
Krushivyavastha: Making Farming Smarter, Simpler and More Sustainable

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Abstract

The goal of this project is to create an app called Krushivyavastha, designed specifically for farmers to track their daily agricultural activities and expenses. This mobile application will be accessible to the public through a secure login, offering farmers a structured platform to efficiently manage their tasks. Keeping up with daily responsibilities and costs can be overwhelming, but Krushivyavastha simplifies the process, greatly reducing the time spent on paper work. Ultimately, Krushivyavastha bridges the gap between traditional farming and modern technology, enhancing agricultural productivity.

Keywords: *Agriculture, Farm management, Expense tracking, Agricultural efficiency, Mobile app, Farmers, Rural development, Technology, Data management, Productivity tools, User management.*

INTRODUCTION

Farmers often struggle to manage the stress that comes with their daily tasks and expenses, often feeling buried under piles of paperwork. Krushivyavastha offers a solution by simplifying these challenges through automation. By integrating technology into farming, Krushivyavastha serves as a valuable ally, helping farmers keep track of their activities and expenditures. This app allows farmers to focus on what truly matters – nurturing their crops and soil – while it takes care of the organization. It's not just about blending tradition with technology; it's about equipping farmers with the necessary tools to confidently navigate new changes. With everything they need at their fingertips, Krushivyavastha empowers farmers,

making them feel more capable and in control of their daily operations. Essentially, this app acts as a bridge, connecting traditional agriculture with innovative solutions and paving the way for a more empowered future in farming.

REVIEW OF LITERATURE

Study of Existing System

- **Traditional Farming Practice**

Many farmers continue to rely on traditional methods to manage their daily tasks, like taking handwritten notes or using notebooks. This often leads to confusion and misplaced information, making it difficult for them to stay organized and accurately track their farm activities.

- **Limited Access to Technology**

The absence of modern farming tools and online resources leaves many rural farmers at a disadvantage. Limited internet access prevents them from utilizing practical applications and valuable information that could significantly improve their farming techniques and productivity.

- **Time-Consuming Processes**

Farmers often find themselves bogged down by paperwork and record-keeping due to the absence of effective systems. This takes valuable time away from actual farming activities, ultimately reducing productivity as they focus more on administrative tasks rather than tending to their crops or livestock.

- **Inconsistent Quality of Resources**

The tools and materials available to farmers can vary greatly in terms of effectiveness and quality. This inconsistency can lead to confusion, making it challenging for farmers to determine which products or methods will truly benefit their operations and contribute to their success.

- **Lack of Organized Financial Tracking**

Managing finances can be quite challenging for many farmers, as they struggle to keep track of their expenses and income. Without a reliable system to record financial

transactions, it becomes difficult for them to maintain a clear understanding of their financial situation and make informed decisions.

FINDINGS FROM THE LITERATURE REVIEW

Our review of existing agricultural management systems identified several significant shortcomings. Many of the solutions currently available are not user-friendly or tailored to the needs of farmers, particularly those in rural areas.

Farmers often rely on traditional methods for their work, which, while familiar, can be slow and inefficient. This is where Krushivyavastha comes in, providing a user-friendly platform that helps farmers manage their farming operations and finances more effectively.

Krushivyavastha is designed to be user-friendly, enabling farmers to easily record their daily activities and track related expenses. This approach boosts productivity and supports better decision-making. The app addresses a significant need among farmers by offering a long-awaited solution that helps them thrive in their agricultural endeavors.

PROBLEM STATEMENT

Farmers usually struggle to manage their farming activities efficiently since they do not have structured systems to monitor their activities, costs, and performance. When activities are well-structured, it is easier to evaluate performance. Incomplete tracking of expenses may cause problems in controlling their budget. Although there are some tools which try to assist farmers in making decisions using this data, most current systems have shortcomings, as they need specific profile data from users. Moreover, most applications do not incorporate an embedded feedback loop and are incompatible with multiple devices, so they are not very useful for farmers to operate effectively.

