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Review on Agri Field an Agricultural Initiative

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I. Introduction

This is an Agricultural based application named as **"AgriField - An Agricultural Initiative"**. This is an first working application on the manipulation techniques of the soil and giving output of soil fertility on their available soil status. This application will provide farmers a quantity of fertilizers required to give in the soil by calculating on the basis of soil test report. The AgriField provides the information about the fertilizers trade according to the present soil status and also quantity of the fertilizer trade. As there are no current technique available for this so we are trying to give AgriField technique.

II. Aim and Objective

The *AGRIFIELD* - An Agricultural Initiative is an application which tries to give the best agricultural solutions and the good agricultural practices .In AgriField the crop productivity of the all the species of the cotton crop are successfully given on the basis of the present soil status. The aim of developing the application of AgriField to give the updated knowledge to the farmers and ensure the good practices of agriculture for the farmers.

III. Problem Statement

The problem statement is very simple and clear that we have to find out the quantity of fertilizers required for .

soil on the available nutrients in the soil and provide a best solutions for their agricultural practices though which they can improve their soil fertility and crop productivity.[1] The soil fertility is the most important factor in the crop productivity and it affects lot when it comes to it. So we are trying to give best practices for agriculture.

IV. Literature Review

The basic idea of this concept has been reviewed through the various research papers available on the web. The research papers are providing information that what a micronutrient affects the crop in each condition. There are 16 micronutrients which affect the crop in excess, in less or in equal proportion[3]. There are various crop analysis research papers on the internet. We studied them and work by on it. Dr. Panjabrao Deshmukh Krushi Vidyapeeth(PDKV), Akola, Maharashtra published a diary named as "Krushi-Sanjeevani" each year. The diary contains the information about the crops and the standard values or quantities needed by the crops of specific types.[4] The websites such as CICR(Nagpur),IISS(Bhopal) are also providing the information.

The Indian Institute of Soil Science, Bhopal has research on this type of project in 2014 but when we refers their web site, their research has been stopped at some point and they publish paper on their research that data is insufficient. Dr. Panjabrao Deshmukh Krushi Vidyapeeth,(PDKV) is also trying for this type of project

Table Prominent nutrient deficiency symptoms in plants[2]

Nutrient	**Color change in lower leaves**
N	Plant light green, older leaves yellow
P	Plant dark green with purple cast, leaves and plant small
K	Yellowing and scorching along the margin of older leaves
Mg	Older leaves have yellow discoloration between veins-finally reddish purple from edge in word
Zn	Pronounced interveinal chlorosis and bronzing of leaves
Nutrient	**Color change in upper leaves** (terminal bud dies)
Ca	Delay in emergence of primary leaves, terminal buds deteriorate
B	Leaves near growing point turn yellow, growth buds appear as a white or light brown, with dead tissue
Nutrient	**Color change in upper leaves** (terminal bud remains alive)
S	Leaves including veins turn pale green to yellow, first appearance in young leaves

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Fe	Leaves yellow to almost white interveinal chlorosis at leaf tip
Mn	Leaves yellowish-gray or reddish, gray with green veins
Cu	Young leaves uniformly pale yellow. May wilt or wither without chlorosis
Mo	Wilting of upper leaves, then chlorosis
Cl	Young leaves wilt and die along margin

Soil testing refers to the chemical analysis of soils and is well recognized as a scientific means for quick characterization of the fertility status of soils and predicting the nutrient requirement of crops.

It also includes testing of soils for other properties like texture, structure, pH, Cation Exchange Capacity, water holding capacity, electrical conductivity and parameters for amelioration of chemically deteriorated soils for recommending soil amendments, such as, gypsum for alkali soils and lime for acid soils. One of the objectives of soil tests is to sort out the nutrient deficient areas from non-deficient ones. This information is important for determining whether the soils could supply adequate nutrients for optimum crop production or not. As farmers attempt to increase their crop production, one of the questions they ought to ask is whether the addition of fertilizer will increase the yield and whether it will be profitable? Fertilizer use could be aimed at economic optimum yield per hectare.

