

# FarmBuddy System Using API

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## Abstract

Farm Buddy is a dynamic smart farming website that aims to precisely provide farmers with real-time agricultural information, crop guidance, market price updates, and e-commerce facilities. This review paper gives a diagram of Farm Buddy's modules and technologies. It investigates the challenges and progressions in integrating weather APIs, market data, and e-commerce systems, with a focus on sustainable farming practices. The paper addresses the importance of digital literacy and farmer empowerment, emphasizing the significance of real-time data and direct farmer-to-customer connections. It discusses real-world applications and highlights the need for further research on IoT integration, AI-based crop prediction, and multimodal approaches. This brief survey serves as an important asset for researchers, professionals, and policymakers interested in the field of smart agriculture.

**Keywords:** Smart Farming, Agriculture, API Integration, E-commerce, Sustainability, Digital India

## INTRODUCTION

Smart farming utilizing web-based platforms has emerged as a vital area of research within the field of agricultural technology. The ability to accurately provide farmers with weather forecasts, crop recommendations, and market prices has significant practical implications in various domains, including rural development, food security, and sustainable farming.

Farm Buddy aims to supply a comprehensive investigation of the techniques, methods, and recent advancements in digital agriculture using web technologies. It integrates HTML, CSS, JavaScript, Firebase, and trusted APIs to deliver real-time data. The platform also includes an e-commerce module for seeds and fertilizers, and a direct farmer-to-customer marketplace.

This review will examine the modules used in Farm Buddy, including weather, crop guidance, market, and e-commerce, and will explore the strengths and limitations of these approaches. It will also address challenges such as digital literacy, rural connectivity, and farmer adoption, while emphasizing the importance of sustainability and fair trade.

## LITERATURE REVIEW

Several agricultural systems have been developed to support farmers:

**Kisan Suvidha** – provides weather updates and scheme information.

**AgriTech Portal** – offers agricultural data but lacks integration.

**Digital Krishi** – focuses on government schemes but is not interactive.

Past studies highlight the importance of real-time data, IoT sensors, and AI-based predictions in

agriculture. Farm Buddy builds upon these works by integrating multiple modules into a single responsive platform.

**It stands out by offering:**

- Weather forecasts using live APIs.
- Crop guidance based on soil and season.
- Market price updates from government databases.
- E-commerce options for seeds and fertilizers.
- Direct farmer-to-customer marketplace eliminating intermediaries.

**PROPOSED SYSTEM**

This project aims to build a dynamic smart farming website that can provide farmers with accurate, real-time information and marketplace access.

**The essential goal of Farm Buddy is to integrate multiple modules:**

**User Module** – registration and personalized access.

**Weather Module** – real-time forecasts via API.

**Crop Guidance Module** – crop recommendations based on soil and season.

**Market Module** – daily commodity prices.

**E-commerce Module** – purchase of seeds, fertilizers, and tools.

**Marketplace Module** – direct farmer-to-customer sales.

**Chatbot & Video Call Features** – instant support and expert consultations.

**Farm Locator** – maps nearby farms for networking.

Farm Buddy also outlines ways this technology can be used to our advantage, ranging from government monitoring and training centers to direct consumer access. The architecture ensures real-time responsiveness, modular updates, and smooth integration with external data sources.

**DATASET DESCRIPTION**

The dataset used in the FarmBuddy project is collected from user inputs and agricultural sources, containing information such as crop type, soil type, temperature, humidity, rainfall, soil moisture, fertilizer usage, and crop images. The target variable indicates whether the crop is healthy or affected by disease or pests. Data pre-processing techniques like handling missing values, normalization, image processing, and encoding are applied to improve accuracy. This dataset helps in predicting crop diseases, suggesting treatments, and supporting farmers in better decision-making.

**METHODOLOGY**

Initially, the dataset in the FarmBuddy project is loaded and analyzed using basic data handling techniques in Python. Missing values are managed, and categorical data such as crop type and soil type are converted into a suitable format. The dataset is then used for processing and prediction.

The system is developed using HTML and CSS for the front-end interface, where users can input crop details and upload images, while Python is used in the backend to process the data and generate results. Based on the input, the system analyzes whether the crop is healthy or affected by disease or pests and provides appropriate suggestions to the farmers.

## RESULTS AND DISCUSSION

The performance of the system in the FarmBuddy project is evaluated based on how accurately it identifies crop health and provides useful suggestions. The results show that the system effectively analyzes user inputs such as crop details and environmental conditions to detect whether the crop is healthy or affected by diseases or pests. Using Python-based processing, the system generates reliable outputs, while the HTML and CSS interface ensures easy interaction for users. The results demonstrate that this approach can effectively support farmers by providing timely insights and recommendations, making the system a helpful tool for improving crop management and productivity.





## CONCLUSION

In conclusion, this review paper gives a comprehensive diagram of the advancements, challenges, and potential applications of Farm Buddy. It highlights the importance of accurate agricultural information systems in domains such as farmer empowerment, sustainability, and rural development.

The paper emphasizes the significance of strong and dependable methods for integrating APIs and delivering real-time data. It investigates a wide range of modules, including weather, crop guidance, market, and e-commerce. The effectiveness of Farm Buddy lies in its interactive design, direct marketplace, and support for sustainable farming practices.

Future enhancements include voice-based guidance, IoT sensor integration, AI-driven pest prediction, and mobile app extensions. Overall, Farm Buddy holds great potential for improving agriculture and strengthening the connection between farmers and technology.

## FUTURE SCOPE

Future work for the FarmBuddy project includes enhancing the system by developing a complete web or mobile application for better accessibility to farmers. Advanced techniques such as deep learning models can be integrated to improve the accuracy of crop disease detection, especially using image data. Additionally, applying feature selection methods can help in improving prediction performance and efficiency.

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