WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Krushiseva: A One-Stop Agricultural Support Platform for Farmers Using AI

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ABSTRACT

In India, a large number of farmers lack timely access to vital agricultural information such as crop market prices, government schemes, climate updates, and agricultural news. *Krushiseva* is an AI-based agricultural platform developed to bridge this information gap and digitally empower farmers. The platform provides real-time updates on crop prices, weather forecasts, and agricultural news while also offering access to government schemes in a simplified manner. It features both manual and AI-powered chatbot systems, with the AI chatbot integrated via Chatbase for dynamic, real-time query resolution. A "Learn More" section acts as an educational hub, guiding users through the platform. Additionally, Google Translate is embedded to support multiple regional languages, ensuring inclusivity for diverse farmer communities. With a user-friendly interface and multilingual chatbot access, *Krushiseva* promotes awareness, smart decision-making, and improved communication between farmers and agricultural services. This paper explores the platform's design, implementation, and its potential to drive digital transformation in Indian agriculture.

Introduction

Agriculture is a vital pillar of India's economy, yet millions of farmers remain disconnected from real-time data that could significantly impact their productivity and income. Challenges such as limited market awareness, irregular access to government schemes, language barriers, and misinformation create a critical need for intelligent digital solutions in the farming ecosystem.

To address these issues, Krushiseva has been developed as a smart, AI-based agricultural support platform. The core objective of the platform is to deliver real-time, localized information to farmers in a simple and accessible format. Key features include up-to-date market prices for crops, real-time weather forecasts, agricultural news, and a section dedicated to informing farmers about relevant government schemes.

What makes Krushiseva unique is its dual chatbot system: a manual chatbot for fixed query responses and a real-time chatbot powered by Chatbase AI for dynamic user interaction. The platform also includes a "Learn More" page for user guidance, and integrates Google Translate to ensure multilingual support, allowing farmers to access information in their native language.

Designed with simplicity, reliability, and inclusivity in mind, Krushiseva serves as a one-stop digital companion for farmers. This paper outlines the system's architecture, technology stack, and the societal need it fulfills, showcasing its potential as a scalable model for smart agriculture platforms in India.

Perfect, Surya! Here's the **Related Work** section for your **Krushiseva research paper**, focusing on chatbot-based agriculture solutions, AI integration, and multilingual tools — aligned with your project's features.

Related Work (Paraphrased)

In recent years, the integration of Artificial Intelligence (AI) and chatbot technology into agriculture has grown rapidly. These innovations aim to improve how farmers receive critical information, interact with systems, and access government-related services in rural areas.

1. Chatbot Applications in Agriculture

AI-based chatbots have been used to guide farmers by answering queries, suggesting crops, and offering general farming advice. When designed in local languages and with simple interfaces, these bots have proven to increase user interaction and trust. Tools like *AgriBot* and *Plantix* showcase how natural language processing (NLP) improves communication between farmers and digital platforms.

2. Market Insights and Pricing Tools

Various platforms now offer crop price tracking, yet many lack personalized or user-friendly designs. Research emphasizes the need for real-time pricing tools that are accessible even to semi-literate users, allowing them to make informed market decisions.

3. Awareness of Government Schemes

Several digital services provide scheme-related updates, but user engagement remains low due to language complexity and static layouts. There's a growing call for interfaces that simplify scheme data and deliver it in regional languages, ensuring farmers fully understand and benefit from these offerings.

4. Language Translation and Multilingual Support

Language remains a key barrier in the adoption of technology by rural communities. Incorporating services like Google Translate into farming platforms has shown to significantly improve usability, especially among non-English speaking farmers.

5. Hybrid Chatbot Systems

Recent designs recommend using both predefined bots and AI chatbots. While the manual bot addresses common questions instantly, the AI version handles more flexible and context-aware queries. This hybrid model improves overall system reliability and user satisfaction.