This is where Krushivyavastha comes to the rescue by providing a more end-user-friendly solution where farmers can manage their activities with ease, monitor expenses, and enhance farm management as a whole without the technical complexity and constraints of existing tools.

PROJECT SCOPE

The project will create a friendly farm management application meant to help farmers manage their day-to-day activities and increase productivity. It will incorporate secure user login and registration with email and two-factor authentication, enabling farmers to conveniently update their profiles using personal and farm details.

The app will allow farmers to track their day-to-day activities such as land preparation, sowing, irrigation, fertilization, pesticide spraying, renting tools, harvesting, and other costs, with extensive labor and cost tracking. Users will have the ability to classify and monitor their expenditures, view summaries of different periods, and study patterns of expenditure in visual form. There will also be a feedback feature for ongoing improvement of the app.

Krushivyavastha will be Android compatible and will provide features for customization, reminders for tasks, and generating reports. These will equip farmers with better, informed decisions and be able to run their farming businesses more easily and efficiently.

THE OBJECTIVE OF THE PROPOSED SYSTEM

Simplify Task Management: Create a user -friendly interface that allows farmers to log and track their daily activities quickly reduces the need for traditional papers

Expense Tracking: Offers tools to help farmers keep track of the expenses and proceeds, making it easier for them to manage finance and plan for the future.

Reporting and Analytics: Provides clear insights and reports to farmers on their activities and financial status, which helps them make better decisions based on real data.

User-Friendly Design: Make a simple and accessible app experience, make sure farmers, regardless of their technical skills, can easily navigate and use the app.

METHODOLOGY

The architecture of our proposed system is shown in the below Fig. 1.

Modules of Software System

- **Module 1: Log In**

- **Sub module1.1:** Sign in or Login
User registration with mobile number and OTP
- **Sub module1.2:** Plot
Plot registration (Plot no, Plot Area, Crop).

Module 2: Profile Management

Sub module 2.1: Add Plot

- Plot registration (plot number, plot area, crop name).

Sub module 2.2: Farmer's Information

- Farmer information management (name, phone number).
- Profile picture upload and management.

Module 3: Activities

Sub module 3.1: Land Preparation

- Pre-defined activity categories (Activities performed on land, performance date, etc.)

Sub module 3.2: Sowing

- Pre-defined activity categories (Sowed Crop, Sowing date, etc.)

Sub module 3.3: Water Supply

- Pre-defined activity categories (techniques used, labor used, etc.)

Sub module 3.4: Fertilizers used

- Pre-defined activity categories (Used Fertilizers, Quantity, etc.).

Sub module 3.5: Pesticides

- Pre-defined activity categories (Pesticide Type, Quantity, etc.)

Sub module 3.6: Tools Lent/Borrowed

- Pre-defined activity categories (Tool Name, Due date, etc.)

Sub module 3.7: Harvesting

- Pre-defined activity categories (Harvested Crop, harvested Date, etc.).

Submodule 3.8: Other Expenses

- Pre-defined activity categories (Light bills, Motor bills, etc.)

Module 4: Report

Sub module 4.1: Activity Report

- Retrieving report of activity categories (seeds, fertilizers, equipment, etc.)

Sub module 4.2: Expense Logging

- Expense input with date, amount, and category.
- Receipt upload and management.

Sub module 4.3: Expense Overview

- Summary of total expenses over selected periods.
- Breakdown of costs by category these modules provide a comprehensive structure for the farm management mobile application, covering user authentication, profile management, task management, expense tracking, and more.

