DOMAIN : ARTIFICIAL INTELLIGENCE

TITLE : FERTILIZER RECOMMENDATION SYSTEM FOR DISEASE PREDICTION

Team Id: PNT2022TMID38677

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Team Title: fertilizers recommendation system for disease prediction

Members List: 4

INTRODUCTION		SURVEY BODY OF REVIEW					CONCLUSION		
Year	Title	Keywords	Problem Definition	Methodology (Algorithm, Protocol…Etc)	Input Parameters	Result	Advantages	Disadvantages/ Drawbacks	Research Gap/Research Question
1. 2022	soil - based,field -specific fertilizer recommen dation are a pipe- dream	1.soil analysis 2.laborator y 3. errors, quefts, 4.soil nutrients agronemic efficiency	For soil disease prediction by using Quantitativ e evaluation of fertility of tropical soil	chemical analysis and sampling error two components soil ph,soil organic carbon	To implement Single soil sample needed	overall averag e cv values for sample s for ph	1.avoid risk 2.long term historical	1.It cover limit environment	Requirement of best indicator of local soil
2. 2022	application of ammonium fertilizers recovered	1.circular economy 2.sustainabi lity 3.ammonia	For nitrogen is essential for crop growth	Electrochemical Used to reject first ammonium And remove Water	the nitrogen into waste water have been broken	separat ion of acid ordere d	1.crop growth 2.reduce nitrogen growth	1.most cost associated	To research growth of cultivation underlying this work is available cooperation

	by an electroche mical system	4.re-using nutrients 5.nitrogen recovery				accordi ng total nitroge n concetr ation			
3. 2022	nutrient manageme nt may reduce global warming potential of rice cultivation in subtropical india	1.global warming potential 2.greenhou se gas,crop modeling, 3.food security	For indicated better nutrient manageme nt practice in rice cultivation	crop models, cultivatuion and validation gas sampling	rice production	land use of eco system	1.better nutrient 2.rice cultivation	1.rising contration	To find the atmospheric methane,co2 productivity
4. 2022	soil health and its relationshi p with food security and human health to meet the sustainable developme nt goals in india	1.soil function 2.sustainabl e 3.developm ent goals 3.soil quality 4.critical zone 5.soil education	For abilities to contribute global food security	soil nutrient status organic carbon health	basic soil properties	soil reasear ch	1.clean water 2.secure food 3.livehoods	1.shift of cultivation 2.poor soil quality	To targeted nutrients available in soil

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5. 2021	impacts of soil fertility management on product and economics of rice and folder intercropping systems under rainfed conditions in odisha,india	1.rice based intercropping system, 2.fodder cultivation, 3.nutrient management, 4.rice and cowpea fodder 5.intercroping system	optimum conditions for plants growth	soils fertility status	fertility parameters across soils groups	soil groups in different tombel area	1.reduce toxicity	1.stimulate soil 2.biological activity	this research did not receive any specific grant from funding agencies

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Ms. Dhatchayani .S									
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6. 2022	A smartphone based plant disease detection and treatment recommendation system using machine learning technique	1.Smartphone 2. Plant diseases 3.Recommender system 4.Treatment 5.Machine learning 6.Classification	Plant disease identified by current technology by implemented user's friendly smartphone based plant disease treatment recommender by using machine learning techniques	capture the image then classified the image recommended treatment for the plant disease	Image, API CNN, ANN+CNN, classified the image, recommended system model	Smartphone base plant diseases treatment recommended using ML techniques	1.Using smartphone taking the image select particular part of image identify the disease and recommended the treatment	1.Already fixed treatment for particular diseases only can recommended	Recommend the treatment for the classified disease using content base filtering recommender system technique
7. 2022	An Artificial intelligence solution for crop recommendation	1.Deep learning 2.Deep neural network 3.Machine learning 4.classifiers NPK Predictions	It To predicting the fertility of the soil and also to predict the right crops to be grown in soil	classifying multiple crop AI prediction module to predict the best crop	classifier crop, collect the data set, fertilizer data set, predict the right crop for the disease	Minimum level of accuracy will predict base on the soil properties	1.Self learning 2.Ability 3.Robustness 4.Flexibility And many more things	1.It Show the maximum level of crop yield	predicting the right crops and help out the farmers to choose the most appropriate crop for his land based on the soil properties.

