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Mobile based Expert System Application for improving productivity of crops in Agriculture for Tamilnadu, India.

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ABSTRACT

Nowadays, utilization of smart mobile devices is very common by everybody. Expert system can be characterized as a tool for information generation from knowledge in agriculture. Farming can be distinguished by recognizing the problems in using the traditional system. so, for this technical information and by proving this Expert systems can help to overcome the problems. Early information on crop disease detection can facilitate the control of diseases through proper management strategies for that issue. Mobile platform provides the advantage for person to obtain consultation practically anytime and anywhere. This expert system application helps to expanding the crop production through mobile devices. This technique will enhances benefit of crops. The vast majority of the expert system's features are limited and it is only in English language. At the same time this expert system in agriculture is develop in a native language (Tamil) of an agriculturist, helps them to know the realities and truths in expanding the production.

Keywords: Expert system, crops productivity, agriculture, pest management, precision irrigation.

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INTRODUCTION

Any of the Horticulture Expert System, Horticulture specialists are the basic sources to provide information about agriculture. It makes to enhance horticultural crops. Horticulture specialists are not generally accessible when the need emerges for their help. As of late, advances technology, tools are uses of data advancements have developed as productive and powerful measures for up gradation of all Horticulture fields. Incorporation of Mobile Based Expert System Application as a powerful tool for the framers to improving the production of crops.

People in rural area of tamilnadu, India are far away from internet. So not able to get all information about agriculture properly. Expert system offers a domain where the great capacities of people and the force of mobiles can be used to overcome a large portion of the constraints. This project has objectives such as to provide irrigation methods, crop fertilization, diagnosis methods , crop productivity, crop precision and market information. This Project aims to reach out all farmers and common people in tamilnadu.

In Expert Systems in Agriculture: A Review (P. Mercy Nesa et al,2011) they presented a Horticulture Expert System regularly have three segments. They are knowledge base, inference engine and user interface. The knowledge base is the segment that contains the learning acquired from the area master. Ordinarily, the method for speaking to learning is utilizing guidelines. The inference engine is the segment that controls the information found in the learning base as expected to touch base at an outcome or arrangement. The user interface is the part that permits the client to inquiry the framework and get the answers of those questions.

Literature Overview

In this project, we reached many type of expert systems

In Expert System on Wheat Crop Management (N.S.Isalm) presented an incorporated framework that addresses all parts of wheat administration in India. The fundamental objective of this framework is to furnish the clients with proposals and exhortation concerning wheat generation. The framework is intended to cover the operations, variety selection, fertilizer application, and insecticide / pesticide application on one hand and financial advantages then again. The framework examinations the inquiry given by the client and determines the outcome to the client.

Expert System on Wheat Crop Management is subdivided into four modules. Variety selection, Plant protection, Cultural practices and harvesting technology. Variety selection module indicates the mixed bag from the agriculturist's perspective. Plant protection module is subdivided into neurotic perspectives, entomological angles and Weed administration. In pathology, the framework recognizes small scale illnesses, for example, leaf rusts, curses and hits and so on. In entomology the framework recognizes bother/bugs influencing plants and prescribes control measures. The Cultural practices module determines the procedure of development of the harvest. The Harvesting technology module helps in prompting the right system, right apparatus and opportune time for the harvest.

In Expert system design and architecture of farming sector (B.Muarya et al, 2013), Expert systems is an uncommon PC project intended to reproduce the critical thinking conduct of a specialist in a tight space or control. Expert systems are recognized as intense device. It is otherwise called knowledge based system (KBS).

In Agricultural Extension in India: A Journey Since 1952 (K. Yadav, 2009), the fundamental point of preference of expert system is the simple access to master arrangement as well as likewise to improve the execution of normal specialist to the level of a specialist. The expert system must be produced in local languages which will help the agriculturists to add to their own ability which will use improve the efficiency of products. This expert system may be made accessible at normal spots in the town's or at cooperatives social orders and so on which can go about as data place for the agriculturists in the towns.