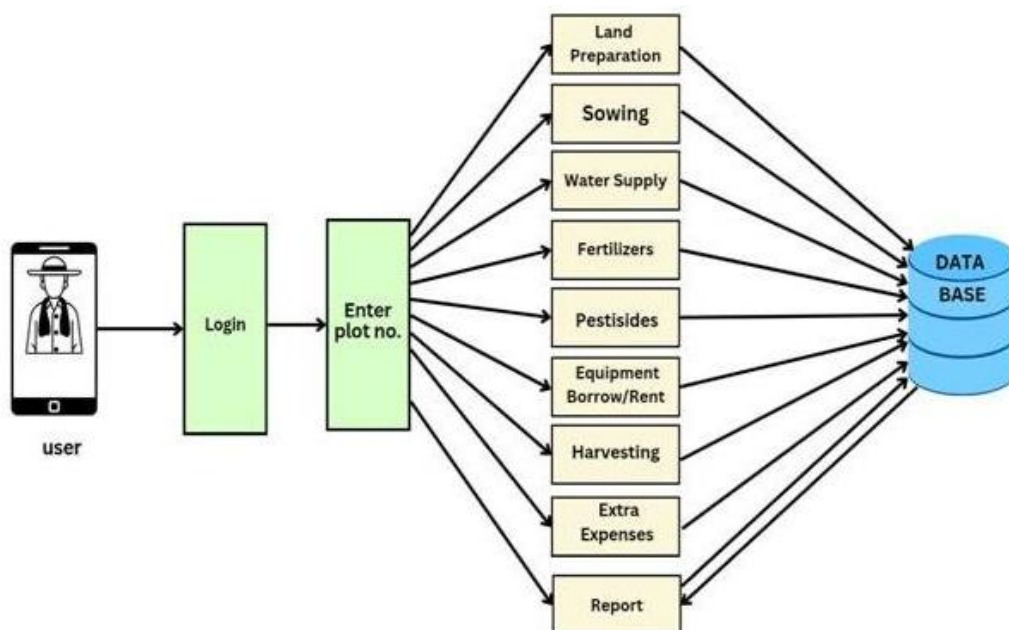


Figure no. 1: System Architecture

REQUIREMENTS

Frontend

- React Native

Backend

- Firebase

Hardware Requirements

RAM: Minimum 8GB

Storage: At least 10 GB of free space for SDKs and project

Processor: Intel core i5 or higher.

