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Prescription Per Plant Detecting the Essential Minerals That Needs To Be Added For Optimum Growth of the Plant

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Abstract: ***Due to rising population and gradually decreasing productivity, there is a requirement for proficient and substantial efficiency of regular rural items and improvement of it which is made conceivable by utilizing most recent advances.With every plant there is certain mineral associated with it for the proper nutritious growth and adequate quantity of water, and alteration of such nutrients may cause less productivity and insufficient growth and care for every pant producing efficient outcome is what is the requirement or the main focus of it. By placing sensors near the roots of the plants we get to know what minerals the particular plant is absorbing and what minerals needs to be added or decreased in order to enhance its growth. By placing many sensors across the agricultural field there is a large set of data that will be generated and we compare that data with the prescribed data and monitor the crop growth accordingly and many such technologies helps in analyzing and help commercial farming succeed. One such technology which has made impact is big data. The use of big data and Internet of things in smart farming with many smart sensors and devices which produces large amount of data. These data collected from various agricultural lands are sufficient enough to analyze and monitor crop growth based on weather changes so that there is increase the productivity of crops.***

Keywords: Agricultural , Crops, Plants, Essential Minerals

I. INTRODUCTION

Agriculture is the major contributor to Indian economy as it is a main source of income as large population of India depend on agriculture however there has been a large increase in population which demands large quantity of agricultural goods. The agricultural land has been decreasing gradually over the years, which has resulted in less area of land for productivity of agricultural supplements. Fresher advancements should be joined alongside development in inclusion and ease of use, bringing about should be develop these practices for agro segment in India. Indian Government has taken couple of exercises for giving on the web and convenient illuminating organizations to farmers related to plant questions, agro merchant's information to agriculturists; similarly giving data related to soil quality at each area. The structure that uses progressing data of soil quality in perspective of its present properties to help better fundamental initiative ought to be executed. Agriculture bolsters the vocation of expansive level of India's populace. Since agribusiness has a different part it is one of the biggest occupation suppliers in India, thinking more towards the tremendous rustic zones. Country ranchers don't know about the most recent techniques for gathering and apparatus to work and receive proficient development in return. The vast majority of despite everything them utilize the customary techniques and obsolete apparatus. In this way, bringing about low profitability. Because of such issues there is a requirement for ideal development of yields in the realm of progressively diminishing rural land. Each plant ought to be given nurture its proficient efficiency and upgrade its development. The cultivating division requires better movement in frames for fundamental authority, that gets the basic measure of data and information, got from a wide number of different sources, i.e. from soils, plants, environment et cetera. There is a requirement for appropriate comprehension of constantly developing information, which requires another basic way to deal with, design, apparatuses and in addition Practices. Scientists in the field of the horticulture have broke down and created distinctive efficient components that would foresee and increment the product yields, in this way making farming profoundly gainful. Presentation of Big information investigation in agribusiness applications has given another knowledge to give propel climate choices, enhance yield efficiency and maintain a strategic distance from pointless cost identified with gathering, utilization of pesticide and composts. The examination of horticultural regions requires countless examples, In this situation, there have been endeavors to build up a domain that utilizations procedures and devices in light of Big Data about the minerals for ideal development of a specific class of plants, and that permits directing agrarian soil investigation from arrive soil and information identified with creation. Prescient investigation would help in settling on more intelligent choices in cultivating by getting constant information on soil and air quality, climate,

trim development and water assets and accessibility which is known as accuracy horticulture. Enormous information is relied upon to assume a vital part in accuracy agribusiness for overseeing constant by performing information investigation on colossal gushing information. As the measure of huge information increments enormously information examination, effectiveness and throughput would be a test. In any case, for performing examination just certain measurements out of various measurements exhibit in unstructured spilling information acquired from various farming sources would be required.

