IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

# Review Of Agricultural Web Assistance

**Tushar S. Ambadey**
Department of Information Technology
Prof. Ram Meghe College of Engineering & Management Badnera, Amravati,
Maharashtra India

**Janhavi P. Bahale**
Department of Information Technology
Prof. Ram Meghe College of Engineering & Management Badnera, Amravati,
Maharashtra India

**Dakshata S. Ingle**
Department of Information Technology
Prof. Ram Meghe College of Engineering & Management Badnera, Amravati,
Maharashtra India

**Sanika S. Dahelkar**
Department of Information Technology
Prof. Ram Meghe College of Engineering & Management Badnera, Amravati,
Maharashtra India

Under the Guidance of
**Dr. Priti A. Khodke**
Department of Information Technology
Prof. Ram Meghe College of Engineering & Management Badnera, Amravati,
Maharashtra, India

**ABSTRACT—** Agriculture forms the backbone of India's economy, with farmers serving as the primary providers of sustenance for the population. However, changing climatic conditions could impact their crops. This paper presents an Agricultural Web Assistance System developed using Python, Flask, and Machine Learning to provide smart solutions for farmers and retailers. The system allows farmers to register and share agricultural waste details, which are processed by the Gemini model to generate useful insights and automatically create posts visible to retailers. Retailers can then view and utilize these posts, creating a platform for effective resource management. The application integrates satellite view and real-time weather forecasting to support data-driven crop prediction, while soil fertility analysis further refines the recommendations. Additionally, the system predicts crop diseases and provides fertilizer recommendations to enhance productivity. With multilingual support and access to nearby NGOs, the platform ensures inclusivity and accessibility. This paper is a comprehensive digital platform designed to support farmers by providing crucial agricultural insights and services. By integrating technology into farming, this paper aims to reduce risks, increase productivity.

**KEYWORDS– Machine Learning, Python, Agricultural Web Assistance, Gemini Model.**

## I. INTRODUCTION

Agriculture is the backbone of many economies, and technological advancements can significantly enhance farming efficiency and productivity. In recent years, the integration of artificial intelligence, machine learning, and web-based tools has shown tremendous potential in transforming agriculture into a data-driven domain. By combining these technologies with real-time analytics, weather forecasting, and intelligent recommendations, it becomes possible to support farmers in making informed decisions and increasing their productivity.

This paper aims to develop a Python-based web platform that assists farmers in managing agricultural waste, predicting crops, and improving productivity through data-driven insights. Farmers can submit waste information, receive actionable suggestions, and share posts visible to retailers, creating a practical resource exchange system. One of its core features is crop prediction which leverages machine learning to help farmers make informed decisions. The platform also provides crop predictions based on weather and soil fertility analysis, recommends fertilizers in case of crop diseases, and helps farmers locate nearby NGOs for additional support. With real-time updates, satellite views, and multilingual support, the system is

designed to empower farmers with timely information and tools for better decision-making and sustainable farming practices. The paper aims to revolutionize the agricultural sector by providing a comprehensive online platform to help farmers optimize their crop cultivation and overall farming practices.

## II. LITERATURE REVIEW

1] V. Srivastava, et al. This review paper proposes the integration of direct-to-consumer agricultural platforms into the Indian Agronomy landscape. In the contemporary era dominated by technological advancements, the widespread use of smartphones and digital platforms has revolutionized various aspects of daily life. Building upon this trend, the aim of this paper is to investigate the practicality and impact of leveraging equipment to facilitate direct transactions between tillers and consumers. The paper underscores the transformative potential of innovation in empowering farmers and reshaping the agricultural landscape in India. By fostering direct connections between producers and consumers.

2] Galeta, Joseph, et al. In this paper, the presented system uses Firebase to allow for push notifications to be sent to users across platforms (iOS, Android, and web) to engage and re-engage with the app's audience and also to utilize their farmer login to register their complaints with the proper dealers or authorities, and the authorities will regularly access that page using their login ids and passwords. Additionally, it offers seamless integration of data, including access to agricultural information, crop suggestions, pest control guidance, and weather forecasts.

