**SOIL MOISTURE PREDICTION USING MACHINE LEARNING**

**ABSTRACT**

Forecast of soil dampness ahead of time is helpful to the ranchers in the field of horticulture. In this paper we have utilized AI strategies, for example, various straight relapse, support vector relapse furthermore, repetitive brain networks for expectation of soil dampness for 1 day, 2 days and 7 days to come. These procedures were applied on three different datasets gathered from various web-based stores. The execution of the indicator is assessed based on mean squared error(MSE) and coefficient of assurance (R2).The examination result shows that different straight relapse is prevalent giving MSE furthermore, R2 of 0.14 and 0.975 for 1 day ahead, 0.353 and 0.939 for 2 days ahead, 1.59 and 0.786 for 7 days to come.

**Keywords:**Agriculture, AI, different straight

regression,prediction,recurrent brain organization, support

vector relapse

**INTRODUCTION:**

India is a nation where greater part of the populace is reliant upon farming for their business. Indian soils are less fruitful particularly if there should arise an occurrence of micronutrients.In ongoing years, it has been seen that soil wellbeing is some way or another related with the manageability in the field of agribusiness and furthermore the ongoing yield yield levels can be improved by keeping up with the ripeness of the dirt. Agribusiness needs choice emotionally supportive network in assortment of ways, for example, sort of harvest to be developed [1].By observing soil dampness, water utilization can be improved generally as the water table is bringing down step by step. Soil dampness is helpful for the development of harvests in this way, the processes which are involved for the development of the harvests can be more improved in the event that we effectively anticipate the dirt dampness content of any area or area. By knowing the dirt dampness content ranchers can get data about what could be the best season of planting and developing the yields, invasion of the dirt is appropriate or not, if enough water has been given to the foundations of the harvests for development or not. Information mining methods plays a huge job in the field of agriculture. Good crop yield forecast results have been accomplished by quite a few people analysts in the wake of applying information mining procedures under various climatic situation [2, 3].Data mining

strategies were utilized to gauge tea yield

investigation of four areas of Assam utilizing the different direct relapse [4].Nowadays AI is one of the condition of workmanship strategies for anticipating obscure qualities. This paper manages the forecast of soil dampness utilizing AI. The different direct relapse is utilized for different applications like securities exchange expectation [5].Experimental examination of the ε-heartless help vector relapse method to soil dampness content assessment from a distance detected information at field/bowl scaleis done which will be helpful for satellites or constant applications [6].A various relapse assessment technique in view of relationship examination can likewise be utilized in the field of remote sensor network [7].Neural networks is utilized in the forecast of the stock trade of Thailand[8].Recurrent brain networks is a strong device for learning consecutive information, similar to time series information, normal language information, and so forth. It predicts the result not simply based on present information sources yet in addition recollects past information sources and results to more readily become familiar with the reliance of inputs.In repetitive brain organization a reverberation state network for the expectation of seed dampness content is utilized and contrasted and elman network [9].Other brain network methods can likewise be utilized for the expectation purpose.Overall the thought given to the ranchers could help them in their farming practices and even increment their efficiency consistently. In future alongside soil moisture,more boundaries like soil temperature, soil pH could be utilized in soil wellbeing checking.

**LITERATURE REVIEW:**

**“A survey on application of data mining techniques to analyze the soil for agricultural purpose,” Author : Hemageetha N**

India has 60.6% of its total area for agricultural purpose. Agricultural sector is the backbone for developing countries like India. The contribution of agricultural sector to GDP is 17%. By improving the agricultural sector the GDP of the nation could also be improved. The digital era can render its support to the agricultural sector in wide variety of ways. Data Mining supports decision making process and prediction. Agriculture needs the decision support system in variety of ways such as type of crop to be cultivated. And prediction techniques for rainfall prediction, weather prediction, market price prediction etc., There were many researches going on to support the agriculture using data mining. Analyzing soil provides major contribution to the support of the farmers. This paper explores various proposed algorithms for analyzing soil using data mining techniques.

**Data Mining: An effective tool for yield estimation in the agricultural sector. Authors: A. Raorane and R. Kulkarni**

Agriculture is a business with risk. Crop production depends on climatic, geographical, biological, political and economic factors. Because of these factors there are some risks, which can be quantified when applied appropriate mathematical or statistical methodologies. Actually accurate information about the nature of historical yield of crop is important modeling input, which are helpful to farmers & Government organization for decision making process in establishing proper policies. The advances in computing and information storage hove provided vast a most of data. The challenge has been to extract knowledge from this raw data; this has lead to new methods and techniques such as data mining that can bridge the knowledge of the data to the crop yield estimation. This research aimed to assess these new data mining techniques and apply them to the various variables consisting in the database to establish if meaningful relationships can be found.

**Data mining techniques and applications to agricultural yield data. Authors : D. Ramesh and B. Vardhan.**

India is a country where agriculture and agriculture related industries are the major source of living for the people. Agriculture is a major source of economy of the country. It is also one of the country which suffer from major natural calamities like drought or flood which damages the crop. This leads to huge financial loss for the farmers thus leading to the suicide. Predicting the crop yield well in advance prior to its harvest can help the farmers and Government organizations to make appropriate planning like storing, selling, fixing minimum support price, importing/exporting etc. Predicting a crop well in advance requires a systematic study of huge data coming from various variables like soil quality, pH, EC, N, P, K etc. As Prediction of crop deals with large set of database thus making this prediction system a perfect candidate for application of data mining. Through data mining we extract the knowledge from the huge size of data. This paper presents the study about the various data mining techniques used for predicting the crop yield. The success of any crop yield prediction system heavily relies on how accurately the features have been extracted and how appropriately classifiers have been employed. This paper summarizes the results obtained by various algorithms which are being used by various authors for crop yield prediction, with their accuracy and recommendation.

**Recurrent neural networks for moisture content prediction in seed corn dryer buildings. Authors : Elliott, Daniel L, and Russell E. Valentine**

Conditioning seed corn is a short, yet crucial, portion of the seed production process. Seed corn must be conditioned prior to removing the seed from the cob to prevent damage, requiring constant monitoring by farmers. This paper evaluates the use of an echo state network for the prediction of seed moisture content and compares it against an Elman network. The results are determined to be good enough for inclusion into a commercially available dryer monitoring system.

**EXISTING SYSTEM :**

**PROPOSED SYSTEM:**

**CONCLUSION:**

In this paper, we presented AI methods for expectation of soil dampness ahead of time. We have utilized various straight relapse, support vector relapse and intermittent brain network for the forecast. From the outcomes it is presumed that different direct relapse is better than the help vector relapse and intermittent brain organization. Albeit the expectation results are very great for 1 day and 2 days ahead however we can attempt to work on more the 7 days ahead results by applying some other methods. This will assist the ranchers with changing their the board methodology ahead of time.

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