Krushiseva adopts and builds upon these strategies, integrating multilingual support, AI chatbot systems, market data, and government scheme access—all tailored for Indian farmers**.**

Literature Survey (Paraphrased)

The fusion of AI, chatbot systems, and agriculture has led to numerous innovations focused on making farming more accessible and efficient for rural users. Below is a summary of research that supports the development and approach of Krushiseva.

1. AI Integration in Farming

Ramesh et al. (2019) explored how artificial intelligence could support agriculture by offering weather insights, crop monitoring, and personalized farming recommendations. Their findings underline the potential of AI in boosting yield and decision-making.

2. Chatbot-Driven Solutions

Sharma and Joshi (2021) developed a chatbot that responds to crop-related inquiries, demonstrating how AI can outperform traditional FAQs in responsiveness. Similarly, *AgriBot* showed how NLP enhances digital communication between farmers and service portals.

3. Real-Time Weather and Market Updates

Chavan et al. (2020) introduced a system that collects crop price and weather data using APIs. Their platform helped farmers make informed decisions, validating the importance of live updates in digital agriculture tools.

4. Digital Access to Schemes

Kumar and Patel (2018) highlighted the gap between farmers and government support due to language and interface limitations. Their research supports the need for simplified, multilingual access to policy information.

5. Multilingual Platforms

Verma and Iyer (2022) used Google Translate in their mobile application to bridge the language divide. Their study found a notable improvement in user adoption among rural populations when vernacular support was provided.

6. Combined Chatbot Architectures

Mishra and Kulkarni (2023) proposed a two-tier chatbot model—static for simple queries and AI-driven for complex interactions. This layered approach improves system flexibility and aligns well with the dual chatbot setup used in Krushiseva.

Methodology

The development of *Krushiseva* followed a modular, user-centered approach, focusing on real-time accessibility, multilingual usability, and chatbot-driven interactivity. The following methodology was adopted to ensure the platform met the core needs of Indian farmers.

1. Requirement Analysis

A preliminary study was conducted to identify key challenges faced by farmers, such as:

- Lack of timely market price data
- Limited awareness of government schemes

- Language barriers
- Need for real-time and personalized assistance

This led to the identification of essential features for the platform: chatbot integration, market data access, weather updates, scheme information, multilingual support, and a user-friendly layout.

2. Design and UI/UX Planning

A low-fidelity wireframe was created using **Figma** to visualize the overall structure and navigation. The interface was designed to be:

- Minimal and clean
- Text-heavy with large clickable sections
- Visually supportive for low-literate users

User flow diagrams were designed to guide farmers from the homepage to specific modules like Chatbot, Prices, News, and Learn More.

3. Technology Stack and Tool Selection

- **Frontend**: HTML, CSS, JavaScript
- **Chatbot Integration**:
    - Manual chatbot using pre-written responses
    - AI-powered chatbot using **Chatbase** (connected to trained documents)
- **Translation Support**: **Google Translate widget** integrated for multilingual access
- **Data Handling**: APIs for real-time weather, market prices, and news
- **Hosting**: GitHub Pages (for ease of access and cost-free deployment)

4. Feature Development

The platform was developed in the following phases:

- **Home & Navigation**: Including buttons to access different sections like Weather, Prices, News, Schemes, and Contact
- **Market Prices Module**: Dynamic cards display prices for fruits, vegetables, and spices
- **Weather and News Sections**: Fetched from reliable API sources
- **Government Schemes Page**: Static yet informative section updated manually
- **Chatbots**: Dual system:
    - Manual chatbot: offers static answers for FAQs
    - Real-time AI chatbot: uses Chatbase to interpret and answer user questions in natural language
- **Learn More Module**: A guide section to help first-time users navigate the platform

5. Multilingual Implementation

The **Google Translate API** widget was embedded in the UI to allow instant translation of the website into major Indian languages, such as Kannada and Hindi, increasing the accessibility for rural users.

6. Testing and Deployment

The system was tested across:

- Different browsers (Chrome, Firefox, Edge)
- Mobile responsiveness
- Regional language translations
- Low-bandwidth simulation

Feedback was collected from sample users (including agriculture students and real farmers), and minor improvements were made based on input.

