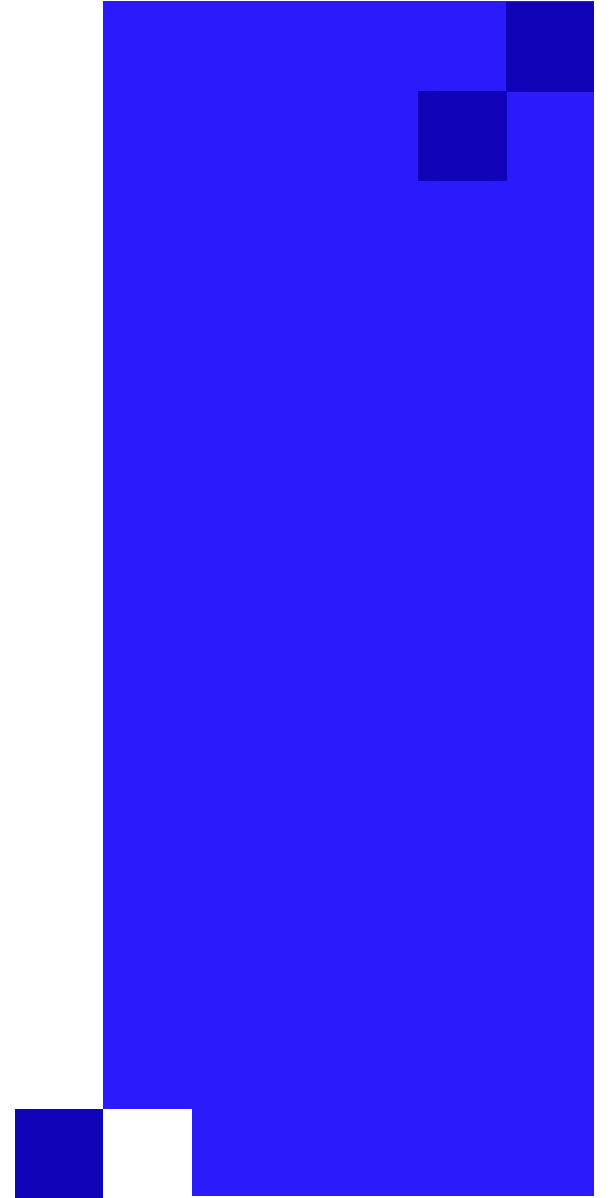


Advanced Agricultural Bot: Enhancing Small-Scale Farming with AI & Automation

Presented by:

Saminathan M



Problem Statement

Small-scale farmers face challenges in:

- Soil testing and pest detection
- Efficient irrigation and harvesting
- Understanding government schemes & subsidies
- Lack of accessible, multi-language support for farmers
- Need for a smart, AI-driven solution to improve productivity & income

EXISTING SYSTEMS

- Kisan e-Mitra (India): AI chatbot with multilingual support, provides real-time guidance on government schemes, but lacks soil testing or pest detection.
- Cropin (India): Cloud-based platform using AI for crop health monitoring, pest detection, and irrigation advice; costly for small-scale farmers.
- Taranis (Global): AI software for pest and disease detection via image analysis, integrated with aerial data, but hardware-dependent.
- Climate FieldView (Global): AI-driven software for personalized planting and irrigation guidance, lacks multilingual support or scheme information.

PROPOSED SYSTEM

- Core Features: Multilingual AI chatbot with voice support, delivering soil testing, pest detection, crop management, irrigation alerts, and government scheme guidance.
- Technology: Cloud-based platform using NLP for chatbot, CNNs for pest detection, and ML for crop recommendations; accessible via mobile/web.
- Target Audience: Small-scale farmers in developing regions, emphasizing low-literacy accessibility with animated videos.
- Outcomes: Boost yields by 20–30%, cut costs by 40%, improve scheme access, and ensure sustainability; limited by internet dependency.