II. LITERATURE REVIEW

Suitable methods to improve the execution of item yield desire and approachs to misuse colossal data related to agribusiness and sustenance security require noteworthy perception. In the season of information, these goals could be recognized by methods for Big Data applications. Rosemary Peters [1] proposed a framework that encourages ranchers to develop reasonable products in light of the minerals, climatic conditions , water and helping agriculturists get best cost for their yield. The procedure occurs in various stages like Information gathering, Data investigation, Alert framework and representation modules. K. Mukesh Kumar; Mayura Nagar[2] proposed utilization of the Map lessening Techniques of Big Data Analysis which is worthwhile over the datamining systems. M. Sarath Babu; R. Venkat; K. Rajesh[3] in their review paper discuss accuracy farming .Noriko Horibe[4] proposed the a model that regards data objects, which are formed, by guaging objects after some time as a sporadic course of action. The model can measure the future from past regard and the present a motivating force after it has been recognized. In this way, various such methods have been introduced. Viraj Patodkar1, Sujit Simant2, ShubhamSharma3, Chirag Shah4, Prof. Sachin Godse5, Android Application (Integrated Farming Management Systems)"2015[1] this item application is basically for sensible headway of farmers. Customarily agriculturist is bewildered to take decisions with respect to the decision of compost, pesticide and time to do particular developing exercises. So to avoid this issue this application is uncommonly profitable. Manure timetable of every sort of yield will get enrolled. Aniket Bhave, Rahul Joshi, Ryan Fernandes, "MahafarmAn Andriod based response for beneficial Agriculture" 2014[2] Information and Communication Technology (ICT) in agribusiness is a rising field focusing on the update of agrarian and nation change in India. Using headway is a key measure in the natural zone.

III. PROBLEM STATEMENT

The bit by bit diminishing area and expanding populace has set out the need for ideal development of yields and higher effective measure of harvests per arrive Agricultural cultivating and product efficiency are the foundation of lion's share of the Indian rustic mass. The externalities of climate and non-accessibility of data from extensive arrangements of information so as to the agriculturists are reasons for concern. The current farming practices are neither prudentially suitable nor ecologically supportable and the yields of numerous rural items in India are basically low. The result of the harvests relies upon the few components like precipitation, season, temperatures, and the cost reported by the administration. Horticulture generally relies upon whether condition, precipitation and exact water level that assistance the agriculturist to design their yield as indicated by momentum situation. Accordingly, enormous information with delineate help better climate guaging. In any case, mechanical consideration and its usability still should be produced and created for agro zone in India. Though couple of exercises have also been taken by the Indian Government for giving on the web and convenient illuminating organizations to farmers related to plant questions, agro shipper's information to agriculturists, it gives static data related to soil quality at each locale. The system, which uses continuous data of soil quality in perspective of its present properties for fundamental authority, has not been executed. A basic leadership framework is required and all horticulture substances should be associated with increment the creation and facilitate the dissemination of rural items from agriculturists to advertising organizations and from sellers to ranchers at a correct value, basic leadership framework will likewise be in charge of helping ranchers enhance profitability and get right cost for their yield. Another issue is basic things like those that distribution center receipt framework is confounded issue in India. There is no legitimate checking framework accessible to know the accessibility of chilly stockpiling and stockroom. With help of huge information, Tools and structure can get ideal choices in cultivating. Yield suggestions, Forecast the horticultural products costs in front of the season. Accordingly, better strategies can be embraced. In this way, the portable application centers around taking care of these issues.

IV. DESIGN METHODOLOGIES

A. Existing System

Horticulture part in India is reducing step by step which influences the creation limit of biological community. There is a critical need to take care of the issue in the space to reestablish dynamic quality and set it back on higher development. The paper proposes an e-Agriculture Application in view of the system comprising of KM-Knowledge base and Monitoring modules. To settle on bene-