In Design and Realization of Information Service System of Agricultural Expert Based on Wireless Mobile Communication Technology **(**Jianshe Zhao et al, 2011), paper clarifies the purpose of planning of farming administration stage framework, which changed agribusiness data conveyance in rustic and

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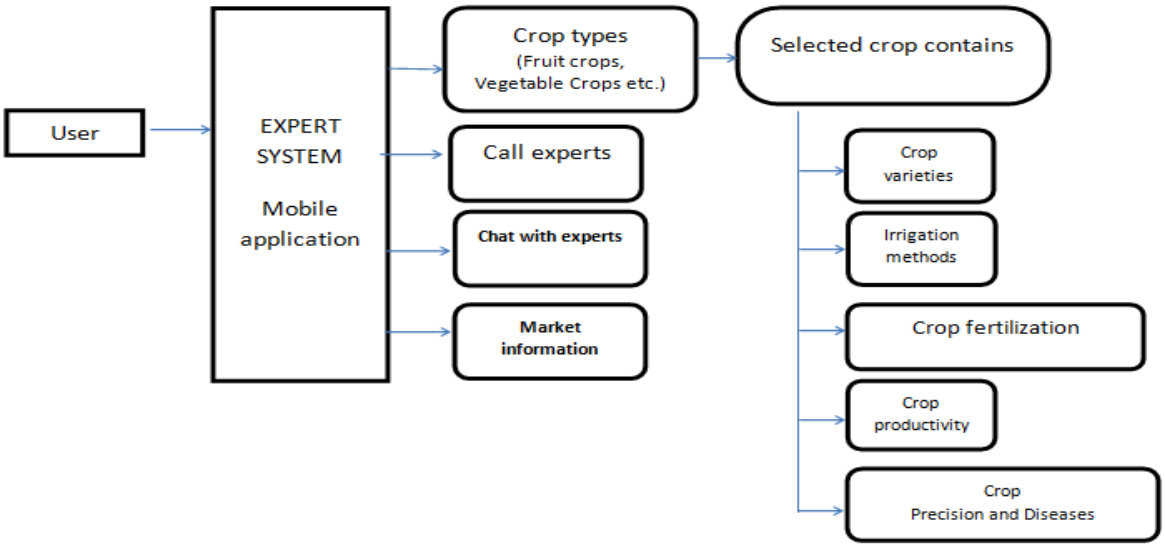
underserved areas. This project Based on mobile wireless protocols. This technology allows mobile phones to catch and send data for agricultural information to rustic and underserved areas framers.

Methodology

System Framework

Main goal of the application is to provide the users with all types Of information and advices in the agriculture .This application providing such elements like Irrigation methods, crop fertilization, diagnosis methods for crops, Crop productivity and crop precision.



(The Framework of an Expert System)

Figure 1

Every crop contains Crop varieties, irrigation method , Soil and season, crop productivity ,Crop Precision and Diseases

Crop Varieties:

It's the greater part of little scale farmers use customary product assortments, which give low yields and might be defenseless against dry season, warmth, sicknesses and different hassles. This application provides the all types of crops varieties with Image. So help to improve varieties offer much higher yields, better quality and more stable production.

Irrigation Method:

It's the controlled utilization of water to produce a schedule for irrigation of a particular farm for horticultural crops through manmade frameworks to supply water necessities not fulfilled by rainfall. This application provides the some factors, including: plant age, soil type, soil calcium carbonate content, type of fasting, and required fasting month.

Crop Fertilization:

Any material of natural or synthetic inception that is connected to soils or to plant tissues to supply one or more plant supplements crucial to the development of plants. This application provides the user with the acceptable amounts and frequency of fertilizer by type (manure, nitrogen, potassium, phosphorus

fertilizers and iron, zinc, and manganese elements).Fertilization requirements include several aspects such as the fertilizer's type, quantity, the fertilizer's application method, and the intervals between applications.

Crop Productivity:

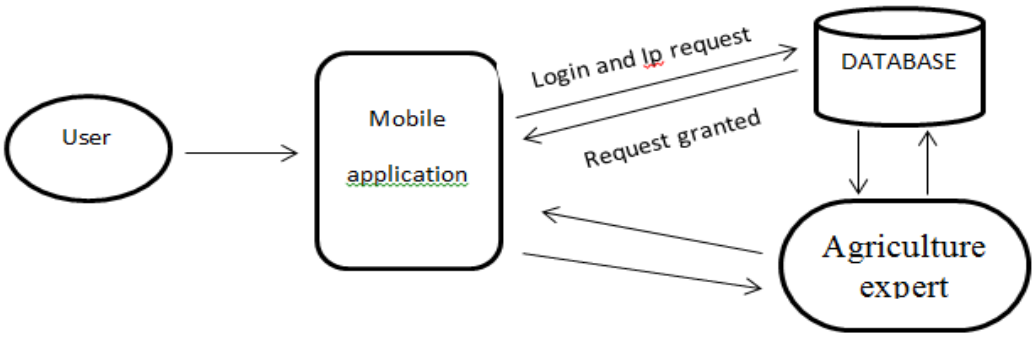
It's generally used to estimate the potential crop production capacity of soils. Crop production management refers to the various processes applied toward the effective cultivation and harvesting of crops and it also use is use to find illness of the crops and require treatment for that crops and relevant information about soil and season for crops. This application provides the soil and season information for all crops. So help to cultivation the in crop suitable season.