SCOPE OF THE PROJECT

- Core Functionalities: Develop a multilingual AI chatbot with voice support, providing real-time guidance on soil testing, pest detection via image recognition, crop management, irrigation alerts, government scheme information.
- Technological Framework: Build a software platform using API integration for chatbot interactions, CNNs for pest detection, and ML for crop and irrigation recommendations; accessible via mobile web interface.
- Target Audience and Accessibility: Target small-scale farmers in developing regions, emphasizing affordability and low-literacy accessibility through animated videos and multilingual (text/voice) support, requiring only a smartphone and basic internet.
- Expected Outcomes and Limitations: Aim to increase yields by 20–30%, reduce costs by 40% (pesticides, water), and improve financial stability via scheme access; limited by internet connectivity, user training needs, and data quality (e.g., image uploads).

Solution - The Advanced Agricultural Bot

AI-powered chatbot with multi-language support

Provides real-time soil testing & pest detection

Guides farmers in crop management, irrigation, and harvesting

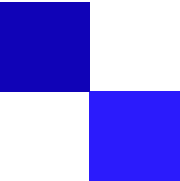
Delivers financial aid & subsidy information based on location

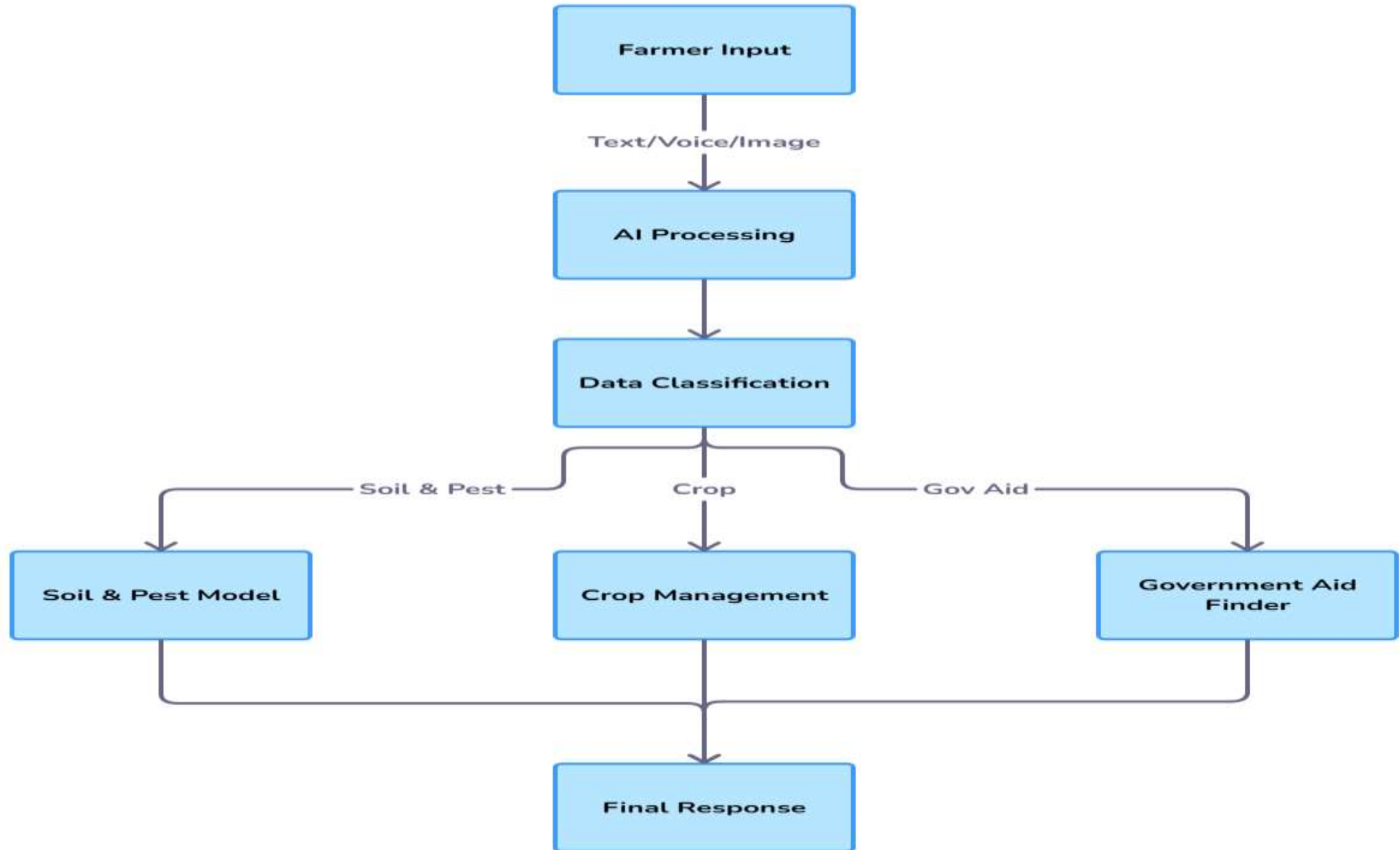
Animated video & Voice-Enabled for easy interaction





