



Agro Advisory System For Cotton Crop Farmers

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Abstract: In agricultural domain, the main challenge is improvement of a specialist framework (Agro-Advisory System) which gives important responses to questions in regards to sort of soil/atmosphere for a specific harvest, weather data, cropping pattern, crop disease, pests and so on. Agro-Advisory System is a query-answering support for farmers, which is nothing but an ontology based knowledge system. Knowledge acquisition is done with the aid of Agro experts. To handle these queries, the old procedure was to collect the questions from farmers and record these questions, then search for the answers to these questions manually from documents provided by agricultural experts. Sometimes lack of experts and their expertise creates problem, so we choose expert system approach to solve this problem. Queries over the system can be defined to be of two categories. One is described as queries over the databases. The other category is the queries over knowledge bases. Database applications are the applications which help in retrieving information from a relational database and queries over the database facilitates this. One such application which helps users in extracting information from the database without having knowledge of it is BANKS.

Keywords:- Agro Advisory System; Ontology; Knowledge System; Agricultural Experts; BANKS;

I. INTRODUCTION

Different parts of the country have recently witnessed a large number of suicide deaths by the farmers who found themselves in extreme distress. A variety of factors are held as responsible for the farmers' suicides which includes a) adverse seasonal conditions, b) lack of irrigation facilities, c) massive pest attack, d) wrong agricultural practices and failure of extension services: excessive use of pesticides, mono-cropping, wrong selection of seeds, dependency on private dealers for technical advice, e) spurious pesticides and seeds, f) increase in the cost of cultivation, and g) low yields and adverse prices [1]. To address some of these problems, this work proposes the development of an expert system (Agro-Advisory System) which provides valuable answers to queries regarding type of soil/climate for a particular crop, type of pests within crop, different diseases, and timelines associated with each activity etc [2]. Agro-Advisory System is ontology based knowledge system that provides query-answering support for farmers [3]. Farmers encounter many questions on cropping depending on climate, diseases on crops, pests, preventions, timelines of various activities etc [4]. It is a system which enables keyword-based search on relational databases, together with data and schema browsing. BANKS [6] enables users to extract information in a simple manner without any knowledge of the schema or any need for writing complex queries. Knowledge-based applications on the other hand are applications which require retrieving information from a knowledge based like ontology. They are developed on the domain knowledge of a system and require understanding and answering of the queries over it. Query posed by the user should

not restrict him to the domain knowledge and rather should provide him the ease of querying it as a natural language keyword query. It should enable the user to query the system without worrying about the domain knowledge of it. Agro-Advisory system is a flexible querying system which allows users to give the flexibility of querying the system as they like. It basically encourages keyword based query where user enters his query in simple keywords which is interpreted and analyzed by the system and advices the farmer based on its context and severity.

Agro-Advisory System is a query-answering support for farmers, which is nothing but an ontology based knowledge system.

II. EXISTING SYSTEM

Farmers encounter many questions depending on climate, diseases on crops, pests, preventions, timelines of various activities etc. To handle these queries, the old procedure was to collect the questions from farmers and record these questions, then search for the answers to these questions manually from documents provided by the agricultural experts. Due to lack of experts and their expertise, this process was inefficient and more time consuming.

III. PROPOSED SYSTEM

To handle farmer queries more effectively, Agro-Advisory System consists of two important elements; 1. Knowledge based system to convert the queries from farmers which may be in non-understandable form to an understandable form. This knowledge based system is called *Ontology* which is the key element for this project. 2. Searching mechanism which will perform search

on the reformed query and display the list of matched documents.

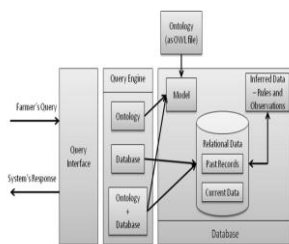


Fig: System Architecture

Query Interface: This is an interface where farmer can post his query. Query is mainly keyword-based query. This query is parsed, tokenized and mapped to resources in the ontology.

Query Engine: This is the core of the system which handles farmer query. Farmer query can be any of 3 types: ontology-based query, database query or ontology & database query. Currently we are handling ontology-based query. This is taken care by designing which returns a path that best matches cluster of resources selected by user query.

Database: This is the repository which holds complete information about the crop in the form of ontology. This ontology is stored as a graph in database. Also, past records of the farmers are present as relational data which give us the farming practices done by them. Based on these generic rules observations are made which help in validating the ontology. Advice is generated by the system based on the current farming which helps him to take precautionary measures in his practices.

IV. CONCLUSION

Agro Advisory system developed for farmers to improve their cotton crop farming. This system is Query based and uses ontology, reasoning capabilities to generate automatic recommendations based on farmer's queries regarding cotton crop and their farming practices. We can add soil health care data for the farms, which will help agricultural experts to make appropriate recommendations to improve the soil condition of the farms. More concepts (like additional crops, weather parameters etc) and properties can be added to make the scope of the ontology larger. The more concepts the ontology has, the effective will be the reasoning capability of the system to provide the users with better recommendations. The system can be improved by generating recommendations using natural language based queries and supporting regional language to make it truly user friendly.

V. REFERENCES

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