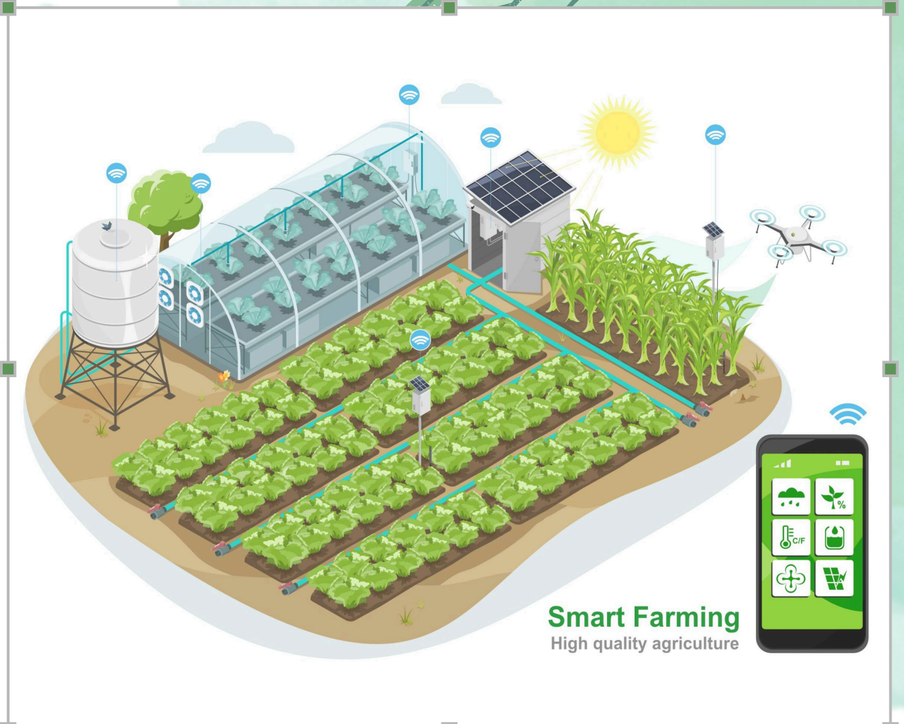
AGRISENSE APP

Smart Agriculture IoT System



Present by : Rushikesh Sable
PRN:- 202201070107
BTECH(ENTC)

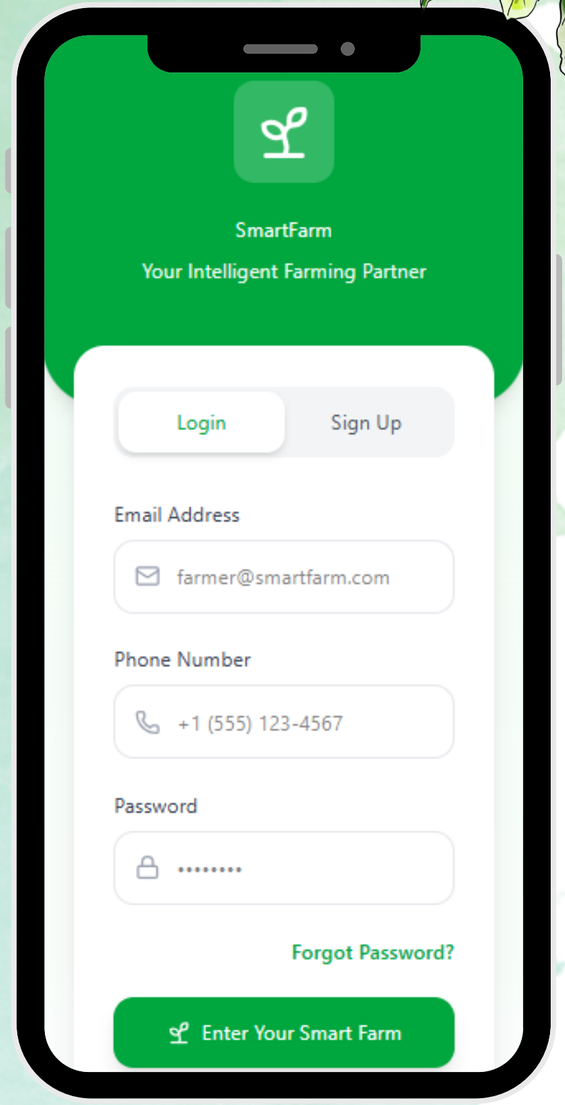
DESIGN BRIEF

Agrisense is a Smart Agriculture IoT mobile application that enables farmers to monitor soil conditions, automate irrigation, receive AI insights, and make data-driven decisions.