Flowchart

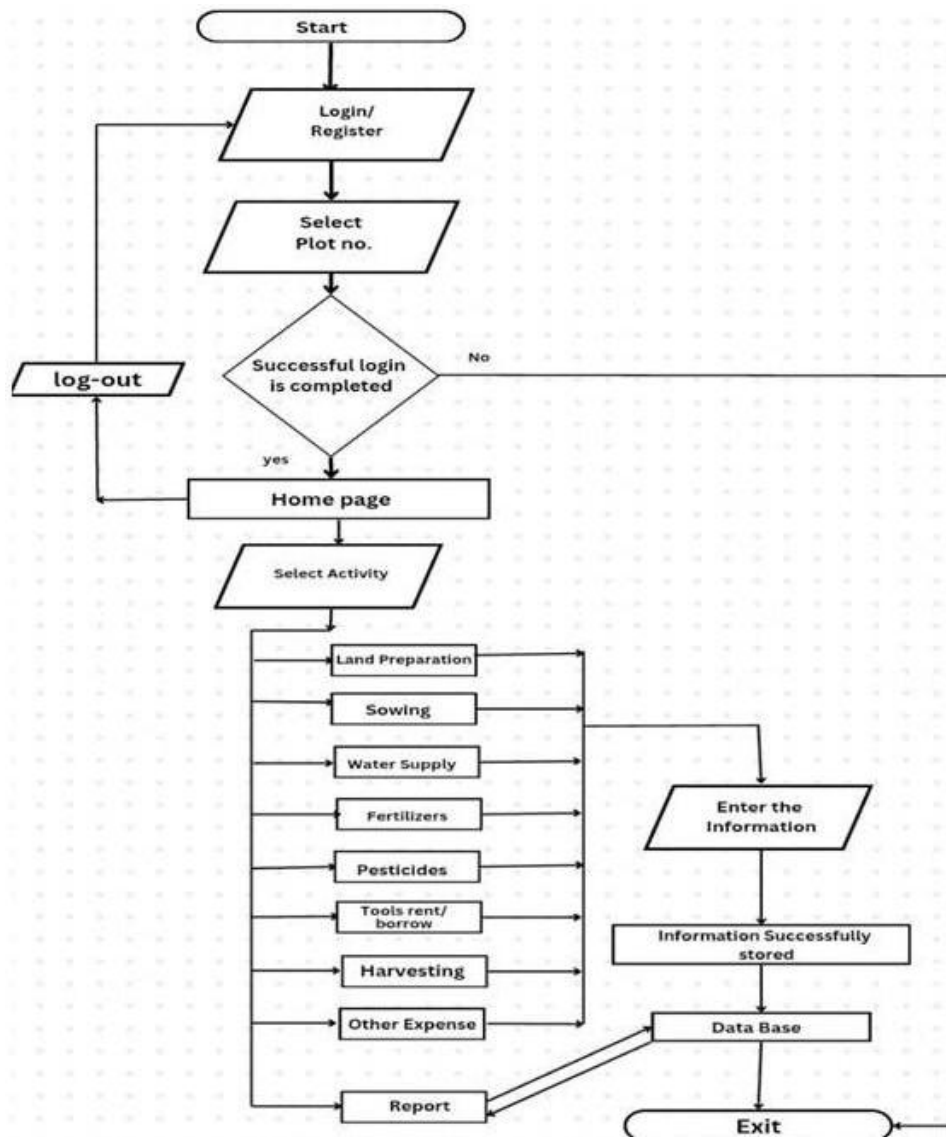


Figure no. 2: Flowchart

ER Diagram

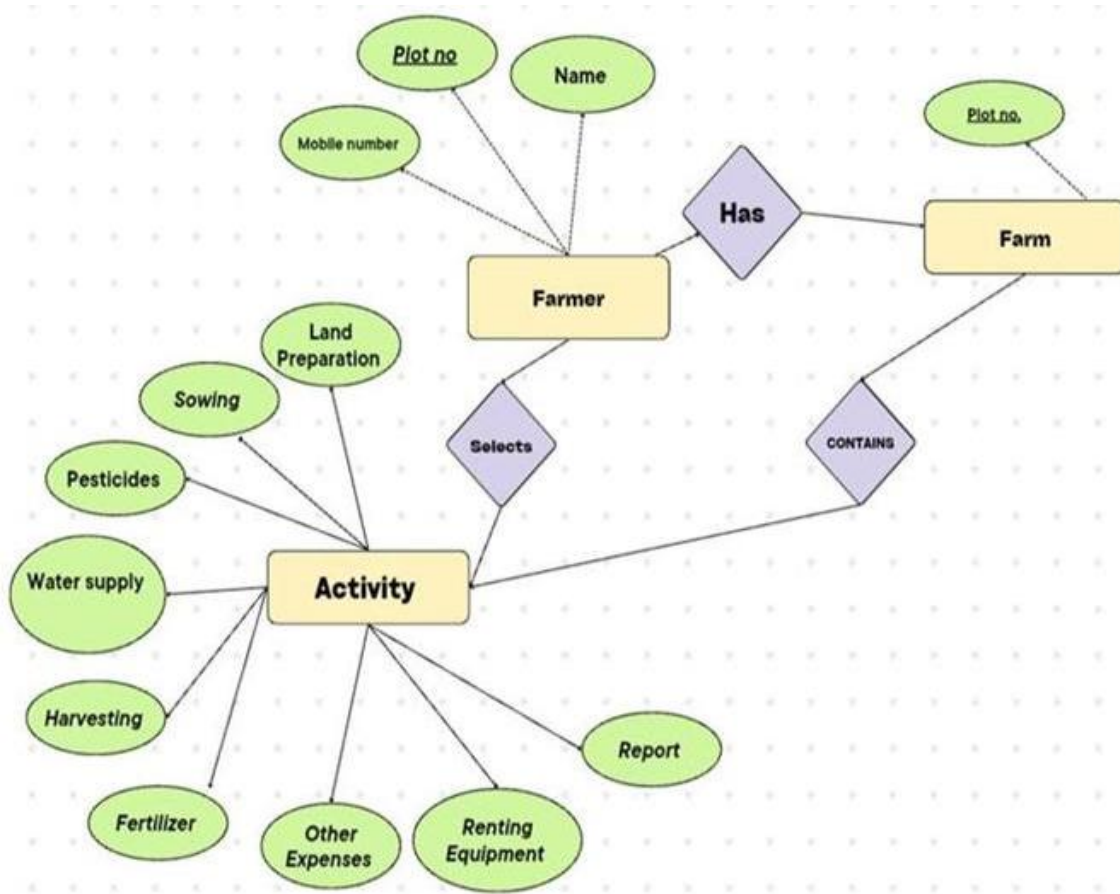