Key Features

- Soil Testing – AI-based analysis of soil type, pH, and moisture
 - Crop Management – Recommends optimal planting & fertilization schedules
 - Pest Detection – Image-based pest identification using deep learning
 - Irrigation & Harvesting – Smart water usage & harvesting alerts
 - Multi-Language & Animated video of farming accessible for farmers with low literacy levels
- 





AI & Data Processing

Soil Testing Data:

Uses OpenCV to analyze soil color, texture, and moisture content

Trained with thousands of labeled soil samples (pH, nitrogen, potassium levels)

Provides recommendations based on machine learning models trained on agricultural data

Pest Detection Model:

Farmers upload pest images via mobile/web interface

Model (YOLO, CNN) classifies pests using a dataset of over 5000+ pest images

Suggests organic and chemical treatment options

Crop Management:...

Irrigation & Harvesting:...

Government Aid Finder:...



Results



உழவன்

உழவது கைவிடேல்

Login

Register

Phone Number

Enter your phone number (e.g., 9876543)

Email (Optional)

youremail@gmail.com

Password

Your password

Sign In →

உழுதுണ്ട് ஜீவிக்குறவராள்
ஜீவிக்குறவർ

மரெல்லாவரும் அனுഗമിച്ച്
ஜீவிக்குறவராள்

— மலയാളம்



ఉత్తమ్ - స్మార్ట్ ఫార్మింగ్ అసిస్టెంట్

Select language

తెలుగు (Telugu)

పంట & సాగునీటి నిర్వహణ

మైదానం (A) రైతు

Enter irrigator level

పచ్చడి (B) రైతు

Enter phosphorus level

పొలం (C) రైతు

Enter potassium level

ఉష్ణోగ్రత (D)

Enter temperature

శీత (E)

Enter humidity percentage

మొత్తం



ഉഴവൻ - സ്മാർട്ട് കൃഷി സഹായി

Select Language

മലയാളം (Malayalam)

മണ്ണ് & കീടനാശിനി കണ്ടെത്തൽ

മണ്ണിന്റെ ചിത്രം അപ്ലോഡ് ചെയ്യുക

Choose File

No file chosen

മണ്ണ് വിശകലനം ചെയ്യുക



Result

← തിരികെ



उज़वन - स्मार्ट खेती सहायक

Select Language

हिंदी (Hindi)

सरकारी सहायता

राज्य

Enter your state

शुनि आकार (एकड़)