The goal of this project is to create a simple, intuitive, multilingual interface that converts complex IoT sensor data into actionable recommendations.

Objectives

- Provide real-time visibility of field conditions
- Deliver AI-based predictions for irrigation, pests, and crop yield
- Enable automation control of IoT devices
- Improve farmer confidence through easy-to-understand visual insights



STAKEHOLDER MAPPING

Stakeholder	Role	Needs
Farmers (Primary Users)	Daily decision-makers	Simple UI, alerts, language support
Field Supervisors	Manage multiple farms	Analytics, multi-field comparisons
Agri Companies	Provide sensors & services	Data accuracy, automation control
Developers	Build IoT integration	Clear user flows, scalable architecture
Government / NGOs	Promote smart farming	Reliable insights, transparent data

USER INTERVIEW SUMMARY

Participants: farmers + field supervisors

Methods: In-person interviews & WhatsApp voice calls

Key Findings

- Farmers want simple, big visuals — not complex graphs
- Alerts need to be clear (color-coded)
- Language is important (Hindi/Marathi support needed)
- Many farmers are interested in auto irrigation
- They don't trust raw values unless AI explains the meaning

Common Quotes

- "Numbers are confusing... tell me what to do."
- "If moisture is low, I want the app to warn me early."
- "Graphs should be simple to understand."

USER PERSONA 01

Name: Bharat Mankar
Age: 28
Occupation: Farmer
Location: Rural Maharashtra
Tech Skill: smartphone user

Goals:

- Monitor moisture & temperature easily
- Reduce water wastage
- Know early pest threats
- Use local language

Frustrations:

- Complex agricultural apps
- Hard-to-read graphs
- No actionable insights
- Cannot detect problems early

Motivation: Improve crop quality & stable income.

USER PERSONA 02

Name: Abhishek akote
Age: 27
Occupation: Farmer
Location: Rural Maharashtra
Tech Skill: smartphone user

Goals:

- Monitor multiple farm fields at once
- Track sensor health and device connectivity
- Generate reports to share with farm owners

Frustrations:

- Switching between apps to manage multiple fields
- No clear history of alerts or actions taken
- Difficult to compare sensor performance

Efficient farm management, reduced workload, and accurate decision-making for better crop outcomes.

CUSTOMER JOURNEY MAPPING

Name: Bharat Mankar
Age: 28
Occupation: Farmer
Location: Rural Maharashtra
Tech Skill: smartphone user

Stage	Action	Pain Point	Opportunity
Awareness	Farmer opens app	Overloaded information	Provide clean dashboard
Monitoring	Checks moisture/temp	Hard to read graphs	Clear cards + color zones
Decision	Decide irrigation	Uncertain thresholds	AI-based recommendations
Action	Turn irrigation ON	Manual labor	IoT automation & timers
Review	View analytics	No insights	Weekly AI summaries

EMPATHY MAPPING

Says:

- “I need to know when to irrigate.”
- “I want an app in my language.”

Thinks:

- “Is my field getting enough water?”
- “Will pests affect my crop soon?”

Does:

- Checks moisture manually
- Calls field workers for updates

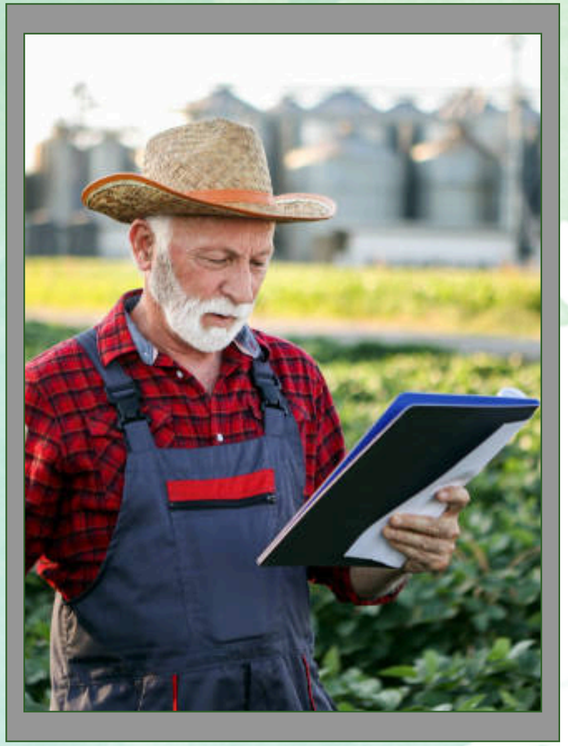
Feels:

