IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 6, Issue 3, March 2026
Impact Factor: 8.2

Agri Logic Solution

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Abstract: *This project is a very practical and impactful initiative, especially for rural development in India. By providing an easy-to-use digital platform for village crew members, it strengthens grassroots administration. When local teams can schedule awareness events, store documents, and monitor activities in one place, it increases transparency, coordination, and efficiency. Instead of depending on manual records, they can make faster and better-informed decisions.*

The integration of soil analysis data into the software is particularly valuable. Agriculture is the backbone of rural India, and soil health directly affects crop yield and farmers' income. By allowing farmers to enter nitrogen (N), phosphorus (P), and potassium (K) values from their soil reports, the system turns technical data into actionable guidance. This reduces guesswork in crop selection and fertilizer usage. As a result, farmers can lower input costs, avoid overuse of fertilizers, protect soil health, and increase profitability.

Government initiatives like soil testing programs and funding schemes such as Rashtriya Krishi Vikas Yojana (RKVY) and Macro Management of Agriculture (MMA) show that soil health management is already a national priority. This software complements those efforts by ensuring that the collected soil data is actually used effectively at the farmer level.

In my opinion, the real strength of this project lies in combining administrative management with agricultural decision support. It not only helps village crew members organize awareness events but also directly improves farmers' livelihoods. If implemented properly with proper training and digital access, this system could significantly enhance rural governance, agricultural productivity, and sustainable development.

Keywords: Cloud computing, Mobile computing, Information and Communication technologies

I. INTRODUCTION

Agriculture plays a very important role in India's development and economy. A large number of people depend on farming for their livelihood. Farmers need proper guidance about crops, fertilizers, soil health, and modern farming methods to improve their production and income. This project is developed to support farmers by providing useful agricultural information in a simple digital form.

Soil testing is one of the most important steps in farming. Over time, when crops are grown repeatedly on the same land, essential nutrients in the soil decrease. This reduction in nutrients can cause low crop yield and plant diseases. To maintain soil fertility, it is necessary to supply the right amount of nutrients to the soil. The three major nutrients required for plant growth are Nitrogen (N), Phosphorus (P), and Potassium (K). A proper soil test helps farmers understand the current nutrient level of their land and apply fertilizers accordingly.

Applying too much or too little fertilizer can affect the quality and quantity of crops. The required amount of NPK depends on the type of crop and its growth stage. Therefore, scientific soil analysis helps in better decision-making and reduces unnecessary fertilizer use.

Modern agriculture is now using digital technology and smart systems to monitor soil nutrients, moisture, and pH levels. Continuous monitoring helps increase productivity and reduce farming costs. Our system provides a user-friendly interface where farmers can enter soil NPK values and get recommendations for suitable crops and fertilizers.

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This project is implemented in Maharashtra to support local farmers. Based on soil data and regional conditions, the system suggests appropriate crops and fertilizer requirements