Figure 3: ER Diagram.

Use Case Diagram

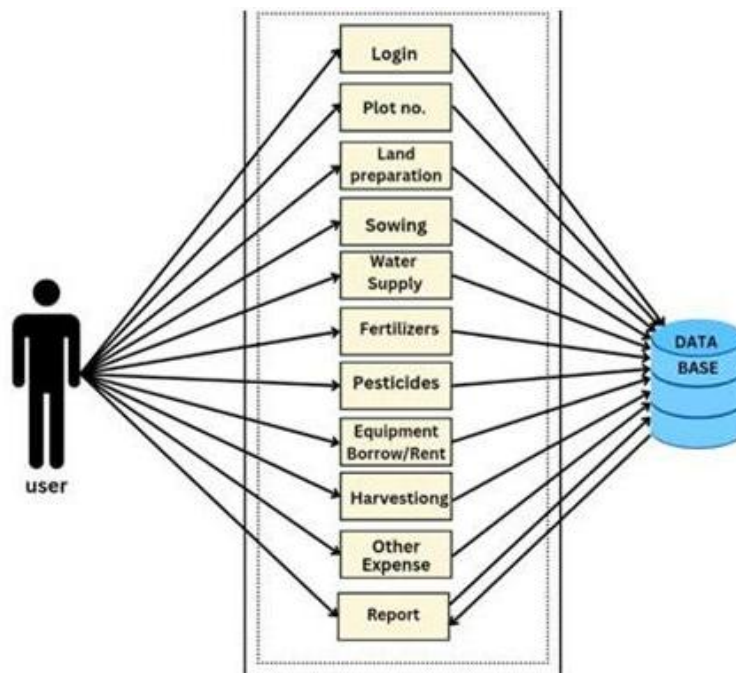


Figure 4: Use Case Diagram.