- Worried about crop loss
- Overwhelmed by data
- Relieved when alerts are clear

Problem Statement

Primary Problem:

Farmers struggle to interpret raw IoT sensor values (moisture, temperature, pH, humidity) and cannot convert them into meaningful decisions.



Secondary Problems:

- No clear early warnings → crop damage
- Existing apps provide too many numbers, fewer insights
- Irrigation decisions are based on guesswork
- No multilingual support for rural farmers
- No unified platform for insights + automation

Why this matters:

Unclear data = poor decisions → reduced yield → financial loss.

Solution Overview

1. Real-time Data
- Moisture, temperature, humidity, pH
- Color-coded sensor cards

2. AI-Powered Insights
- Irrigation recommendations
- Pest probability
- Yield predictions

3. Smart Alerts
- Critical, warning & informational notifications
- Local language support

4. Automation Control
- IoT irrigation ON/OFF
- Auto mode & timer scheduling

5. Advanced Analytics
- Multi-field comparisons
- Trend charts
- PDF export reports

DESIGN PROCESS

A standard Design Thinking Framework was followed:

1. **Empathize – Understand farmer pain points and technology limitations**
2. **Define – Convert insights into clear problem statements**
3. **Ideate – Explore visual concepts, features, and interaction flows**
4. **Prototype – Create low-fi → mid-fi → high-fi Figma screens**
5. **Test – Evaluate usability, clarity, and decision efficiency**
6. **Refine – Iterate based on user feedback**

DEFINE STAGE

Primary Problem

Farmers struggle to understand sensor readings and need simple, actionable, AI-powered insights instead of raw data.

Secondary Problems

Lack of early warnings leads to crop damage

Farmers need automation features to reduce effort

Current apps don’t support multilingual interfaces

How Might We (HMW) statements

HMW simplify sensor data through visual cues?

HMW help farmers take timely actions with AI suggestions?

HMW support multiple fields with easy navigation?

HMW reduce water usage through smart irrigation control?

AFFINITY MAPPING

Theme 1: Simplicity
- Large cards, clear icons
- Less text, more visuals

Theme 2: Automation
- Auto irrigation mode
- Smart alerts

Theme 3: AI Intelligence
- Crop predictions
- Pest risk probability
- Yield forecasting