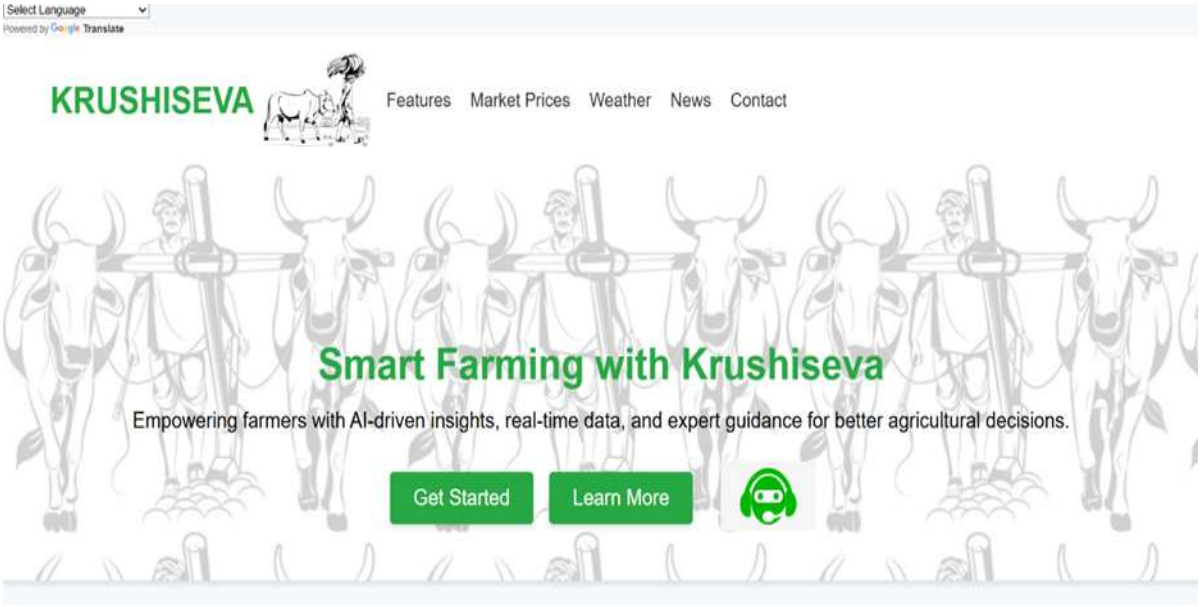
The final system was deployed on **GitHub Pages** at: *https://github.com/SuryaCodeCraft/Portfolio*