Data Flow Diagram

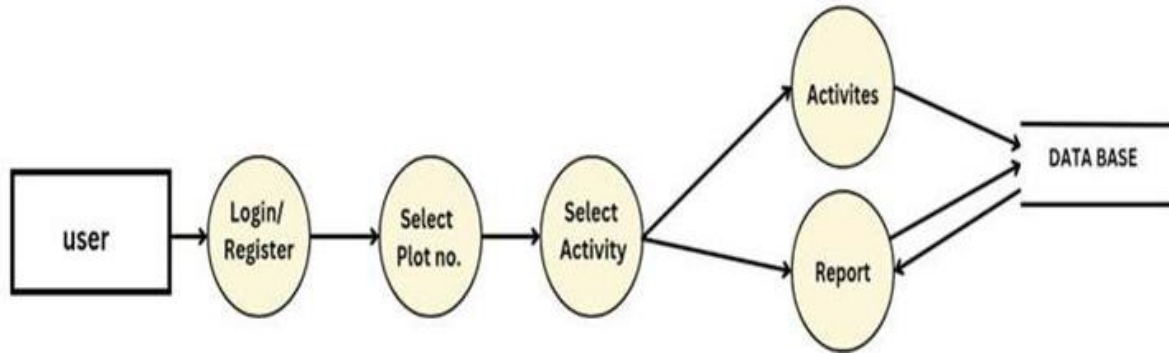


Figure 5: Data Flow Diagram level 0

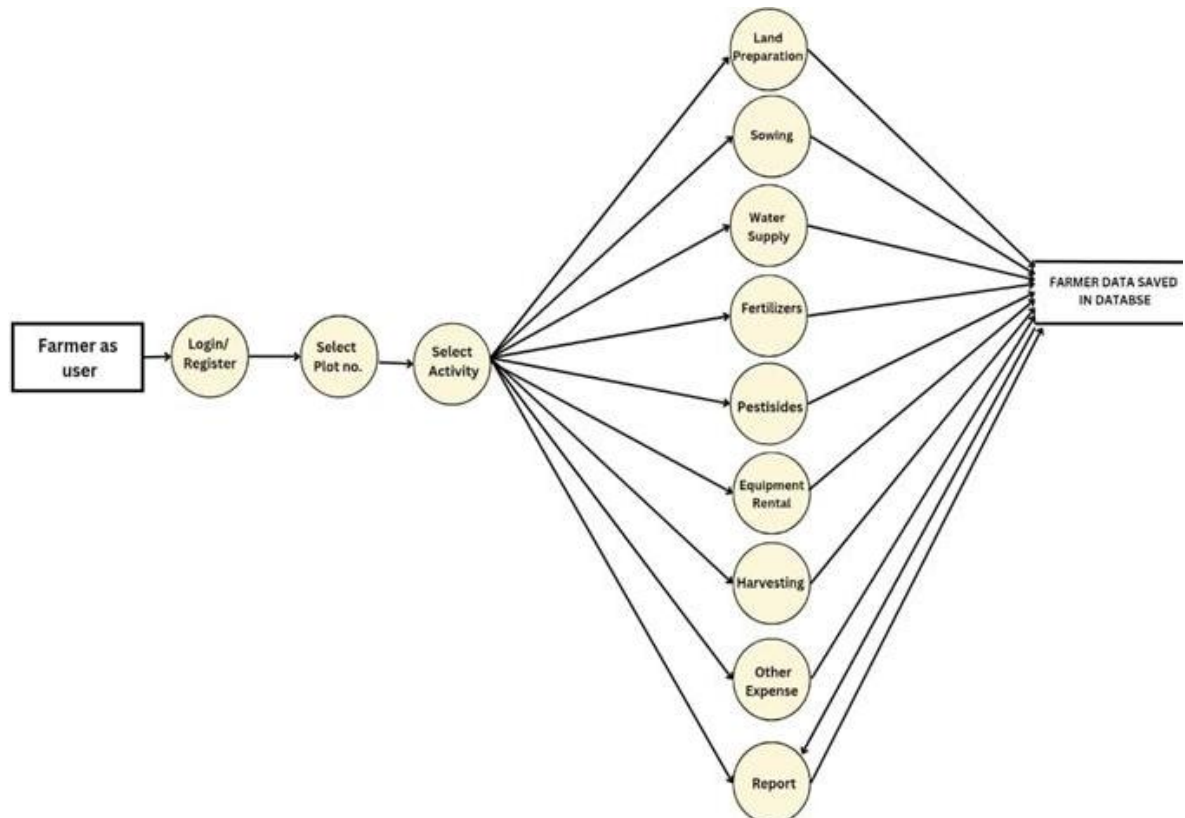


Figure 6: Data Flow Diagram level 1

SNAP SHOTS



Figure 7: Login Page.

If your account exists, enter valid credentials and click on LOGIN.