Theme 5: Control & Transparency
- View sensor node maps
- Export analytics PDF

Theme 4: Localization
- Hindi/Marathi support
- Regional weather models

IDEATION STAGE

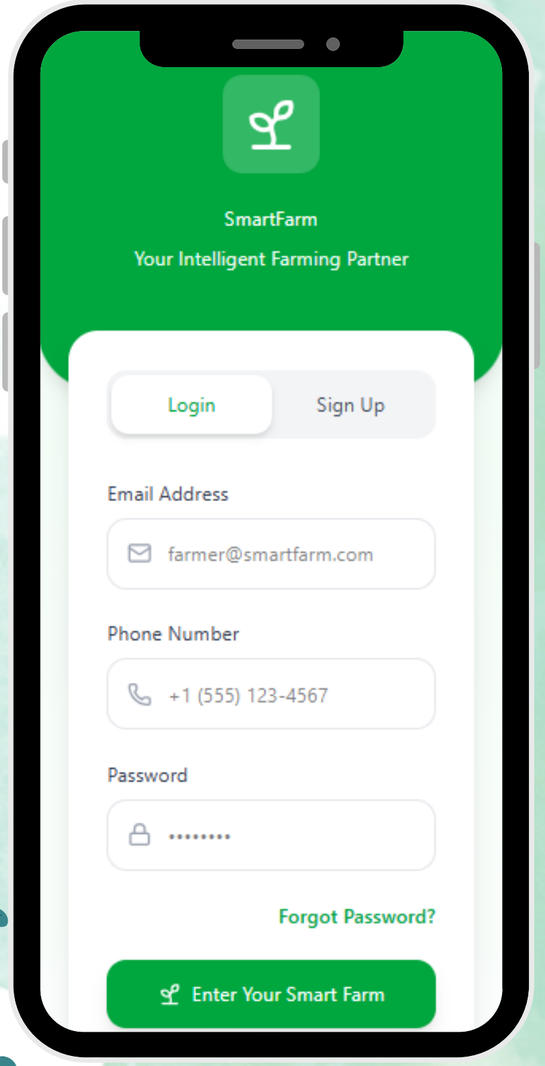
Concept Ideas

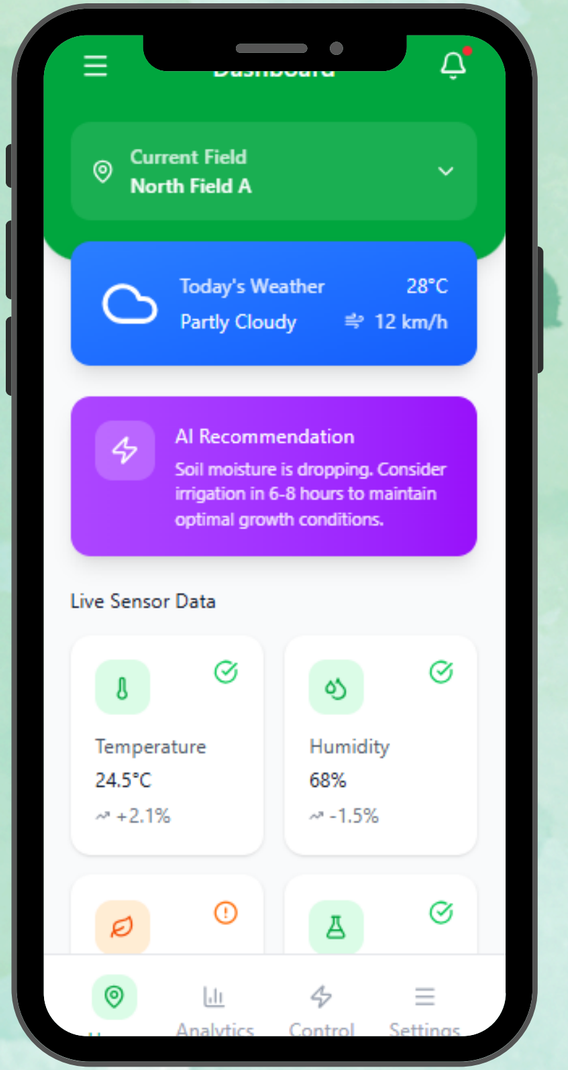
- Real-time sensor cards with color coding
- Field Map showing moisture zones
- AI Insights hub with predictions
- Automation panel with toggles & timers
- Analytics dashboard comparing fields
- Weather + irrigation scheduling
- Multilingual onboarding & UI themes