3] Lagade, Pratik, et al. The "Farmer Assistant Application" presented in this paper is a comprehensive digital platform designed to support farmers by providing crucial agricultural insights and services. It integrates crop prediction using machine learning models to help farmers optimize their yield based on soil conditions and historical data. The application offers real-time weather updates to assist in decision-making regarding irrigation and harvesting. Additionally, it provides information on government subsidies, ensuring farmers are aware of financial aid and schemes available to them. A labor-finding feature connects farmers with agricultural workers, addressing workforce shortages. The app aims to enhance efficiency, reduce risks, and improve overall productivity for farmers through technology-driven solutions.

4] Peng, Chunming, et al. This paper explores advantages of Web services in providing on-demand agricultural drought analysis and facilitating the perception process in agricultural drought management. Four Web services, drawROI, getVCIStats, getDroughtPercentageByStates, and getDroughtTimeSeries, are presented in details in this paper. These Web services demonstrate improved support to drought analysis and decision-making for the general public and illustrate the potential of Web services in automating geospatial knowledge discovery and dissemination in the Big Data era.

5] Reddy, Pennabadi Devendra, et al. In this paper, an AI Agriculture Assistant integrating a crop recommendation system and an agricultural query chatbot is developed to provide guidance on crop cultivation. Based on this, the crop recommendation system uses a stack ensemble model comprising Random Forest and Gradient Boosting, and an accuracy of 99.32% and F1-Score of 99.26%. Here, word embeddings are performed through FastText which allows for a quick response time (0.0244 seconds) and a cosine similarity of 0.88629 for the chatbot. With RSA encryption for securing user data, we ensure secure communication. It uses the critical elements of the soil composition, weather and crop performance in formulating tailored agricultural guidance. Back end communication is done through Flask, and the entire system was deployed in this manner with a web interface to drive usage and for real time data responses.

6] Shyamaladevi, et al. The proposed system is called farmer helping system which integrates relevant web services like soil information, plant disease information, and plant information and also contains pesticides and fungicides information. This farmer helping system gives the appropriate solution for farmers. The farmer helping system analyses the message from the user, contacts appropriate resources, and return actionable information, while requiring minimal involvement or technology consciousness from the user. The semantically annotated data is used for integration, search, analysis, discovery, question answering and situational awareness for making the user system efficient.

7] Baz, Fatih Çağatay, et al. The Web Based Remote Agricultural Control and Consultancy Application designed in this study was developed with the Python programming language. The development and operation of the application is presented in the form of screenshots. In the research, user opinions of the application were collected through a form consisting of 4 questions to measure demographic information and a qualitative question consisting of 7 main titles and 28 sub-titles to measure the opinions of technical personnel about the application, which was prepared by taking expert opinions. The data obtained from the research users were analyzed with the Nvivo 12 program.

8] Syed, et al. In this research, we present ensemble-based machine learning approaches in the IoT environment to predict crop yields and enable sustainable farming by guiding the farmers to grow the correct crop during the correct season to increase their yields. The proposed method uses a novel ensemble-based machine learning classification approach with two levels of predictions-level-0 prediction includes (Logistic Regression (LR), Classification and Regression Trees (CART), Support Vector Machines (SVM), and K-Nearest Neighbors (KNN)) classifiers are input as features to the level-1 meta classifier (Random Forest) to detect the distinct categories of different crops.

9] Naidu, P. M., et al. This project seeks to develop a solution for automating the stubble collection process, its transportation to designated sites, sending notifications about pickup and delivery, and facilitating the tracking of stubble disposal in an eco-friendly manner. The proposed Android application is versatile and can be utilized by various stakeholders, including farmers, transportation services, and small-scale industries. The application consists of modules to the specific needs of each user group,

facilitating seamless interaction and problem resolution. The Agriculture Waste Management System Android application represents an innovative solution to efficiently and sustainably manage agricultural wastage. This system addresses the unique requirements of farmers, transporters, and industries, creating an interconnected ecosystem for responsible handling of surplus agricultural produce.