No. / Year	Title	Keywords	Description	Modules / Datasets	Terms	Methodology	Result	Output	Future Scope
8. 2021	Soil Analysis and crop fertility prediction using machine learning	1.fertility 2.crop yield prediction 3.soil chemical feature 4.ANN 5.machine learning	They are different type of soil properties know the characteristics @properties for various soil type understand it which crop sow in certain soil type using machine learning	1. Soil dataset 2. Crop dataset 3. Yield dataset 4. Training dataset 5. testing dataset	collection of dataset, known properties at characteristics of soil type, identity crop sow in certain soil type	Predicting the soil fertility@crop yield with type of the crop can grown on fertile soil	1.This completes the one epoch multiple epoch are running accuracy reached the optimal value	1.Predicting the Crop sow certain soil type	Providing fertilizer and also data from another region will be addedto make this model more reliable and more efficient usage
9. 2019	Crop suitability /fertilizers recommendation using data mining technique	1.NPK 2.K-Means Clustering 3.Fertilizer Recommendation 4.Random Forest Algorithm 5.Ontology	Predict the suitable crop for the field under the base on the regions and climate	Crop recommendation Fertilizer recommendation	farmer, Server, Fertilizer recommendation system, ontology	Recommendations of suitable crop in the field for crops to data stored in ontology	1.Changes of climate base on disease will occur recommendedtreatment by using two data mining technique for it and store the data in ontology	1.Approximate fertilizer quantity and type of crop will grown or planted	Android application will be developed in regional language

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10. 2019	Fertilizer Recommendation system for disease prediction in tree leave	1.Disease Prediction 2.Graph Cut Algorithm 3.Guided Active Contour method, 4.Leaf segmentation 5.Leaf Feature Identification.	For Testing the leave issues for quality and quantity of the food crops using SVM approach	The digital camera(or) are take image of different types & identify the affected area in leaves especially need to predict both quality &quantity of leaf model	Segment of leaf boundary, classification affected part, image acquisition testing diseases suggested the fertilizer	Base on SVM to classify tree leave identify the disease and suggest the fertilizer	1.It gives better result when compared to existing CNN yield more productivity	1.It takes more time consumption	To identify the disease that affect the various plant organs such as stems & fruits

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Ms.Saraswathi.K									
Year	Title	Keywords	Problem Definition	Methodology (Algorithm, Protocol…Etc)	Input Parameters	Result	Advantages	Disadvantages/ Drawbacks	Research Gap/Research Question

No. / Year	Title	Techniques	Objective	Model	Input	Methodology	Advantages	Disadvantages	Future Scope
11. 2022	Intelligent insecticide and fertilizer recommendation system based on TPF-CNN for smart farming	1. Artificial Intelligence 2.Mathemati cal model3.Preci sion Farming 4.Sensor technology	To enhance agricultural production and productivity by offering smart technology which will recommend insecticides and fertilizers for crops and in the soil using TPF CNN dual operator approch	Temporal Pos Feature-Convetional Neural Network (TPF-CNN) model, Support Vector Machine(SVM), ArtificalNeural Network(ANN)and , K-Nearest Neighbour (KNN)	Plant leaf Image, Soil nutrients	Based on soil nutrients level, fertilizer recomme ndation would be done	1.Gain maximum farm yield. 2.Nutrient-rich soil. 3. It does not require an internet connection	1.It does not save any data on the system or cloud database. So we will not do any on demand fertilizer recommendati on system.	In this work, they have not consider pH, temperature, humidity, and moisture for open and indoor farming
12. 2022	Compariso n of	1.ArtificalInt elligence 2.Machinele	To predict plant disease in	Conventional Neural Network	Type of Climate, Specific	Identifyi ng of pathogen	1.Accurate prediction 2. It Minimizes	1. Plant diseae prediction is based on	It does not consider the Ph parameters and it can use other

	Artificial Intelligence algorithm in plant disease prediction	arning 3.Deep learning	a specific area based on the forecasting model of weather.	(CNN), Artificial Neural Network (ANN),Support Vector Machine(SVM),K-Nearest Neighbour(KNN)	crop, disease, Trainingdata, Test data,	s causing disease& recommending fertilizer	the loss of crop due to disease attacks. 3.This Grows crop in desert regions 4. The amount of spraying time of fungicide sprays avoid the growth of disease.	weather condition.	algorithms.
13. 2021	Soil based Fertilizer recommendation system for crop disease prediction system	1.Soil nutrients 2.Fertilizer3. Sensors	The type soil nutrient and of leaf disease occurring the crop	Long or short term memory algorithm	Soil type, soil analysis report	Analyzing soil nutrient type for crop yield	1.Highly Efficient	1.Alogrithm requires a lot of resource and time	Does'not use any valid parameter regarding soil type and it does't recommend fertilizer to diversified crops.
14. 2021	Anutrient recommendation system for soil fertilization based on	1.Sensor data 2.Evolutionary computation 3.Soil nutrients 4,Agriculture	The explo-ration of nutrients to develop a knowledge-based	Improved Genetic Algorithm (IGA)	Sensor, Threshold values , Extract patterns from the time-series	Reduce the computation resources and improve	1.Thismethod performs better against the standard recommendation. 2. It optimizes	1.Its does not uses the multi-objective optimization models tosolve optimization issue for more	The optimization search strategy and individual repair methods to extract valuable paramaters will reduce the computation