The National interest would be to obtain the maximum yield from the area under cultivation while the farmer's interest would be to obtain profitable yields and not necessarily the maximum yields. Indiscriminate use of fertilizer is not an answer to any one of the problems as this not only increases the cost of crop production but also results in deleterious effects on soil fertility. The concept of balanced nutrition of crops also guides the use of plant nutrients in a definite proportion as required by the crops which is possible only if one knows the available nutrient status of his soils. Soil testing helps in understanding the inherent fertility status of the soils. Further, various factors other than poor soil fertility may also be responsible for poor crop production but soil fertility status assumes a greater importance. Each fertilizer recommendation based on a soil analysis should take into account the soil test value obtained by the accurate soil analysis, the research work conducted on a crop response to fertilizer application in a particular area and the practices and level of management of the concerned farmer. The soil test aimed at soil fertility evaluation with resulting fertilizer recommendation is, therefore, the actual connecting link between the agronomic research and its practical application to the farmers' field.[2]

V. Detailed Descriptions

"AgriField-An Agricultural Initiative" is an system based application which will provide a quantity of fertilizers required to give in the soil. After the soil testing farmers will get the exact number of nutrients and micro nutrients available in the soil. On the basis of this soil status we are calculating manipulating and giving the recommendations to the farmer. The architecture of a application is as follows:

VI. Architecture

The architecture involves the following steps:

- Process Flow
- Fertilizer Type
- ACTIVITY DIAGRAM
- USE CASE DIAGRAM
- SEQUENCE DIAGRAM

VII. Process Flow

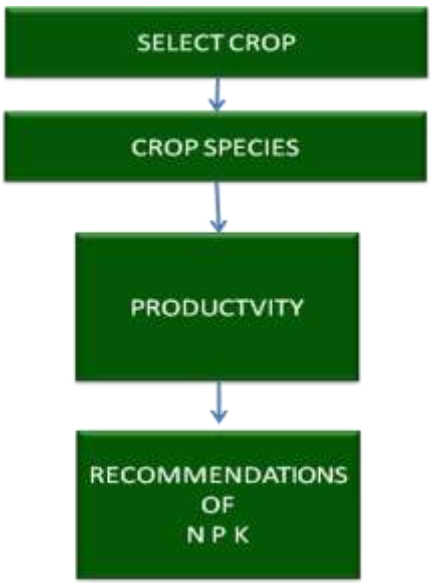

FIG. Process Flow

The Process Flow indicates the main purpose of the AGRIFIELD. The ultimate aim of achieving best crop productivity based on the recommendation of fertilizers.