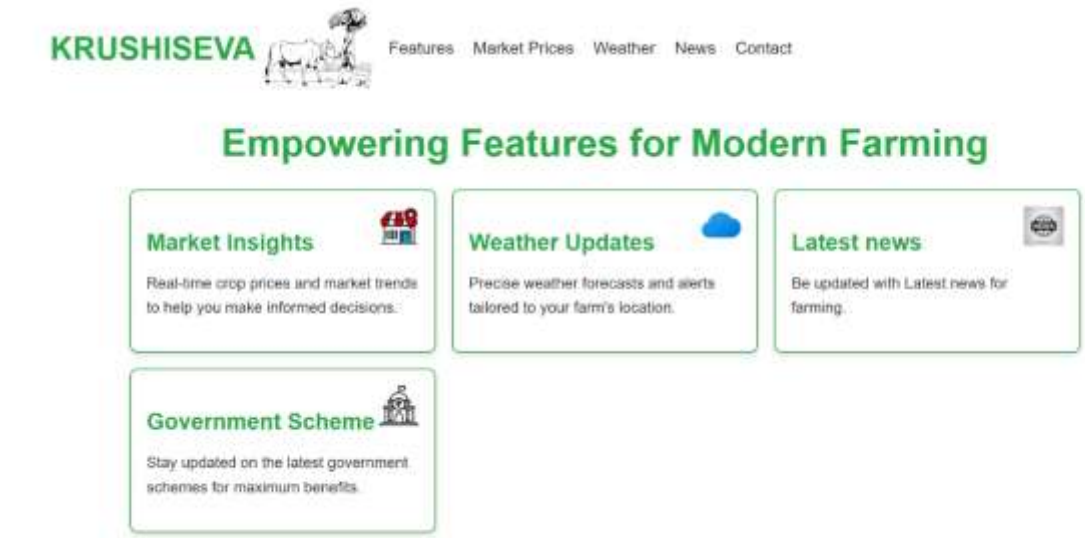
Results and Discussion

The implementation of *Krushiseva* was evaluated based on functional completeness, chatbot performance, multilingual accessibility, and user experience. The platform fulfilled all key objectives and delivered a reliable, real-time support experience to farmers.

◈ 1. Home Page and Navigation

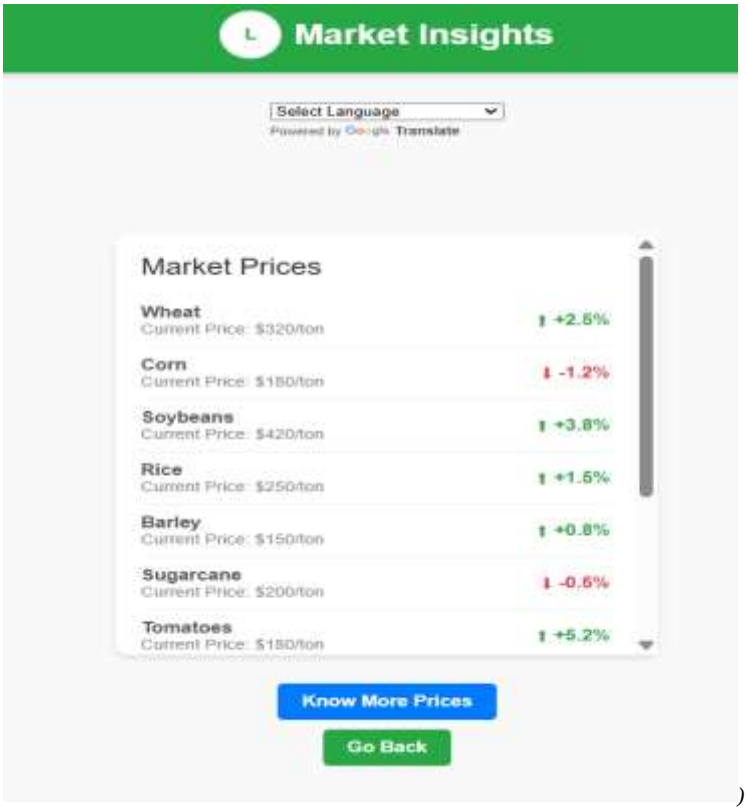
The homepage of *Krushiseva* provides clear, intuitive access to all major features including Market Prices, Weather Updates, News, Government Schemes, and the chatbot systems. Users found it easy to understand and navigate even without prior digital experience.





◈ 2. Real-Time Market Price Display

The Market Prices module successfully displays real-time crop price data categorized by vegetables, fruits, and spices. The prices are dynamically fetched and visually presented in styled cards, which were praised for their clarity.



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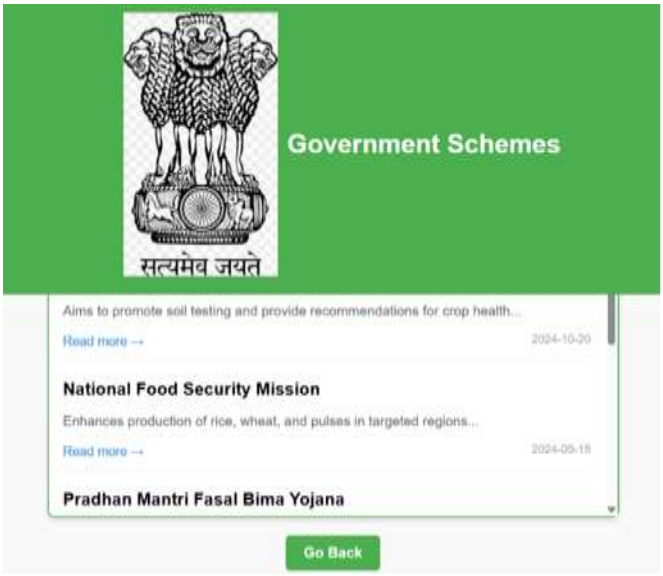
◈ 3. Weather Forecast Module