	Title	Concepts	Methodology	Algorithm	Parameters	Objective	Advantages	Disadvantages	Future Work
	evolutionary computation		system for the ICT environment.		data of Nitrogen, Phosphorus and Potassium(NPK)	the recommendation to maintain crops for soil fertilization.	the crop yield ant maintain the soil nutrient.	efficiently.	resources and improve the recommendation to maintain crops for soil fertilization.
15. 2019	Prediction of crop yield and fertilizer recommendation using Machine Learning Algorithm	1.Agricultur 2.Yield Prediction3. Machine learning4.Ra ndom Forest 5.Soil Nutrients.	To detect Crop diseases and recommen d pesticides for disease based on Support Vector Machine(S VM).	SupportVector Machine (SVM), Crop Image.	Soil nutrients, Location data, Plant image.	The prediction of crop yield based on location and the higher crop yield is achieved	1.There is a higher crop yield of productivity	1.Takes a more time to predict the disease in the crop.	In this work, they have not consider pH, humidity, and moisture for disease prediction.

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Ms.Divya.K									
16. 2021	Crop yield prediction and fertilizer recommen dation using voting based Ensemble classifier	Crop,SVM, KNN,rando m forest , nitrogen ,phosphoro us,CNN	The proposed can be used to determine the ideal planting season ,plant developme nt , and plant harvesting	Random forest is a supervised learning algorithm	Nitrogen ,ph , potassium etc	The information they need to earn a high return and as a result increase benefits lowering self destruction rates	Predicting the better crop is the ultimate aim of the project	Problem is to have the better crop yield	Base on the voting prediction the fertilizer recommendation is possible?
17. 2021	Machine Learning Strategy for Soil Nutrients Prediction Using Spectrosco pic Method	machine learning; nutrients prediction; soil spectra; soil analysis; soil category;	Based on UV-VIS and VIS - NIR spectra without selection of spectral variable selection,	RF for OC, LS-VM for N, P and K, GRNN for nutrients	Soil,Joined fiber optic,lightbox ,spectromotor .	The presented results confirm our initial hypothesis that the Machine Learning signifi-	Low computati on time Performs well with large datasets Reduce data dimension	Do not deal with nonlinear problems over-fitting may occur	What Chemical characterization of the samples was performed in a certified laboratory ?

		preci-sion farming	provided the ability to distinguish between high and low values			cantly improves the accuracy of soil property prediction.	ality Provide a feature selection Easy to implement		
18. 2021	Optimized fertilizer recommendation method for nitrate residue control in a wheat–maize double cropping system in dryland framing.	Nitrogen Phosphate Nitrogen requirement Nitrate nitrogen Fertilizer recommendation.	Nitrogen Phosphate Nitrogen requirement Nitrate nitrogen Fertilizer recommendation.	Winter wheat–summer maize is the major local cropping system in this area.	The local production level limits the target yield, and if the relationship between the amount of fertilizer applied and grain yield is established by collecting field data for a specific re-gion, the estimation of this parameter will be accurate.	The yields were further improved by 81.9 %, 79.8 %, and 75.7 % at P rates of P1, P2, and P3, respectively, compared with P0.	These results indicate that the crop yields were increased by N application and they increased further when combined with P fertilizer.	Thus, insufficient or excessive N and P fertilizer decreased HI, which was not conducive to enhancing the crop yield.	Developed a convenient method to optimize the fertilizer recommendation method for the winter wheat–summer maize cropping system.

No./Year	Title	Keywords							
19. 2020	Review on application of drones for crop health monitoring and spraying pesticides and fertilizer	Unmanned aerial vehicle, camera, GPS,crop monitoring, spraying system ESC,	To measure the speed of wind the indicator is used to measure the moisture in the air	Digital temperature, humidity indicator ,water sensitive sensors, anemometer, filter papers.	Training process,RGB, HSV,YUV, accuracy	performance of this method will increase by quadcopter	Implementation of the agriculture technique to enhance the productivity	Sometime show the different color in the training process	How to find the color of the plant?
20. 2018	Variable Fertilizer Recommendation by Image-based Grass Growth Status	Precision, Sensors, Image processing, Variability, Automatic control.	production fields and calibration relationships were obtained between the sensor measurements and grass growth levels.	1.Sensing grase growth information 2.Image aquisation 3.Processing of the images *VRF Recommendation *Prescription *Variable rate applicator	Sodium,Potassium, phosporous,nitrogen	Variations in the growth levels of the zoysiagrass were found for the same field, therefore, different levels of fertilizations were recommended.	1.Simple methodology 2.Easy to predict	1.More resources ne 9eded	This study would contribute greatly to increase fertilizer use efficiency and reduce environmental contamination, if the recommended fertilizers were variably applied.