10] Mamatha, Bommireddy, et al. This review article comprehensively explores a spectrum of strategies aimed at enhancing soil health and fertility management within the context of sustainable agriculture. Beginning with an overview of the pivotal role soil health plays in agricultural systems, the review meticulously examines the significance of adopting sound soil fertility management practices to sustain soil productivity while mitigating adverse environmental impacts. Traditional and innovative approaches to soil management are thoroughly discussed, encompassing a range of practices such as organic amendments, cover cropping, crop rotation, reduced tillage, and integrated nutrient management. These practices, deeply rooted in agricultural traditions, are shown to enhance soil structure, foster nutrient cycling, and promote beneficial soil microbial communities, thereby contributing to long-term soil health and productivity. Furthermore, the review elucidates emerging technologies and methodologies that hold promise for revolutionizing soil health and fertility management in sustainable farming systems.

11] Professor Savita Sawant, et al. studies in e-commerce and retail analytics highlight the effectiveness of clustering techniques such as K-Means and Fuzzy C-Means in segmenting customers based on purchasing behavior, preferences, and demographics, enabling personalized recommendations and targeted marketing. In a nursery context, clustering can group users by plant type interests, seasonal buying patterns, and budget ranges, while product clustering can reveal frequently purchased plant combinations, improving inventory planning and product bundling. Furthermore, visual data representation techniques, including dashboards and dimensionality-reduction methods, support intuitive interpretation of complex datasets by displaying trends, customer segments, and sales patterns in graphical form. These approaches help administrators make data-driven decisions and improve user engagement through clear product categorization and recommendations. Overall, the literature indicates that combining clustering algorithms with visual analytics can significantly enhance operational efficiency, customer satisfaction, and decision-making in an e-nursery retail platform.

12] Gulam Muddasir Farooqui et al. presented key solution to improve agricultural productivity, resource efficiency, and decision-making through the integration of Internet of Things (IoT), data analytics, and automation technologies. Existing research shows that smart farming assistants use sensors to monitor soil moisture, temperature, humidity, and crop health, enabling real-time data collection and automated responses such as irrigation control and fertilizer recommendations. Machine learning techniques are increasingly applied to analyze environmental and crop data, helping predict disease outbreaks, optimize irrigation schedules, and enhance yield forecasting. Cloud platforms and mobile applications further support farmers by providing remote monitoring, alerts, and visual dashboards for easy interpretation of field conditions. Studies also highlight the importance of data visualization in presenting complex agricultural data in user-friendly formats, allowing farmers to make informed decisions quickly. Overall, the literature indicates that smart farming assistants combining IoT sensing, intelligent analytics, and visual data representation can significantly reduce manual effort, conserve water and energy, and improve crop productivity, making them a vital component of modern precision agriculture.

13] Pasupula Sai Vikas et al. emphasize the role of AI-driven web platforms in supporting farmers with predictive insights and data-based recommendations. Studies on intelligent farming systems highlight the use of machine learning algorithms to analyze historical crop data, weather patterns, soil conditions, and market trends to forecast crop yields, pest outbreaks, and optimal planting schedules. Web-based platforms enable centralized access to these predictions, allowing farmers to receive real-time recommendations on crop selection, irrigation planning, fertilizer usage, and disease prevention. Research also demonstrates that integrating data visualization dashboards improves usability by presenting complex agricultural data through charts, maps, and trend graphs, helping farmers interpret insights quickly. Furthermore, AI-powered recommendation engines enhance decision-making by providing personalized suggestions tailored to regional climate conditions and farm characteristics. Overall, the literature indicates that intelligent farming websites combining AI predictions, cloud accessibility, and visual analytics can improve agricultural productivity, reduce risks, and support sustainable farming practices.

14] Kona Jayasarika, et al. Agricultural yield prediction has gained significant attention with the adoption of machine learning techniques to enhance decision-making and improve farm productivity. Existing research demonstrates that algorithms such as Linear Regression, Decision Trees, Random Forest, and Support Vector Machines can analyze historical crop data, soil properties, rainfall, temperature, and fertilizer usage to accurately forecast crop yields. These predictive models help farmers and policymakers optimize crop selection, irrigation scheduling, and resource allocation while minimizing risks associated with climate variability and pest outbreaks. Studies also highlight the integration of remote sensing data and IoT-based field sensors to provide real-time inputs, improving model accuracy and enabling precision agriculture practices. Furthermore, data visualization tools and dashboards play a crucial role in presenting yield predictions and trends in an intuitive format, supporting informed decision-making. Overall, the literature indicates that applying machine learning techniques to agricultural yield prediction can significantly enhance productivity, promote sustainable farming, and reduce economic uncertainty for farmers.