ficial choices, ranchers require data all through the whole cultivating cycle. The required data is scattered in different spots which incorporates continuous data, for example, advertise costs and current creation level details alongside the accessible essential product information. The data is collected over the years and the proven one is used to analyze crop details and soil conditions, in regard to this a model was proposed, which makes use of Big-Data analytic for best procedure and nutrition's that needs to be added and crop sequence, next crop to be cultivated for better production, total crop production in the area of interest, total fertilizer requirements, and other data of interest that could be analyzed. As there exists an interconnection between horticulture related elements like distributed computing, the field of Cloud processing is helping by a wide margin to ad lib our well established business - Agriculture. Commonsense applications can be worked from the monetary utilization of distributed computing gadgets that can make an entire figuring environment, from sensors to instruments that watch information from horticultural field pictures and from human performing artists on the ground and precisely bolster the information into vaults alongside their area as GPS co-ordinates. In all actuality, sensors are currently ready to recognize the situation of water sources in a subject that is being explored. Issues identified with agriculturists are continually hampering the course of our development. One of the response to these sorts of issues is to help the ranchers utilizing modernization strategies. This paper proposes an approach consolidating the benefits of the real attributes of developing advancements, for example, Internet of Things(IoT) and Web Services so as to build an effective way to deal with handle the tremendous information engaged with agrarian yield. The approach utilizes the mix of IoT and distributed computing that advances the quick improvement of rural modernization and acknowledges keen answer for agribusiness and productively explain the issues identified with ranchers In the other existing systems, the variety of methods is implemented for the classification of the agriculture data. In these systems, agricultural data classification was done based only on a few of many factors available. Many of the existing systems the accuracy of classifying the data is lower as they are implemented using Data Mining techniques instead of the big data analytics. The existing systems do not take into consideration of many interlinked factors affecting the crop production. Thus using "Big Data analytics" with up to date data results in accurate classification and better prediction of data. There are sensors that calculate the moisture and minerals that are present in the soil and the problem with that is the real time data is not calculated with respect to the requirement of the adequate quantity which needs to be present for the optimum growth of the plants and the minerals deficient to that particular plant and moisture level that needs to be present at that time considering the various factors of climate changes and stage of growth of that plant. Application of Big data technology in agriculture can be extended to a greater distance by the collaborative assistance of IT industries and support by the government, different data prepossessing methods according to different sub-models are used to obtain better forecasting results.

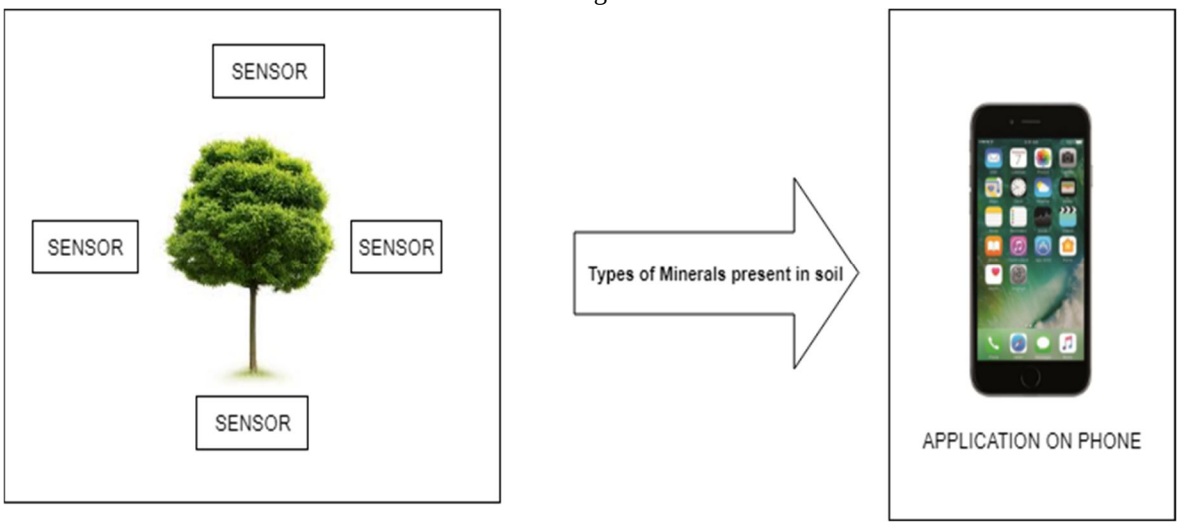

Fig. 4.0 Existing System Flow Diagram

In the existing system the sensors placed across the plant or crops which senses mineral data and sends the types of minerals present in the soil. It does not provide any information about the deficient minerals in the soil. Nor it provides any information about excess or unwanted minerals present in the soil. Fig. 1 displays a brief about the existing system, which just informs the in charge person or farmer about the types of minerals present. With this amount of data it restricts the plant or crops to be grown in the available space of agricultural land.

