

Crop Management System

A ProgressiveWebApp (PWA) based Technology-Driven solution for a Sustainable Future of Farming

Submitted for UDUS IT Compete 2025

By: Team **GreenMind**



Problem Statement



- • UDUS staff and students actively engage in farming.
- • Farmers face challenges with climate change, pests, and crop management.
- • Limited access to agricultural extension services.
- • Difficulty in aligning crop activities with weather conditions.



Our Solution



- • A Crop Management App to assist farmers from planting to harvesting.
- • Integrates weather forecasts for smarter decisions.
- • Tracks crop growth, predicts yields, and monitors health.
- • Provides alerts, personalized recommendations, and analytics.



Importance of the App

- • Automates farm management, reducing time and costs.
- • Provides data-driven insights for better decisions.
- • Helps mitigate risks of crop failure and climate impact.
- • Optimizes resources (water, fertilizer, pesticides).
- • Enhances profitability through improved yields.

Core Features

- • Crop Tracking (growth stages, planting & harvest dates)
- • Weather Integration (forecasts & alerts)
- • Task Management (irrigation, fertilization, pest control)
- • Crop Health Monitoring (detect pests/diseases early)
- • Yield Prediction (historical + weather data)
- • Personalized Recommendations
- • Alerts & Notifications
- • Data Analytics & Reports

Technical Plan

- • Tech Stack: Html, css, tailwindcss, vanilla javascript for front-end. And nodejs, expressjs for Backend
- • Database: PostgreSQL / MongoDB
- • APIs: OpenWeatherMap, Twilio/Firebase Cloud Messaging
- • AI/ML: For yield prediction & crop health insights
- • Scalable architecture for global use



UI/UX Vision

- • Welcome Page with Sign Up/Login
- • Farmer Dashboard: crop tracking, weather widget, task list
- • Admin Dashboard: analytics & user management
- • Clean, mobile-first design with easy navigation



Monetization & Sustainability

- • Freemium model: basic free, advanced features paid
- • Partnerships with agricultural agencies & NGOs
- • Ads & input marketplace for seeds, fertilizer, equipment
- • Local pilot at UDUS, scalable globally




Developer Roadmap

- Phase 1: MVP (Crop tracking, weather integration, task management)
- Phase 2: Crop health monitoring + Alerts
- Phase 3: AI-based yield prediction + Advanced analytics
- Phase 4: Expand crop database, multilingual support, marketplace integration



Call to Action



- Join us in transforming farming at UDUS and beyond.
- Together, we can empower farmers with technology,
- reduce crop losses, and improve food security.
-  Crop Management System – Farming Made Smarter 