Enter land size in acres

सरकारी योजनाएं प्राप्त करें



Result

← वापस

மண் & பூச்சி கண்டறிதல்

மண் படத்தை பதிவேற்றவும்

Choose File

penkpx.jpg

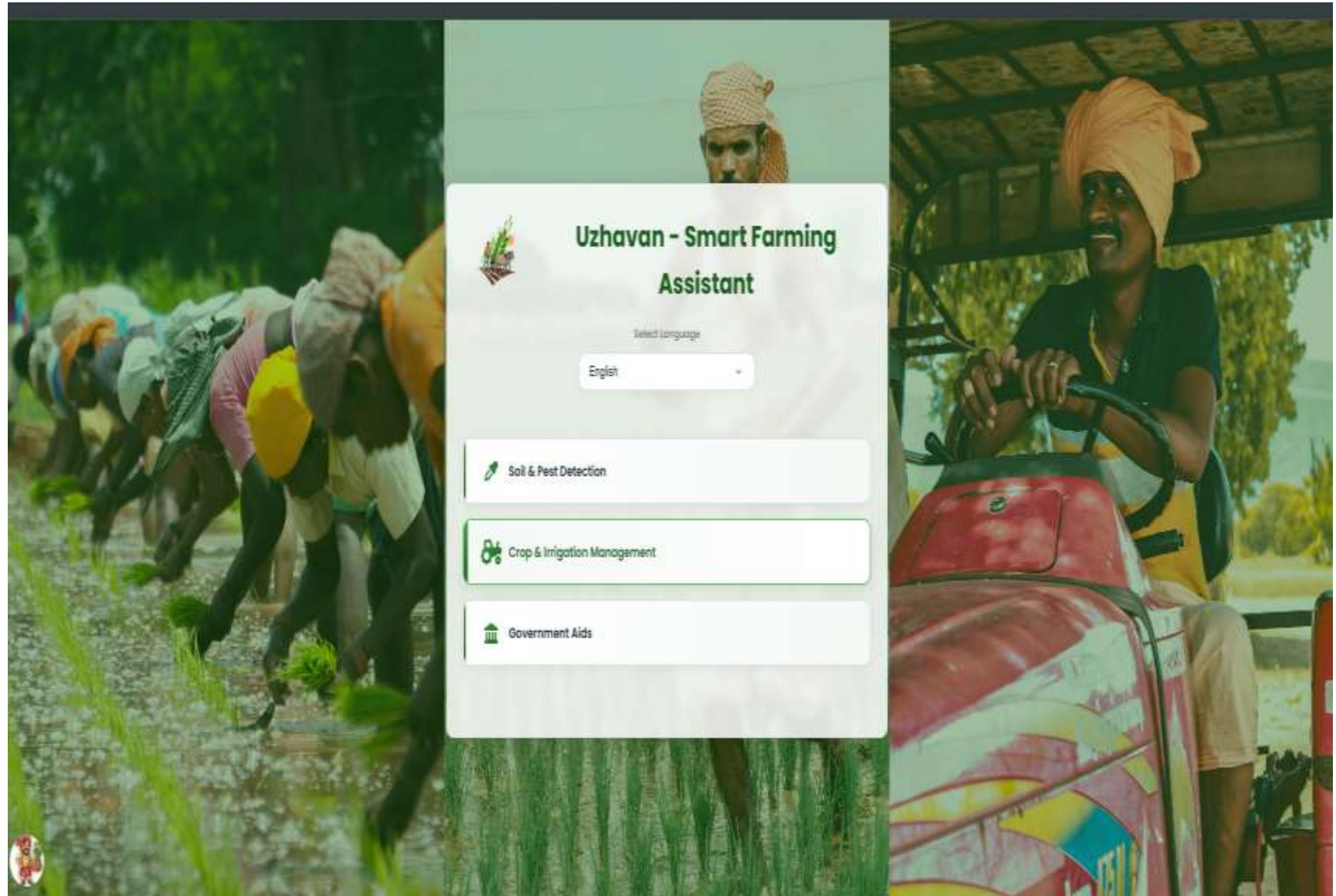