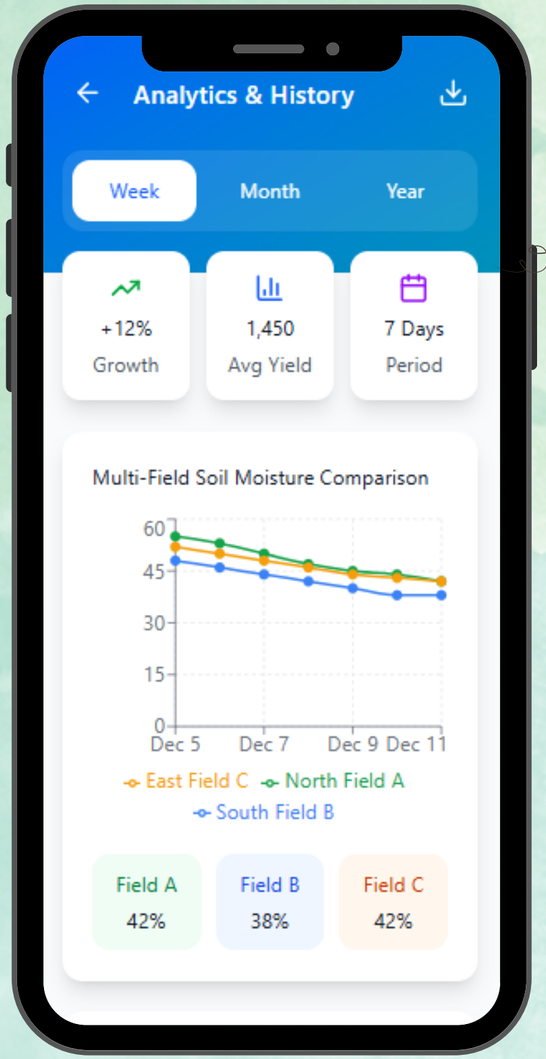
Sketches Created For

- Dashboard layout
- AI insights screen
- Sensor detail with trend chart
- Alerts with severity filters

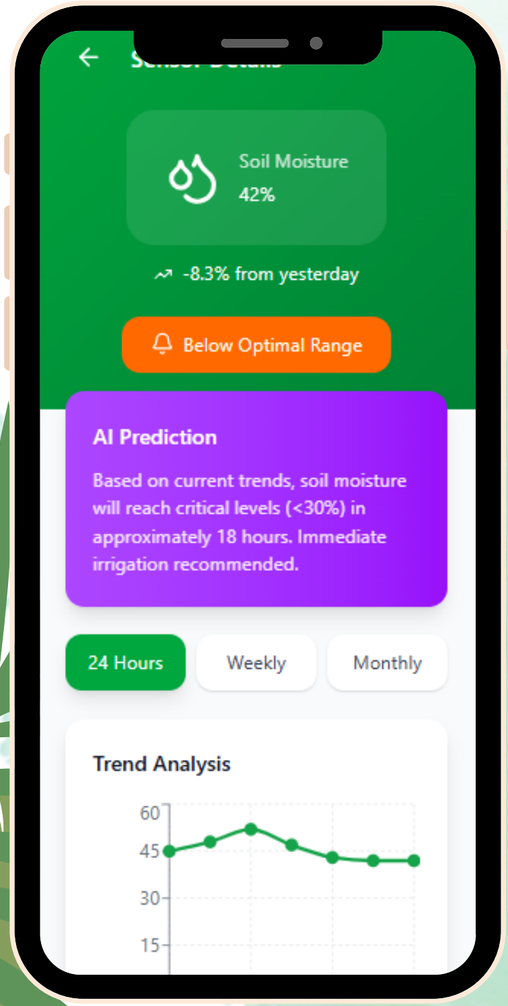
PROTOTYPE

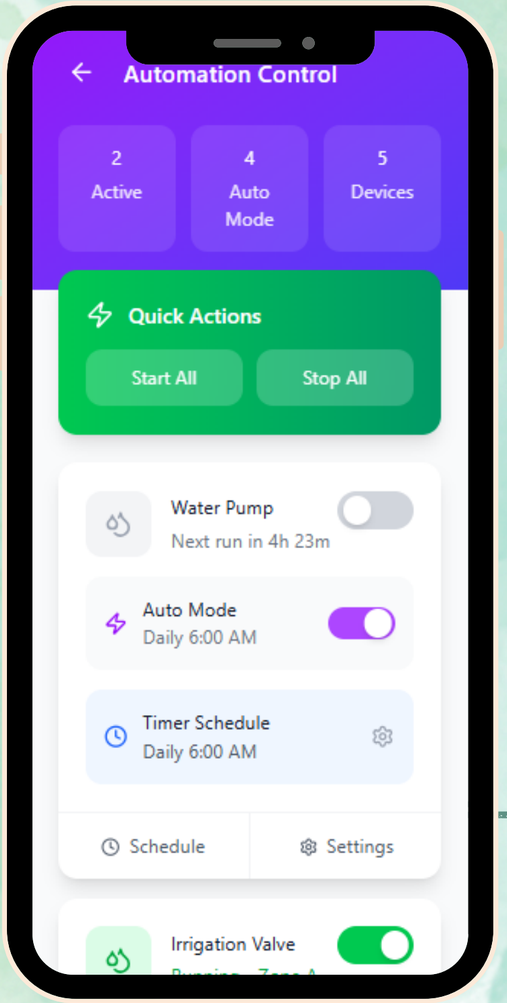

SmartFarm
Your Intelligent Farming Partner
Login
Sign Up
Email Address
farmer@smartfarm.com
Phone Number
+1 (555) 123-4567
Password
Forgot Password?
Enter Your Smart Farm