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VIII. Fertilizer Type

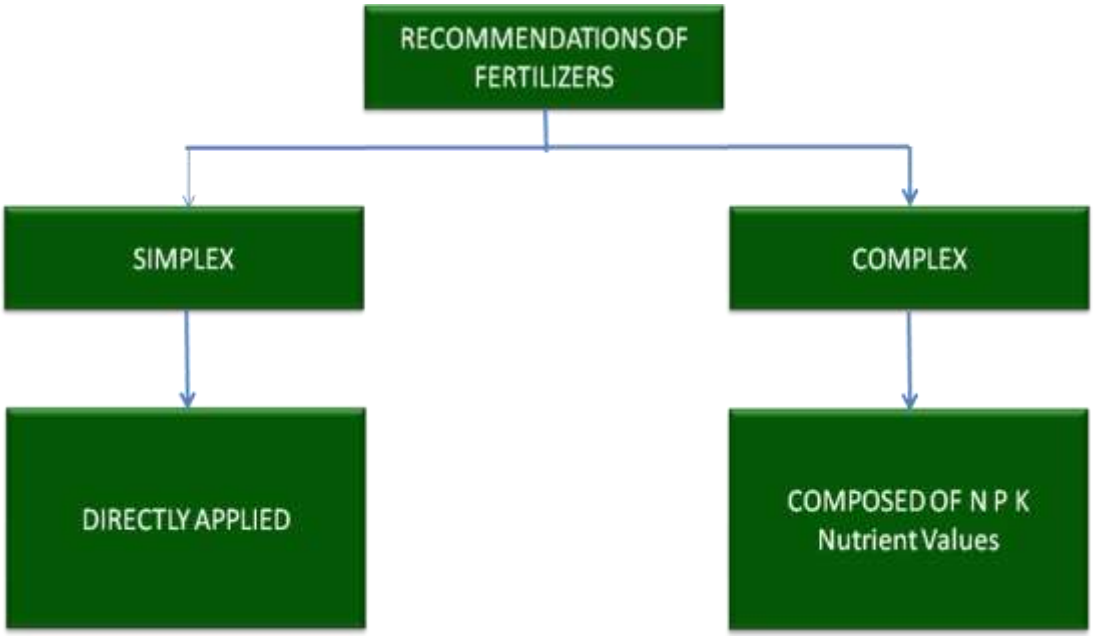

FIG. Fertilizer Type

There are two types of fertilizers, one is Simplex Fertilizer and another is Complex fertilizers. We have to give results using both the type of fertilizer .

The Simplex Fertilizers are of single nutrients such as Nitrogen(N),Phosphorus (P) and potassium(K).

The Complex Fertilizer is combination of two or more soil nutrients such as nitrogen(N), phosphorus(P), potassium(K). They are named as for example, 10:26:26 that is 10 of nitrogen,26 of phosphorus and 26 of potassium.

IX. Activity Diagram

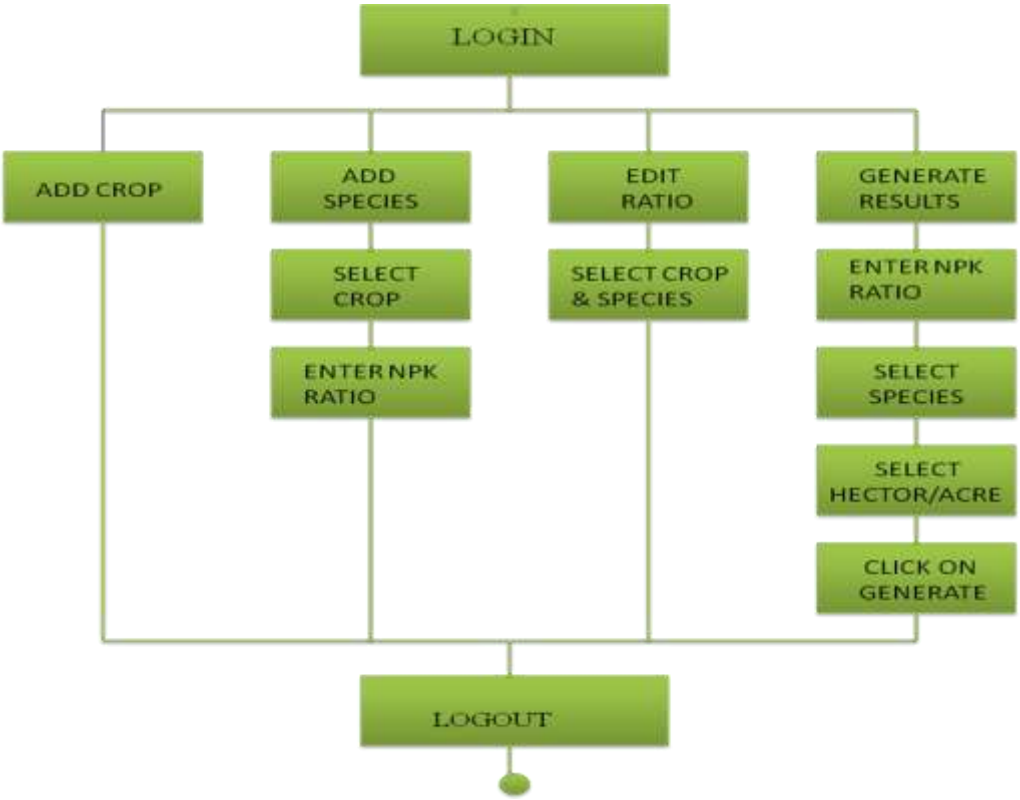

Fig. Activity Diagram

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The Above Activity Diagram is of AGRIFIELD, it shows the type of activities perform in the AGRIFIELD.