Figure 8: Registration Page.

For creating new account, enter valid credentials and click on REGISTER.



Figure 9: Add Plot.

Figure 10: Add Plot Details.

Add Plot details accordingly and save.



Figure 11: Select Plot / Log out.



Figure 12: Activities

Select the activities performed on plot and fill details respectively.

Figure 13: Sowing

Add details like date, cost etc.

← पाणी पुरवठा

< **Water supply (Irrigation)**

Irrigation Type (सिंचन प्रकार)

Enter Irrigation Type | सिंचन प्रकार टाका

Time To Water (पाणी देण्यासाठी लागणारा वेळ)

Fri Mar 07 2025 📅

Water Cost (पाण्याचा खर्च (लागल्यास))

Enter Water Cost | पाण्याचा खर्च (लागल्यास) टाका

Number of Labour (कामगारांची संख्या)

Enter Number of Labour | कामगारांची संख्या टाका

Salary of Labour (कामगारांचा पगार)

Enter Salary of Labour | कामगारांचा पगार टाका

Total Cost (पाणीपुरवठ्याचा एकूण खर्च (सिंचन))

Enter Total Cost | पाणीपुरवठ्याचा एकूण खर्च (सिंचन)

सेव्ह

Figure 14: Irrigation

Add details like type, cost etc.

← मातीची तयारी

< **Soil Preparation**

Work Type (काम प्रकार)

Enter Work Type | काम प्रकार टाका

Time to Work (काम करण्याचा वेळ)

Fri Mar 07 2025 📅

Number of Labour (श्रमिकांची संख्या)

Enter Number of Labour | श्रमिकांची संख्या टाका

Salary of Labour (श्रमिकांचा पगार)

Enter Salary of Labour | श्रमिकांचा पगार टाका

Total Cost (मातीची तयारीसाठी एकूण खर्च)

Enter Total Cost | मातीची तयारीसाठी एकूण खर्च टाका

सेव्ह

Figure no. 15: Soil Preparation.

Add details like type, cost etc.

← खत

< Fertiliser

Fertiliser Type (खते प्रकार)
Enter Fertiliser Type | खते प्रकार टाका

Quantity of Fertiliser (खतेचे प्रमाण)
Enter Quantity of Fertiliser | खतेचे प्रमाण टाका

Fertiliser cost (खते खर्च)
Enter Fertiliser cost | खते खर्च टाका

Date of Fertilisers used (खते वापरण्याची तारीख)
Fri Mar 07 2025

Number of Labour (कामगारांची संख्या)
Enter Number of Labour | कामगारांची संख्या टाका

Salary of Labour (कामगारांचे वेतन)
Enter Salary of Labour | कामगारांचे वेतन टाका

Total Expenses of Fertiliser (खते खर्चाचा एकूण खर्च)
Enter Total Expenses of Fertiliser | खते खर्चाचा

सेव्ह

Figure no. 16: Fertilizer.

Add details like quantity, cost etc.

← कीटकनाशक

< Pesticides

Pesticides Type (कीटकनाशक प्रकार)
Enter Pesticides Type | कीटकनाशक प्रकार टाका

Quantity of Pesticides (कीटकनाशकाची प्रमाण)
Enter Quantity of Pesticides | कीटकनाशकाची प्रमा

Pesticides cost (कीटकनाशकाची किंमत)
Enter Pesticides cost | कीटकनाशकाची किंमत टाका

Date of Pesticides used (कीटकनाशक वापराची तारीख)
Fri Mar 07 2025

Number of Labour (कामगारांची संख्या)
Enter Number of Labour | कामगारांची संख्या टाका

Salary of Labour (कामगारांचा वेतन)
Enter Salary of Labour | कामगारांचा वेतन टाका

Total Cost (कीटकनाशकाचा एकूण खर्च)
Enter Total Cost | कीटकनाशकाचा एकूण खर्च टाका

सेव्ह

Figure 17: Pesticides.