II. LITERATURE SURVEY

We went through papers as this project was being developed. Sumitha Thankachan and Dr. Kirubakaran (2014) investigated how technology has aided decision-making across a range of industries, particularly in agriculture. Due to a lack of agricultural expertise and environmental changes, agriculture has been underdeveloped for the past few years. This report aims to inform farmers about their understanding, application, and perception of e-agriculture. Statistical survey design was utilized in the study to get information on farmers' knowledge of ecommerce. The results showed that there is a lack of awareness to the point where e-agriculture is required for their support. EAgriculture is a platform that helps with agricultural product marketing. According to Santosh G. Karkhile and Sudarshan G. Ghuge, everyone uses mobile devices often today, even farmers and individuals who live in rural areas. Information and communication technologies (ICT) findings indicate that farmers' daily lives are significantly impacted by mobile technology. Farmers who formerly relied on clouds for rain are now looking to cloud computing (CC) for answers to cultivate better crops in the contemporary agricultural environment. Particularly in India, the farmers adopt slow, unreliable conventional methods. Due to bacterial attacks and a lack of information resources, a significant portion of the crop is suffering harm in the field. Such loss approaches 40% overall on an annual basis. As a result, the research provided here recommends numerous ways a farmer might use mobile computing (MC) on their handsets utilizing the application "Kissan" to help them for significantly better farming and goods. The main issues of market updates for various products, weather updates, and updates for the rainy season are all addressed in this effort, which focuses on Indian farmers and offers bilingual help. Farmers will be able to sell their goods on the world market and make a significant profit thanks to this. Therefore, this framework makes use of MC, which effectively gives the power to the farmer. Tools like the Android SDK are used in the experimental setup. Mobile devices with Android operating systems are tested in this study. According to Aakash G. Ratkal, Gangadhar Akalwadi, and Vinay N. Patil, barely 14% of India's GDP is attributable to agriculture, despite the fact that over half of the country's population depends on it for survival. The insufficient agricultural planning is one potential cause of this. The current system does not offer enough details about the best crops to farm. By examining trends in historical data, we attempt to anticipate crop production and price that a farmer can achieve from his property in this research. We employ a sliding window non-linear regression technique to produce predictions based on several aspects of agricultural production, including rainfall, temperature, market prices, the size of the land area, and previous crop yields. Several districts in the Indian state of Karnataka are the subject of the analysis. In order to address the current socioeconomic problem that many farmers are currently experiencing, our system aims to recommend the best crops for a farmer. This website and mobile application offer information on crop production forecasts, agricultural bank loans, and various government initiatives. The user will ultimately save time by using this programme instead of going to government offices, money by not having to fly, and time by not having to go through drawn-out official procedures. This essay also discusses how many services are made available in various Indian languages. Suman Rani (2016) talked about the many government services that the Indian government offers to citizens who live in rural areas. This essay also discusses the impact of Digital India on the economy, the environment, and society. The author has also covered a number of difficulties brought on by the creation of Digital India.

III. ANALYSIS & FEASIBILITY

3.1 Analysis

Every year, the fertility of soil is decreases and land get polluted. Studies have shown that this is one of the most common problem of every farmer in India and one of the most advantageous for armers. We must have to overcome this problem by using digital technologies that are world wide famous and easy to understand to every farmer in local language. By entering the actual values of NPK farmer gets the detailed summery report for selected crop which farmer

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want to grow. It will reduce the efforts and cost and helps to increase the fertility of soil. In short farmer can produce more vegetables and fruits in less expenses and efforts

3.2 Necessary procedure to know NPK values of soil:

Soil NPK estimation using standard protocol An elaborate description of the standard laboratory testing procedure followed in India is given in the section below. Table 1 provides soil fertility level classification of NPK depending on their kg/ha values and is required for interpreting the test results

3.3 Determination of available phosphorus from soil

Olsen's reagent is made up of sodium bicarbonate and is used for extracting phosphorus from soils with pH > 6.5. It also works well with calcareous soils. It separates Caphosphates, Al-phosphates and Fe-phosphates in the soil by precipitating Ca as CaCO3. Thus, extract obtained by adding Olsen's reagent to soil and filtering the content contains our required phosphorus which is further treated with ammonium molybdate to obtain blue colored solution of phosphor–molybdate complex. The intensity of the blue color provides a measure for the concentration of P, in the test solution. Extraction and estimation

1. Add two spoons of Darco-G-60 followed by 50 ml of 0.5 NaHCO3 solution to 2.5 g soil
2. Cork the flask and shake for 30 minutes then filter the contents to collect the filtrate.
3. Pipette out 5ml of the NaHCO3 exact into 25 ml volumetric flask
4. Add two drops of 2, 4-paranitrophenol and 5 N H2SO4 drop by drop with intermittent shaking till yellow color disappears.
5. Dilute the contents to about 20 ml with distilled water and then add 4ml solution containing ammonium molybdate, antimony potassium tartarate and ascorbic acid.
6. Make up the volume, shake it and measure the intensity of blue color at 660nm on Spectronic 20 or using red filter on colorimeter.