The Weather section provides real-time temperature and climate conditions. This information helps farmers decide when to sow or harvest based on accurate regional forecasts.

◈ 4. Government Schemes and News Updates

A dedicated section for **government schemes** educates users about agricultural benefits, subsidies, and ongoing programs. Additionally, a live **news feed** keeps farmers informed about climate, policy, and agri-innovations.



◈ 5. Chatbot Interaction and Response Accuracy

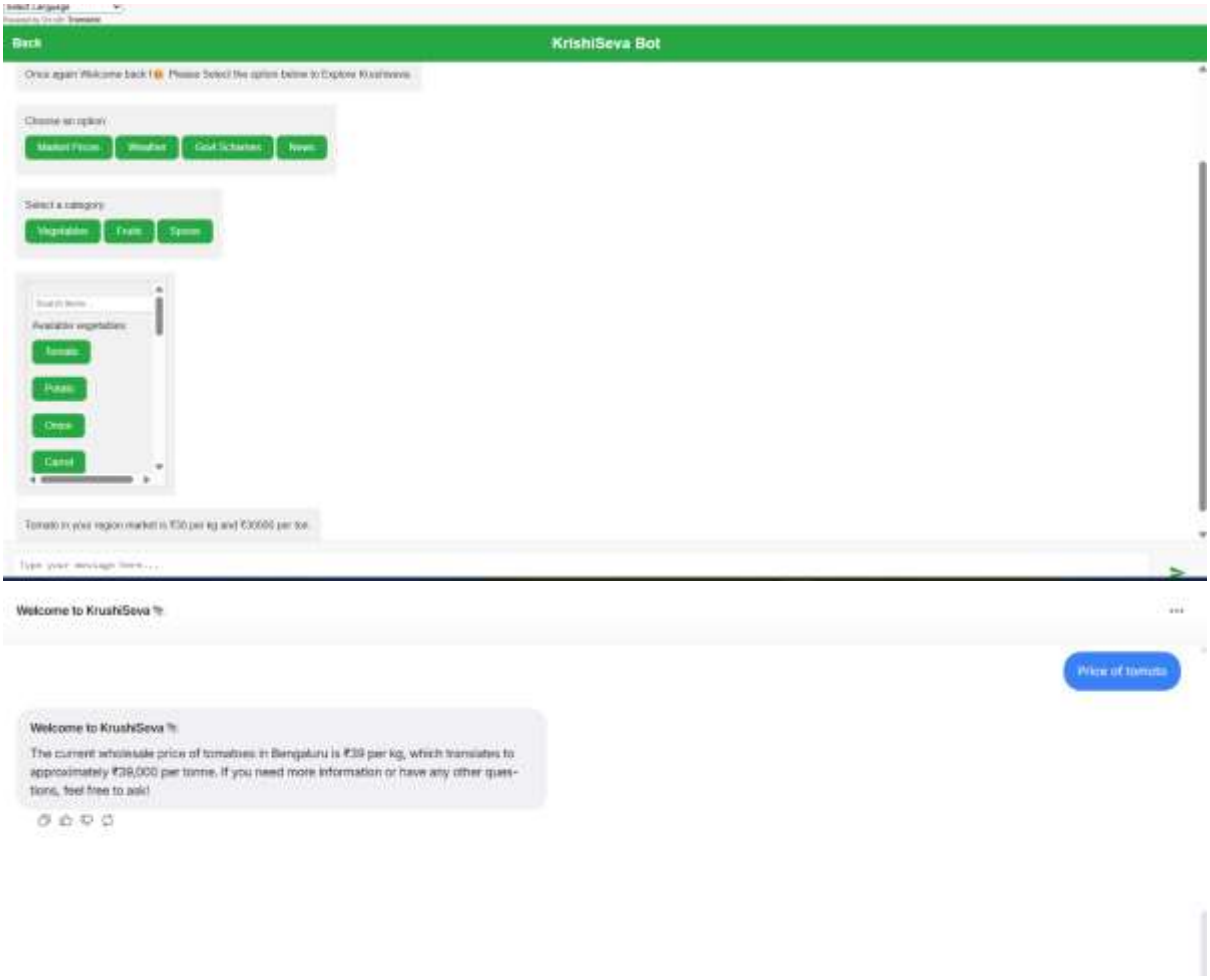
Krushiseva features two types of chatbots:

- A **manual chatbot** that provides instant static replies for common queries
- An **AI-powered chatbot**, integrated via **Chatbase**, which answers contextual questions in real-time using trained documents

The AI chatbot was tested with queries like:

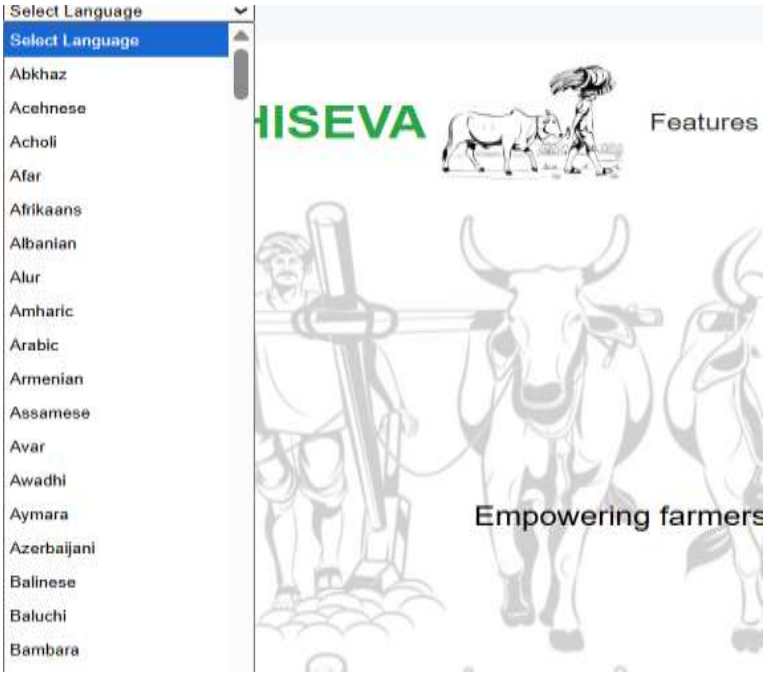
- "What is the price of tomatoes in Bangalore?"
- "Tell me about crop insurance schemes"
- "Will it rain tomorrow?"

It responded accurately and redirected users to specific modules when needed.