Add details like quantity, cost etc.

Figure no. 18: Harvesting

Add Harvesting details like date, cost etc.

Figure no. 19: Renting.

Add details like date, cost etc.

← इतर खर्च

< Other Expenses

Department (विभाग)
Enter Department | विभाग टाका

Expenses (खर्च)
Enter Expenses | खर्च टाका

Date (तारीख)
Invalid Date

Amount Paid (भरलेली रक्कम)
Enter Amount Paid | भरलेली रक्कम टाका

Remaining amount (उर्वरित रक्कम)
Enter Remaining amount | उर्वरित रक्कम टाका

सेव्ह

Figure no. 20: Other Expenses.

Add details like expenses, cost etc.

← स्मार्ट रिपोर्ट

स्मार्ट अहवाल येथे व्युत्पन्न केले आहेत.

खते: NaN
कापणी: NaN
इतर खर्च: NaN
कीटकनाशक: NaN
साहित्य भाड्याने घेणे: NaN
मातीची तयारी: NaN
पेरणी: 11200
पाणी पुरवठा (सिंचन): NaN

खते

उत्पादन

इतर खर्च

कीटकनाशक

उपकरणे भाड्याने घेणे

Figure no. 21: Final Report.

APPLICATION OF PROPOSED SYSTEM

Like a farm assistant, the Krishivyavastha app decreases laborious work in farming and financial management for the farmer. It is an intelligent assistant that increases productivity through efficient daily routines.

- 1. General Farmers:** The app allows farmers to log and track daily activities and expenses. Key reminders could be set for tasks, crop schedules could be monitored, and financial health could be graded so that decisions might be made wisely.
- 2. Agricultural Cooperatives:** Krishivyavastha allows data sharing with cooperative members, which helps with proper communication and coordination. Thus, this coordination provides resource sharing and planning to become hassle-free and increase the actual performance of cooperatives.
- 3. Individual Farmers:** The application improves management concerning time and finance and considerably decreases bookkeeping efforts. As a result, the farmers can emphasize land productivity improvements, eventually improving yields. The ability to obtain direct access to records helps them accelerate improvements to market demands.
- 4. Record Maintenance:** It keeps all the records of farming activities and expenses. Tracking inputs, outputs, and financials can be quickly done, thus simplifying auditing and compliance while allowing for the analysis of trends to plan better for the future.
- 5. Performance Measurement:** The app includes performance metrics for crop yields and expenses as a percentage of income. This data-driven approach helps farmers identify areas for improvement, reducing reliance on guesswork in their practices.
 - Continuously monitors legal news and updates, providing users with timely information on changes in laws and regulations that may affect them.
 - In the next deployment, the system can support multilinguals.
 - The system can be integrated with another system, including the support of professional Lawyers with great potential for solving their queries.

ADVANTAGES AND DISADVANTAGES

Advantages

- Time-Saving
- User- Friendly Interface
- Real-Time Data Tracking
- Efficient Data Management.
- Cost-Effective Tool

Disadvantages

- Limited Offline Features
- Initial Learning Curve

CONCLUSION AND FUTURE WORK

Farmers often need help managing daily tasks and expenses through cumbersome paper work in today's fast-paced world. Our project, Krishivyavastha, aims to alleviate this burden by providing a user-friendly platform that integrates modern technology with traditional farming practices. Our literature review highlighted key challenges: outdated methods, limited technological access, lengthy processes, inconsistent resource quality, and poor financial tracking. These issues underscore the need for an innovative solution tailored to farmers, especially in rural areas. Krishivyavastha addresses these challenges by offering intuitive task management, robust expense tracking, insightful reporting, and a user-friendly design. This simplifies daily management, improves financial monitoring, and empowers farmers to make informed decisions. The project scope includes secure user registration and login, detailed activity and expense logging, customization options, task reminders, report generation, and a feedback feature for continuous improvement.

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