X. Use Case Diagram

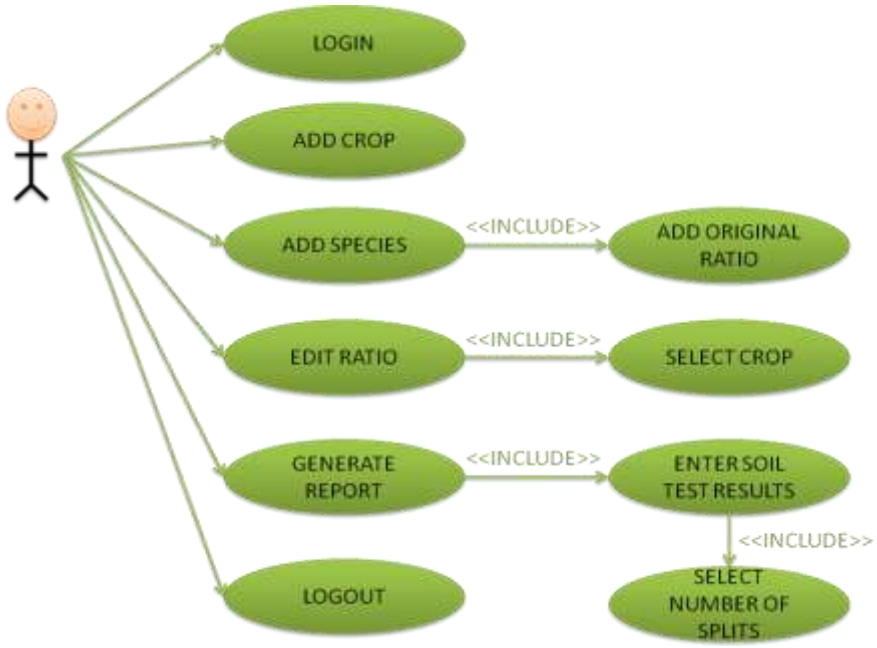

Fig. Use Case Diagram

In above shown use case diagram, it represents the facilities provide to user. User can use various facilities of their particular choice.

XI. Sequence Diagram

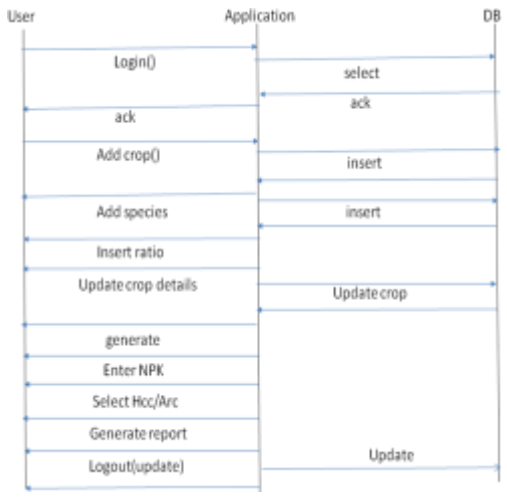

Fig. Sequence Diagram

In the above shown Sequence diagram, it represents the sequence of activities or operations perform in the AGRIFIELD.

XII. Applications and Future Scenario

Application

- Soil quality enhancement tool at University
- Farmer Helping centers all across nation.

Future Scenario

- The AgriField can be used in different agricultural universities for the soil improvement program.

XIII. Conclusion

A fertility testing program that monitors nutrients and pH management can help you save money. Soil testing is the only way to determine the available nutrient status in soil or soilless media and the only way you can develop specific fertilizer recommendations. Yield and economic return can be optimized when fertilizer rates accurately address the needs of a crop. Potential soil and water pollution can be minimized when nutrient application is geared to the needs of a particular crop. It is necessary to have a system that can examine how much fertilizers we need to put into the soil to make it better. AgriField is an initiative in the direction of this domain.

References

[1] www. soilandplantlaboratory.com
[2] http://www.agriinfo.in
[3] www.pdkv.ac.in
[4] Krushi Sanjeevani Diary, PDKV, Akola.