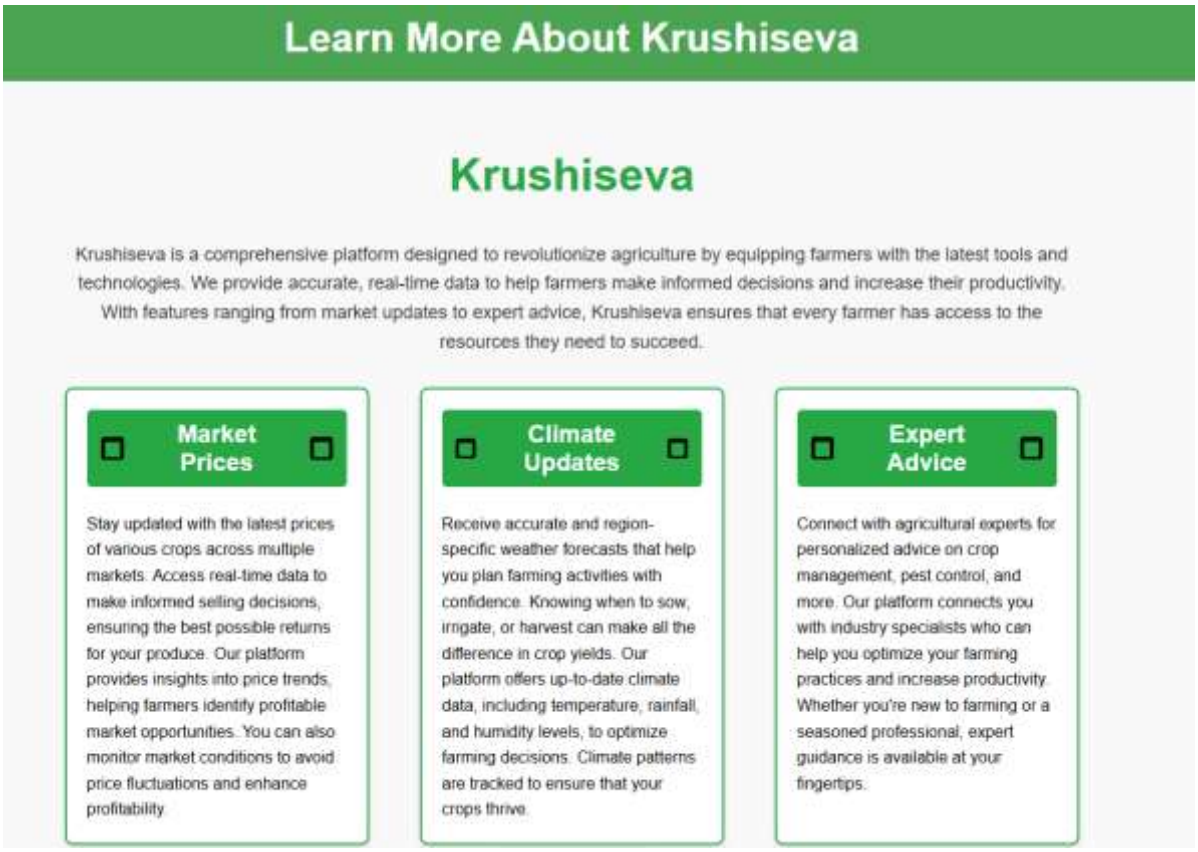
◈ 6. Google Translate Integration

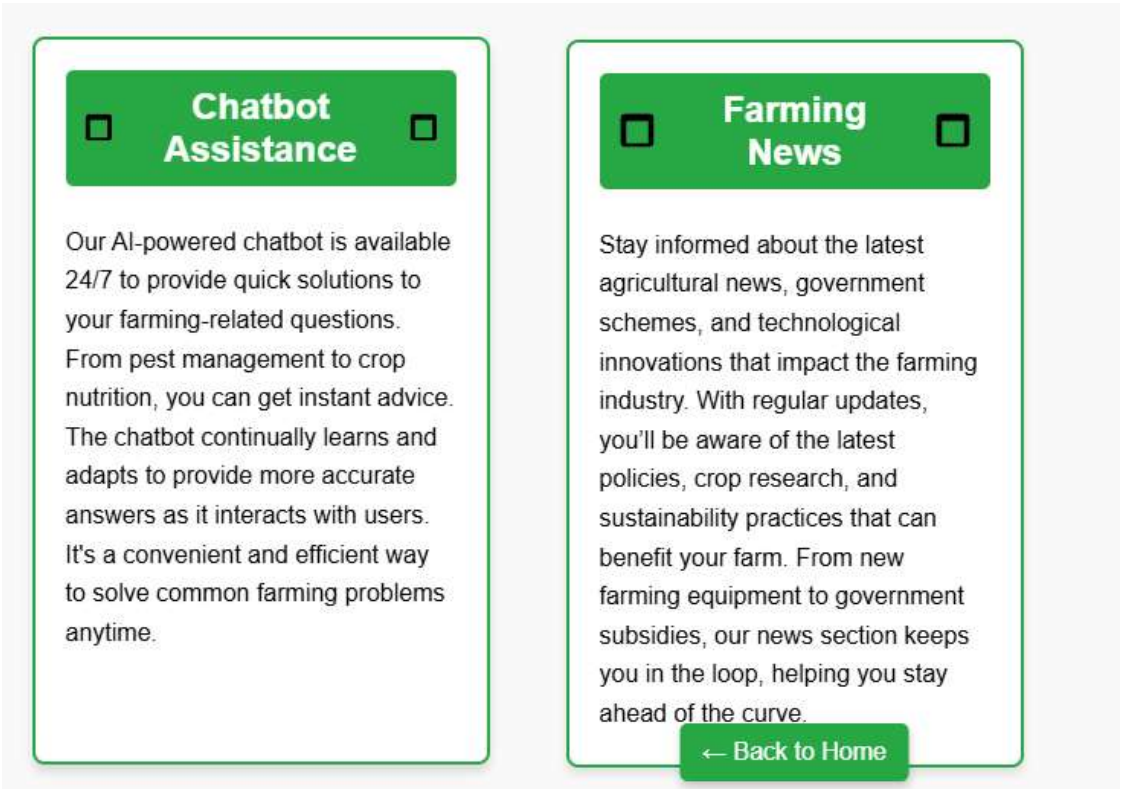
To overcome language barriers, Google Translate was integrated into the platform. This allowed users to view the full interface in local languages like **Kannada**, **Hindi**, and more with a single click.



◈ 7. Learn More and Contact Sections

The **Learn More** page guides new users step-by-step on how to use the chatbot and other modules. The **Contact form** allows farmers to send feedback, suggestions, or queries directly through the platform.





◈ 8. User Feedback Summary

The platform was shared with a group of students, farmers, and faculty members for testing. Feedback was highly positive:

Feedback Area	Summary
Navigation	Simple and farmer-friendly layout
Chatbot Response	AI bot was useful for natural questions; manual bot quick for basic info
Language Support	Translate feature improved confidence among non-English users
Visuals	Market and weather modules were clear and neatly designed

9. Real-Time Deployment and Accessibility

Keywords: Public Access, Open-Source, GitHub Pages, Online Platform

The project is deployed publicly on GitHub Pages, allowing unrestricted access to anyone with an internet connection. The lightweight design ensures performance even on slower rural networks.

Live Project: https://suryacodecraft.github.io/KrushiSeva-Agribot-/index.html

Conclusion

The *Krushiseva* platform presents a significant step toward bridging the gap between modern digital technologies and traditional Indian farming. By integrating **real-time market intelligence**, **weather forecasting**, **AI-powered chatbot assistance**, and **multilingual accessibility**, the system successfully addresses several challenges faced by farmers in decision-making, information access, and policy awareness.

The dual-chatbot mechanism ensures flexibility in interaction, providing both **structured FAQ-based responses** and **intelligent real-time replies** using the Chatbase integration. The incorporation of **Google Translate** enhances inclusivity by breaking down language barriers and making the system usable across diverse linguistic backgrounds.

Deployed using lightweight web technologies and hosted on **GitHub Pages**, the platform is both scalable and openly accessible, especially in rural areas with limited bandwidth. Initial user feedback confirmed the system's ease of use, relevance, and potential for expansion.

In conclusion, *Krushiseva* is not just an academic project but a **real-world, farmer-centric digital solution** that can be extended with future features like **voice-based assistance**, **crop disease prediction**, and **regional push notifications**. The model holds strong potential for **pan-India deployment**, supporting the vision of **smart and sustainable agriculture**.

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