B. Limitations of Existing System

Many systems have been proposed and newer technologies have been implemented to produce better and efficient systems. In spite of all this, there exists some factors or drawbacks associated with each of them leaving a scope for improvement.

Farmers should be provided with the mobile application designed with local language for better understanding of the information Availability of internet facility to use the apps is also one of the major concern The increasing volume, variety and velocity of agricultural big data sets demands excessive computing power and computational resources to manage and analyze Data privacy is a major concern of sharing, and private owners may be reluctant to share the data. Even if private data (e.g., administrative data; field treatment data) is shared, it is not certain that one private dataset will be compatible with another private dataset or with other public datasets To support big data analytical methods in agriculture, such as data mining, it is increasingly common for satellite imagery to be supplemented with more and more field data With respect to the prediction of time, series model the accuracy is short termed. As times increasing, the predicted error will gradually increase.

V. PROPOSED SYSTEM

To overcome the problems in the existing system, we propose a system that reduces Middlemen problem and farmers can learn new methodologies from the experts through this system. In this we place sensors across a particular crop or plant which detects the deficient mineral(s) which are to be added to the plant or crop for the optimum growth of the crop or plant in the available space of agricultural land.

The main pros of our proposed system is it will also detect the excess mineral(s) content in the soil that must be limited to a certain extent for proper growth of the crop or plant. Excess mineral(s) can sometimes damage the crop or plant. They can also plan for planting best crop as per the demand to yield higher profits. Maintain an up-to-date document library of environmental regulations or government standards, readily accessible from mobile devices in the field. Ensure that your inspection reports are always accurate and up-to-date by submitting them from mobile devices directly from the field. Improve quality control by enabling two-way data transfer between record-keeping databases and mobile devices. Either a state wide or nationwide app which is divided as per the location or the state of the farmer. Data should be provided about the different kind of crops that can be grown irrespective of that location, live examples of few other super successful farmers who have thrashed the old styled of irrigation and yielded crops that were never heard of or not aware of.

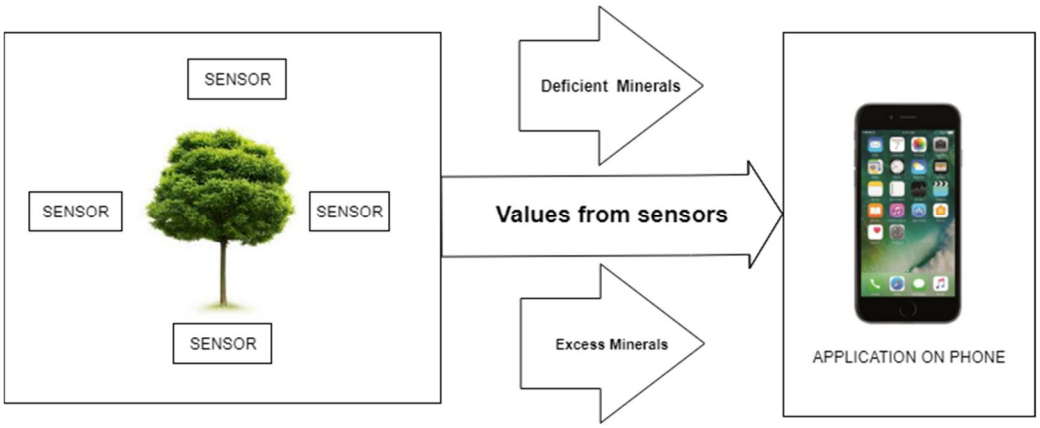

Fig. 5.0 The proposed system Flow Diagram

In our proposed system as mentioned above we place sensors all across a particular crop or plant. The sensors senses the minerals deficiency and excess minerals in the soil and the values are sent to the mobile device. The farmer then monitors the values and regulates the content of minerals to be added or removed from the soil for the optimum growth of the plant or crop. With this system the farmer or the person in charge can add only the required minerals to crops or plants. And also reduce the mineral content which are not required for the particular crop or plant

VI. CONCLUSIONS

In this article, we conclude that in the existing system there has not been advancement to meet up the current standards in the field of agriculture. In existing system it has been stated what has to be done if there is deficiency minerals and not about what has to be there are excess minerals in the soil. Basically, the data from the past is collected and with the help of big data analysis tool the pre-

diction is made. It also gives the farmers a fair idea for planting the best crop based on the availability of minerals in the soil. Therefore, farmers can choose the best crop based on the prevailing climatic conditions and availability of minerals in the soil. It also provides a platform for the farmers that informs them about the various minerals available in the soil, and the amount of minerals available for optimum growth of the crop or plant.