மண்ணை பதப்பாய்வு செய்



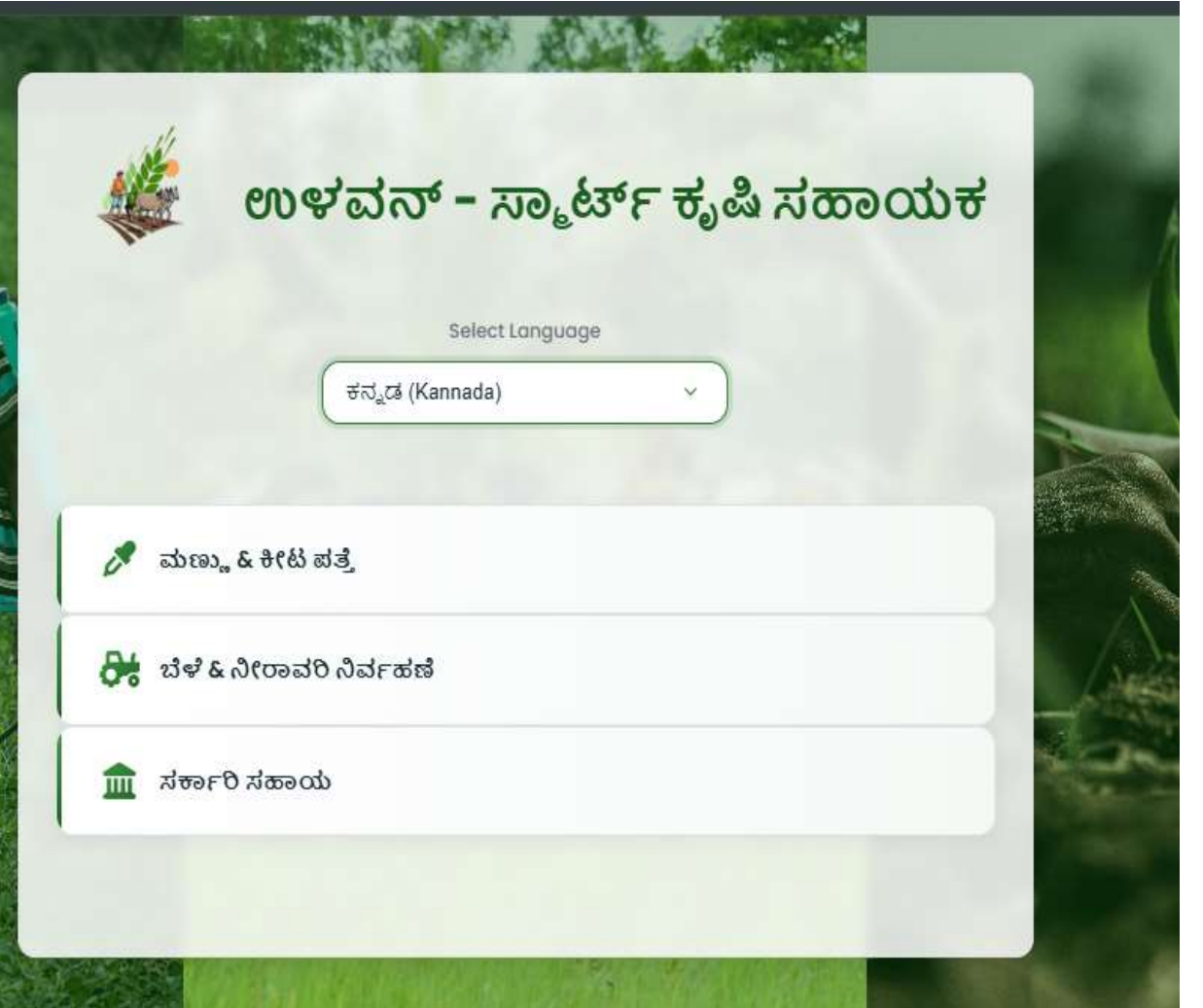
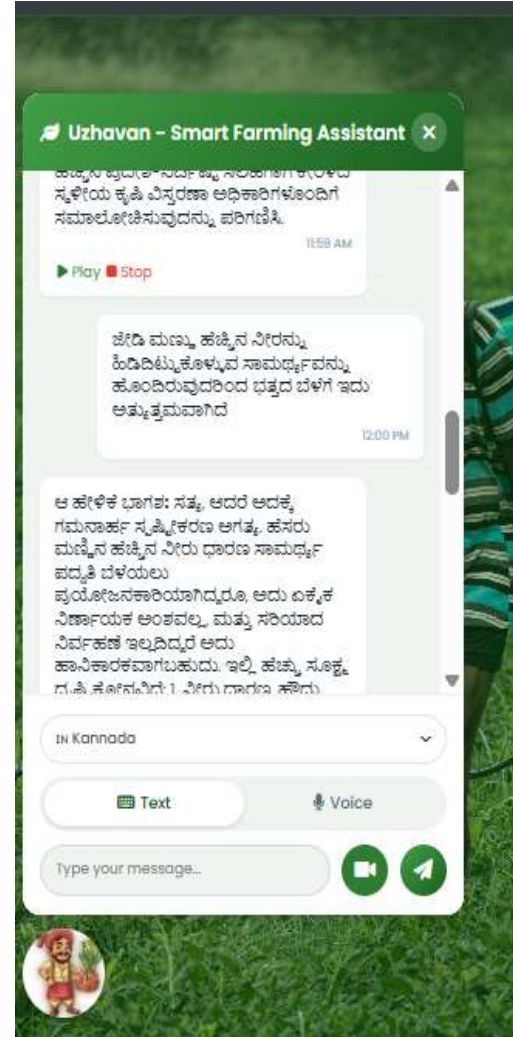
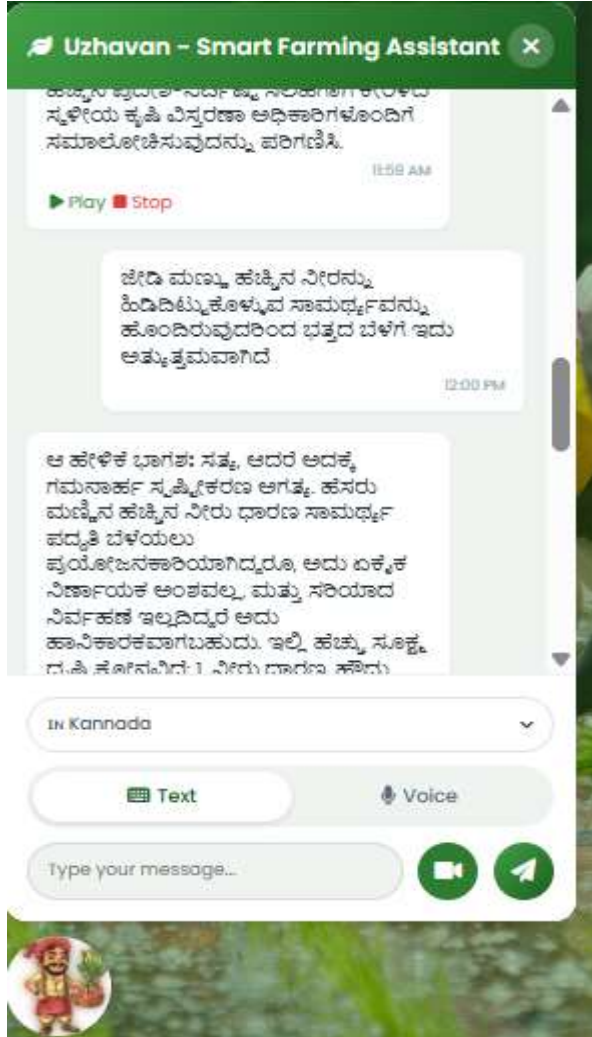
மண் வகை: களிமண்