3.4 Feasibility Study

All the projects are feasible if unlimited resources and unlimited time is given. Practically, it is not possible to provide unlimited resources and unlimited time to any project. The development of the Web-Based is more likely to be affected by lack of resources and time deadlines. During the analysis, the feasibility study is performed, based upon the following points

Through Agri Assist, farmers can easily access important details about crops, fertilizers, weather updates, and government schemes in one place. I believe this system can reduce confusion, save time, and improve productivity. Since it is low-cost and easy to develop using simple technologies, it is a practical and impactful project that can support digital farming and contribute to the growth of the agricultural sector.

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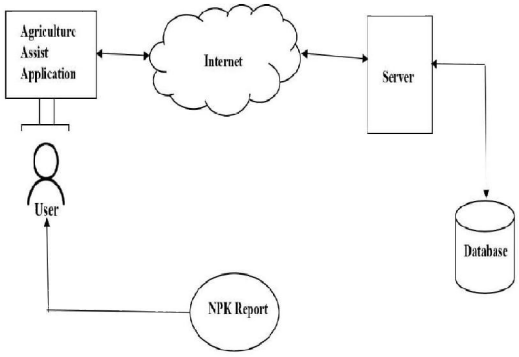
IV. PROPOSED WORKING



A system's structure, behavior, and other aspects are all defined by its conceptual model, or system architecture.A formal description and representation of a system that is set up to facilitate analysis of its structures and behaviors is called an architecture description. The user's first requirement is a soil analysis report with the necessary NPK values for the soil. Users must first provide the NPK values in the appropriate fields for our system. The machine then connects to a server and the server responds to the user after retrieving the record via the internet. Each land type has a suitable value stored in the database, which gives farmers precise information. The report can help farmers manage various types of crops and organize various activities on their farms.

V. RESULT

This method provides the output for numerous soil parameters for various soil samples and suggests the recommended amount of fertilizers, minimizing the use of extra fertilizers and increasing yield. Accurate results are now possible because to technological advancement, which promotes cultivation. Precision agriculture thus provides real-time responsive data that enhances farming practices.

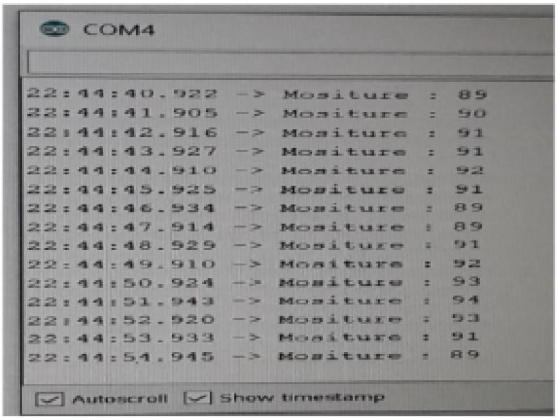


Fig 5. Moisture value shown in Ardunio IDE

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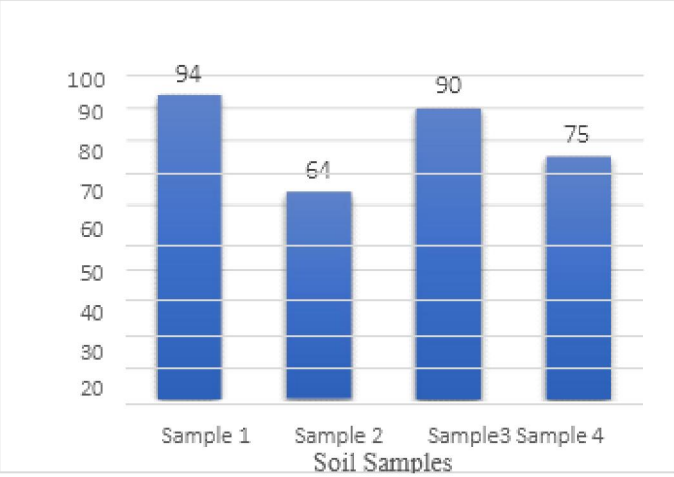