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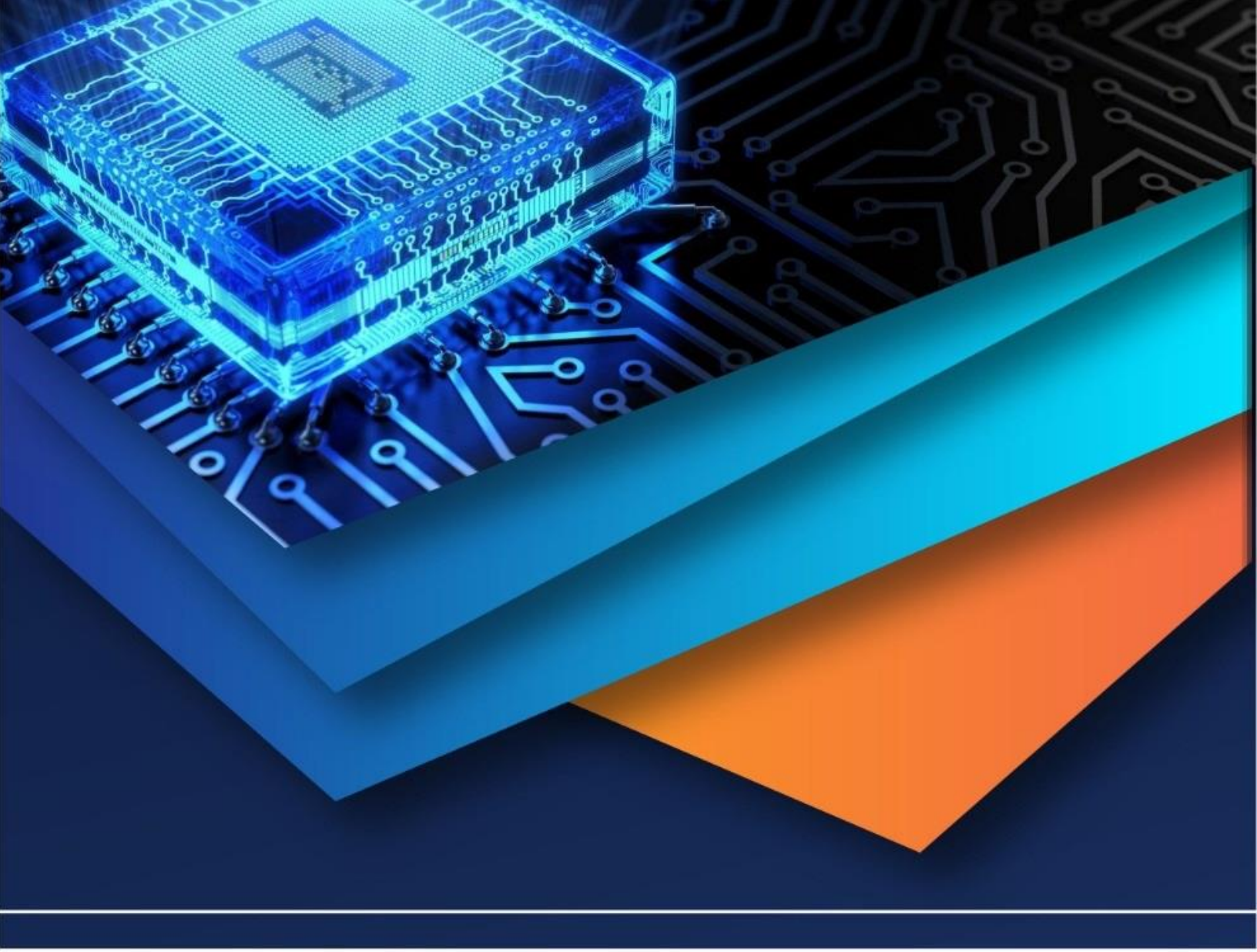

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