15] Dr. B. Jalendar et al. Web-based agricultural portals have become essential tools for delivering timely information, resources, and digital services to farmers, helping bridge the gap between technology and traditional

farming practices. Existing studies highlight that farmer-centric web applications provide features such as crop advisory, weather forecasts, market price updates, fertilizer recommendations, and access to government schemes, enabling informed decision-making and improved farm management. Such platforms often integrate databases, cloud services, and user-friendly interfaces to ensure accessibility across rural regions via smartphones and low-bandwidth networks. Research also emphasizes the role of data visualization dashboards and multilingual support in enhancing usability, allowing farmers to interpret complex agricultural data through charts, alerts, and localized content. Additionally, secure user authentication and personalized recommendations improve user engagement by tailoring information based on crop type, location, and seasonal conditions. Overall, the literature indicates that web application portals for farmers can enhance productivity, market connectivity, and knowledge dissemination, contributing to sustainable and technology-driven agriculture.

## III. METHODOLOGY

The proposed system is a Python-based web application developed using the Flask framework, with machine learning models built using Python libraries to support decision-making. The proposed system works as a web-based platform where users can register as either farmers or retailers. Once registered, farmers can add details of their agricultural waste, which the integrated Gemini model processes to provide useful suggestions and automatically create a post visible to retailers. Retailers can then view these posts and connect with farmers for further use. Alongside this, the system integrates satellite view and real-time weather forecasting APIs to provide updated environmental data. Based on this data, the ML model predicts suitable crops for farmers, while soil fertility analysis further refines the crop prediction. If crop diseases are reported, the system recommends appropriate fertilizers to improve productivity. Additionally, farmers can view nearby NGOs for support, and the platform supports multiple languages to ensure accessibility for diverse users.

### FLOWCHART

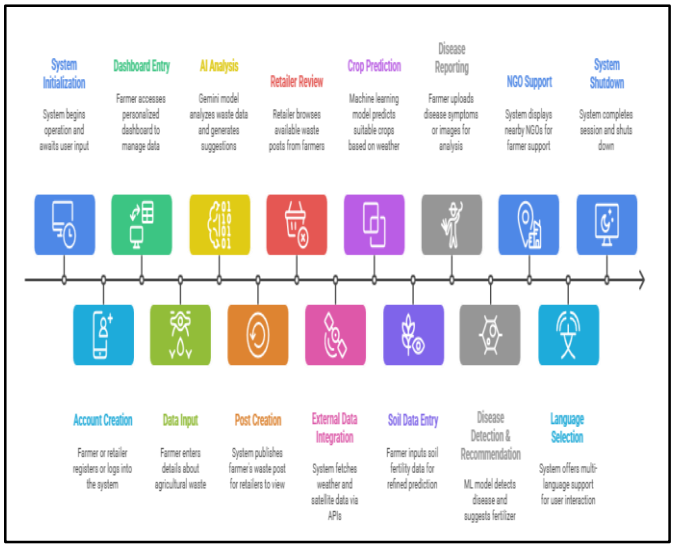


**Fig 1 shows the flowchart of the system**

## IV. SYSTEM REQUIREMENT

### SOFTWARE REQUIREMENT

1. Arduino IDE
2. Proteus

### MODULE

1. Flask

## V. CONCLUSION

The "Agricultural Web Assistance" System provides a comprehensive solution to enhance modern farming practices by integrating Python, Flask, and machine learning technologies. It effectively connects farmers and retailers, facilitates better resource management, and empowers farmers with real-time insights on crop prediction, soil fertility, and disease management. This platform has the potential to revolutionize traditional farming practices by leveraging digital solutions for improved efficiency and productivity. This is a valuable tool for modernizing agriculture, empowering farmers with data driven decision-making for better yield and sustainability.