Fertilizer values for phosphorus in soil

Fertility Rating for Phosphorus	
Levels	Range
Low	0-11 Kg p/ha
Medium	11-22 Kg p/ha
High	>22 Kg p/ha

Fertilizer values for nitrogen in soil

Fertility Rating for Nitrogen	
Levels	Range
Low	0-280 Kg/ha
Medium	280-450 Kg/ha
High	>450 Kg/ha

Fertilizer values for potassium in soil

Fertility Rating for Potassium	
Levels	Range
Low	0 – 118kg K/ha
Medium	118 – 280 kg K/ha
High	>280kg K/ha

DOI: 10.48175/IJARSCT-31617

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VI. MAIN BODY

1. System Overview

Agri Assist is developed using HTML, CSS, JavaScript, PHP, and MySQL. The system runs on a local server environment like XAMPP or can be hosted online. It provides two main modules:

- Farmer Module
- Admin Module

2. Farmer Module

The Farmer Module allows users to:

- Register and login securely
- View crop information
- Check fertilizer and pesticide details
- View market prices
- Get weather updates
- Access government scheme information

3. Admin Module

The Admin Module is responsible for managing the system. The admin can:

- Add, update, and delete crop details
- Update market prices
- Manage user accounts
- Maintain database records

4. Database Design

The system uses MySQL database to store:

- User details
- Crop information
- Market prices
- Fertilizer details
- Government scheme data

5. Advantages of the System

- Easy access to agricultural information
- Saves time and effort
- Reduces dependency on middlemen
- Improves decision-making
- Supports digital agricultur

VII OBJECTIVE & HYPOTHESIS

OBJECTIVE,S

1. Shetkaryanna krushi sambandhit mahiti ekach platform var uplabdh karun dena
2. Pikanchi mahiti ani lagvad paddhati sangne.
3. Khate ani kitaknashak yanchi yogya mahiti dene.
4. Bazaar bhavanchi navin mahiti dene.
5. Havaman andaj dakhavne.
6. Sarkari yojana ani anudan yanchi mahiti dene.

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7. Shetkaryanna digital tantra-shikshanashi jodne.
8. Madhyasthavaril avalambitva kami karne.
9. Shetkaryanna yogya nirnay ghenyas madat karne.
10. Sheti utpadakta vadhavne.
11. Shetkaryancha vel ani parishram vachavne.
12. Krushi mahiticha ek kendrit database tayar karne.

HYPOTHESIS

H_0 (Shunya Kalpana)

1. Agri Assist mule shetkaryanna mahiti milnyat sudhar hot nahi.
2. Ya pranali mule sheti utpadakta vadhat nahi.
3. Nirnay prakriyet kahi mahatvapurna badal hot nahi.

H_1 (Vikalpik Kalpana)

1. Agri Assist mule shetkaryanna yogya ani velavar mahiti milte.
2. Ya pranali mule sheti utpadakta vadhte.
3. Shetkaryanna changle nirnay ghenyas madat milte.
4. Bazaar bhav ani sarkari yojananchi mahiti upyogi tharte

VII. CONCLUSION

The group that manages events in villages benefits from this project. In this project, we give the teams access to a storage interface so they can manage awareness campaigns effectively. Through this initiative, they can plan the events' schedule and gather the information they need, such as crop-related videos, PowerPoint presentations, and documentation. They are able to double-check the equipment needed at any moment before attending a programme in a certain village.

The Agri Assist project is very important for farmers and the agricultural sector. Many farmers face difficulties due to lack of proper guidance and updated information. This project can help them by providing useful details about crops, fertilizers, weather, and market prices in one place. It is easy to use and affordable to develop, which makes it practical for rural areas. Overall, Agri Assist can support farmers in making better decisions and improving their productivity, contributing to the growth of agriculture.

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