plant diseases is essential to ensure high quantity and best quality. In recent years, the number of diseases on plants and the degree of harm caused has increased due to the variation in pathogen varieties, changes in cultivation methods, and inadequate plant protection techniques.An automated system is introduced to identify different diseases on plants by checking the symptoms shown on the leaves of the plant. Deep learning techniques are used to identify the diseases and suggest the precautions that can be taken for those diseases.

LITERATURE SURVEY

Yan Guo, Jin Zhang, Wei Wang [1] Plant Disease Identification Based on Deep Learning Algorithm in Smart Farming Published 18 August 2020,Computer Science,Discrete Dynamics in Nature and Society.

M Pawar, G Chillarge [2] Farmers can maximize crops yield by knowing proportion of nutrients present in the soil. Soil toxicity affects the soil nutrients which indirectly affects crops health. The proposed system predicts the level of toxicity present in the soil and makes farmer aware about it. Many farmers are depending on rainfall which is the one of the factor for poor growth and decreases crops yield. Thus the proposed system recommends the farmer about the crop, fertility of soil, level of toxicity and water supply.

UsmanAhmeda Jerry Chun-We [3] A nutrient recommendation system for soil fertilization based on evolutionary computation. An improved GA is presented for nutrient recommendation in time-series sensor data.An exploration is used to speed evolution process and increase convergence rate.An exploitation is used to optimize the parameters for achieving maximum yield.

Devdatta A. Bondre [4] prediction of crop yield and fertilizer recommendation using machine learning algorithms. This paper aims to improve the yield of the crop in several ways and recommends fertilizer suitable for every particular crop.

Shivnath Ghosh, **[5]** In this paper machine learning system is divided into three steps, first sampling (Different soil with same number of properties with different parameters) second Back Propagation Algorithm and third Weight updating.

P.Vinciya, **[6]** This paper mainly focused on analyzing the agriculture analysis of organic farming and inorganic farming, time cultivation of the plant, profit and loss of the data and analyzes the real estate business land in a specific area. This work goes for finding reasonable information models that accomplish a high precision and a high consensus as far as yield expectation abilities.

Zhihao Hong, **[7]** This paper proposes an information driven approach on structure PA answers for gathering and information demonstrating frameworks. Soil dampness, a key factor in the yield development cycle, is chosen for instance to exhibit the viability of our information driven methodology. On the accumulation side, a responsive remote sensor hub is built up that expects to catch the elements of soil dampness utilizing soil dampness sensor. The prototyped gadget is tried on field soil to show its usefulness and the responsiveness of the sensors. On the information examination side, a one of a kind, site-explicit soil dampness 2w Machine and Relevance Vector Machine. The structure predicts soil dampness n days ahead dependent on a similar soil and natural characteristics that can be gathered by our sensor hub.

Tanmay Thorata B.K.Patle **[8]** Intelligent insecticide and fertilizer recommendation system based on TPF-CNN for smart farming . The combination of two major things required in farming in one system is spraying proper insecticides and adding the needed fertilizer amount to the soil.Efficient approach for controlling the overuse of insecticides and fertilizers in farming.

Dr.P.Pandi Selvi , P.Poornima [9] Mostly, fertilizers were recommended based on the nutrients present in the soil. Hence while preferring fertilizer the farmer needs to consider the soil type, the crop and the pesticides. On using chemical fertilizer the quality or the nutrients present in the soil was degraded, that promotes a decrease in the nutritive value of the soil. Another major factor to be considered is the disease in the crop cultivated. Identifying the disease in the plants and preferring appropriate fertilizer by the agriculturist to the farmers plays a major role. In earlier days, all these process were carried out manually. But with the advancement of technology the entire system was digitalized. But even then there exist various problems that need careful attention. On considering all these the authors proposed a new framework that can be used in real life, which enables the farmers in solving certain problems.

Komal Bodake [10], developed a soil based fertilizer recommendation system that can be used for regional soil analysis. The advanced farming involves various techniques as IOT, Cloud computing and data mining. This helps the farmers to gather details regarding the fertilizers he can use from his soil sample. The tool was constructed insuch a way involving regional languages. This makes it understandable to all the farmers and yield maximum production.

Pradeepthi Duggaraju [11] In recent years, the number of diseases on plants and degree of harm caused has increased due to the variation in pathogen varieties, changes in cultivation methods and inadequate plant protection techniques. An automated system is introduced to identify different diseases on plants by checking the symptoms shown on the leaves of the plant. Deep learning techniques are used to identify the diseases and suggest the precautions that can be taken for those diseases.

S. Khayyo, J. Pérez-Lotz, C. Ramos [12] Application of the Nmin nitrogen fertilizer recommendation system in artichoke in the valencian community. Three fertilizer rates were applied to obtain three levels of available soil mineral nitrogen, the latter being defined as the amount of soil mineral nitrogen (N_{min}) present in soil at planting time, to the depth of 60 cm, plus the N addition by fertilizer, irrigation water and rainfall. The intended treatments were: N_2, where available N_{min} = 280 kg N ha^{-1}; N_1 = 182 (35% less than 280 kg N ha^{-1}); N_3 = 378 (35% more than 280 kg N ha^{-1}). The available N_{min} values obtained were somewhat different from the intended values mainly due to the high N_{min} in soil at planting time in the experimental plots. Total yield varied between the different fields but was not significantly affected by available N_{min} in any field. In fields A and B there was no significant increase in total yield for available N_{min} values higher than 234 and 267 kg N ha^{-1}, respectively. In field C, yield did not increase significantly for available N_{min} values higher than 239 kg N ha^{-1}. These results suggest that under the given experimental conditions, the available Nmin required by artichoke is equal to or less than around 270 kg N ha^{-1}. In fields A and C, higher levels of available N_{min} resulted in higher values in soil N_{min} at harvest in the 0-60 cm soil layer, but no effect was observed in field B.

M. S. Suchithra & Maya L. Pai [13] Support Vector Machines (SVM) are advancing rapidly in the field of machine learning due to their enhancing performance in categorization and prediction. But it is also known that the performance of SVM can be affected by different kernel tricks and regularization parameters like Cost and Gamma. The polynomial kernel seems to be more suitable for performing multiclass SVM classification for the dataset used here. In this study, we propose an improved sigmoid kernel SVM classifier by adjusting the cost and gamma parameters with which a better performance can be achieved. The study is conducted for a multiclass soil fertilizer recommendation system for paddy fields.