Crop Precision and Diseases:

It includes the perception, impact assessment and timely strategic response to fine-scale variety in causative segments of an agricultural production process. This application provides the technologies and principles to manage spatial and temporal variability associated with all the aspects of agricultural production for improving crop performance and environmental qualities. In short it means adding the right amount of treatment at the right time and the right location within a field.

Chat with expert:

This application provides online services to chat with agriculture expert. This application will be used by general users to do chat and Share image and also user can get the text expert advice in Tamil and in English languages.



(The Framework of chat with expert)

Figure 2

This application having of association facility like sending sicknesses leaf photograph to the area horticulture officer .so we can avoid the more damage from unknown diseases and easy to find new diseases. This application is user friendly.

Market Information:

It's used to know the current business sector data, which meets the quick business needs of agriculturists and dealers and "verifiable" data which, when broke down, can be utilized for arranging purposes by ranchers and approach producers Link to: http://agmarknet.nic.in (Market-wise Daily Report)

Call Expert:

It provides a distinct wise agriculture expert contact so it easy communicates with the expert.

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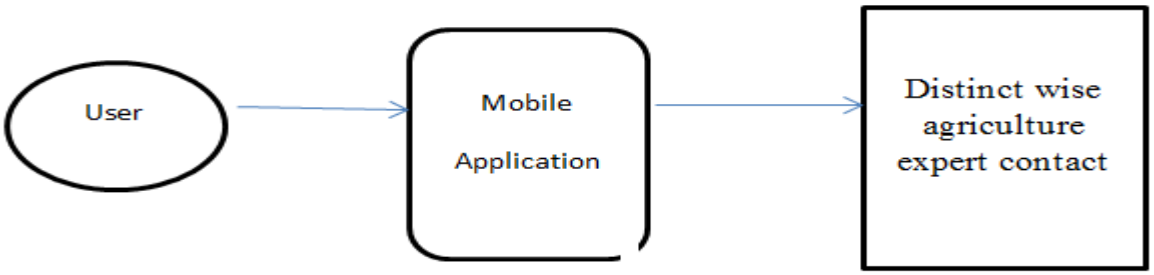
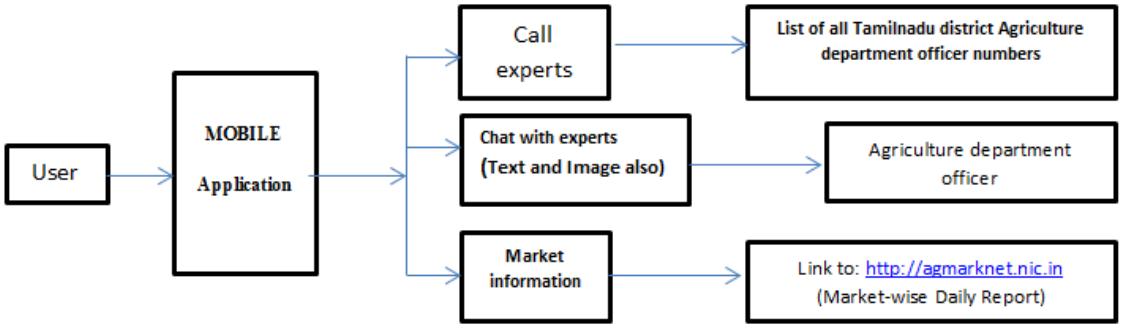


(The Framework of chat with expert)

Figure 3

The above features of information to be communicated with experts of agriculture. For this communication we need internet connection. And also this part includes the current market information in agriculture. This application helps not only farmers but also the other users having internet.

Multimedia from like picture, sound and estimation additionally give in the application to clarify about agriculture. Each crop contains the soil preparation, cultivation timing, irrigation scheduling to improve the stages of crops growth. Expert systems have the answer for relevant question and explain this process also we can interact with framers.



(The Framework of a communication model)

Figure 4

Figure 5

This application having of association facility like sending sicknesses leaf photograph to the area horticulture officer .so we can avoid the more damage from unknown diseases and easy to find new diseases. This application is user friendly. Access without login in the application Expert system includes the chat box in the each crop so easy to interact.

CONCLUSION

This expert system application provides various data and information by experts so that expert system application helps a lot to increasing the crop production. This expert system is an offline application and Native language support has been provided wherever required and possible.

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