## VI. REFERENCE

[1] V. Srivastava, V. R. Kesarwani and S. Saumya, "Farming Portal: Web Based Agriculture Assistance Services," 2024 IEEE 11th Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON), Lucknow, India, 2024, pp. 1-4, doi: 10.1109/UPCON62832.2024.10983470.

[2] Galeta, Joseph, Chipatso Medi, and Fanny Chatola. "Farming Assistance Web Service." i-Manager's Journal on Information Technology 12, no. 3 (2023): 1.

[3] Lagade, Pratik, V. M. Mane, and A. P. Shinde. "FARMERS ASSISTANT WEB APPLICATION." International Research Journal of Modernization in Engineering Technology and Science, Volume:07/Issue:03/March-2025.

[4] Peng, Chunming, Meixia Deng, Liping Di, and Weiguo Han. "Delivery of agricultural drought information via web services." Earth Science Informatics 8, no. 3 (2020): 527-538.

[5] Reddy, Pennabadi Devendra, K. Satya Sampath Reddy, P. Jayanth, Bhanu Prakash Kakarla, and Roshni M. Balakrishnan. "Agri Assist: An AI Integrated Farmer Assistant." Procedia Computer Science 258 (2025): 3510-3522.

[6] Shyamaladevi, K., T. T. Mirnalinee, Tina Esther Trueman, and R. Kaladevi. "Design of ontology based

ubiquitous web for agriculture—A farmer helping system." In 2012 International Conference on Computing, Communication and Applications, pp. 1-6. IEEE, 2022.

[7] Baz, Fatih Çağatay, and Emrah Denizer. "Web based remote agricultural control and consultancy application: An early diagnostic warning system." European Mechanical Science 6, no. 2 (2022): 152-160.

[8] Syed, Liyakathunisa. "Smart agriculture using ensemble machine learning techniques in the IoT environment." Procedia Computer Science 235 (2024): 2269-2278.

[9] Naidu, P. M., M. Anjali, K. Sri Vaishnavi, S. Chandralekha, and K. Tejaswini Reddy. "Agriculture Wastage Management System Using Android Application." In 2024 4th International Conference on Soft Computing for Security Applications (ICSCSA), pp. 702-708. IEEE, 2024.

[10] Mamatha, Bommireddy, Chandana Mudigiri, Guguloth Ramesh, Pakala Saidulu, Nayaki Meenakshi, and Chuncha Laxmi Prasanna. "Enhancing soil health and fertility management for sustainable agriculture: A review." Asian J. Soil Sci. Plant Nutr 10 (2024): 182-190.

[10] Mamatha, Bommireddy, Chandana Mudigiri, Guguloth Ramesh, Pakala Saidulu, Nayaki Meenakshi, and Chuncha Laxmi Prasanna. "Enhancing soil health and fertility management for sustainable agriculture: A review." Asian J. Soil Sci. Plant Nutr 10 (2024): 182-190.

[11] Professor Savita Sawant, Supriya Morve, Janhavi Bhosale. “E- Nursery Retail Project Using Clustering Algorithm & Visual Data Representation”.International Journal of Scientific Research & Engineering Trends. Volume 11, Issue 2, Mar-Apr-2025.

[12] Gulam Muddasir Farooqui, Mohammed Mouzzam Mohiuddin, Syed Barkath Ali. “Smart Farming Assistant”. International Journal of Innovative Science and Research Technology. Volume 10, Issue 7, July – 2025.

[13] Pasupula Sai Vikas, Burra Sathwik Goud, Matta Daniel, C. Sruthi, Dr. Mohan Dholvan. “ Agropredict: A Website For Intelligent Farming With Ai-Powered Predictions And Recommendations”. IJCRT | Volume 13, Issue 7 July 2025.

[14] Kona Jayasarika et al. “Agriculture Yielding Using ML Techniques”. Institute Of Science And Technology. 2021.

[15] Dr. B. Jalendar , K. Nagaraju , Md Abdul Qadir , Md Khaja Naseeruddin Bhaba , S. Ajay. “ FARMASITE: A Web Application Portal Designed for Farmers “. International Journal for Research in Applied Science & Engineering Technology (IJRASET)Volume 11 Issue VIII Aug 2023.