பூச்சி கண்டறிதல்: வெட்டுக்கிளிகள், பேன்கள்

குறிப்பு: இந்த களிமண் மண்ணில் இந்தப் வெட்டுக்கிளிகள், பேன்கள் பூச்சிகள் இருக்கலாம்



CHAT BOT



FIELD WORK



Field Work



WORK DONE IN FIELD WORK

- Visited multiple fields to gather data on soil types and crop yields, enabling the development of a robust AI-driven software system that analyzes this data via our website, providing farmers with precise recommendations for crop selection and management.
- Addressed farmers' concerns that text-based chatbot input was inconvenient for illiterate users by integrating voice input, enhancing the multilingual AI chatbot's usability to deliver guidance on farming tasks effectively.
- Leveraged data from field visits to implement web-based analysis of soil types and crop yields, offering small-scale farmers actionable insights through our website to optimize productivity and resource efficiency.
- Responded to fieldwork feedback by incorporating voice input and animated video features into the chatbot, ensuring accessible delivery of agricultural guidance, including pest detection, irrigation, and government scheme information, for illiterate farmers.

REFERENCES

- Javaid, M., Haleem, A., Khan, I. H., & Suman, R. (2023). Understanding the potential applications of artificial intelligence in the agriculture sector. *Advanced Agrochem*, 2(1), 15–30.
- Khan, A., et al. (2024). Real-time pest detection framework using YOLOv5 for precision agriculture. *Precision Agriculture*, 25(3), 1123–1140.
- Li, Y., et al. (2024). Agro Deep Learning Framework: A software-based approach for precision agriculture. *BMC Bioinformatics*, 25(1), 89.
- IndiaAI. (2024). AI-driven agriculture: Case studies and impact in India. *IndiaAI Report*, 2(1), 1–25.
- Sharma, R., et al. (2024). Streamlit-based crop recommendation system with explainable AI. *Neural Computing and Applications*, 36(5), 2453–2468.

Thank You