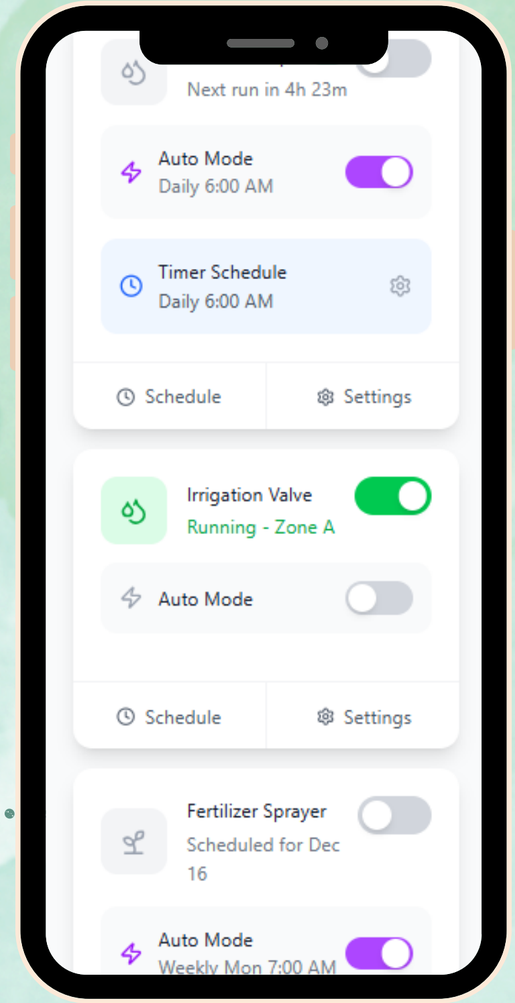

Current Field
North Field A
Today's Weather
28°C
Partly Cloudy
12 km/h
AI Recommendation
Soil moisture is dropping. Consider irrigation in 6-8 hours to maintain optimal growth conditions.
Live Sensor Data
Temperature
24.5°C
+2.1%
Humidity
68%
-1.5%
Analytics
Control
Settings

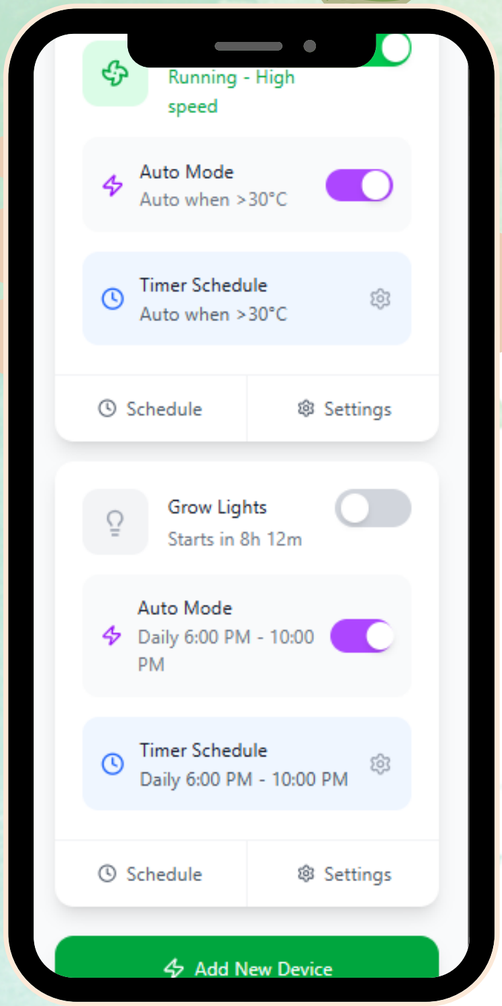

Analytics & History
Week
Month
Year
+12%
Growth
1,450
Avg Yield
7 Days
Period
Multi-Field Soil Moisture Comparison
60
45
30
15
0
Dec 5
Dec 7
Dec 9
Dec 11
East Field C
North Field A
South Field B
Field A
42%
Field B
38%
Field C
42%

PROTOTYPE

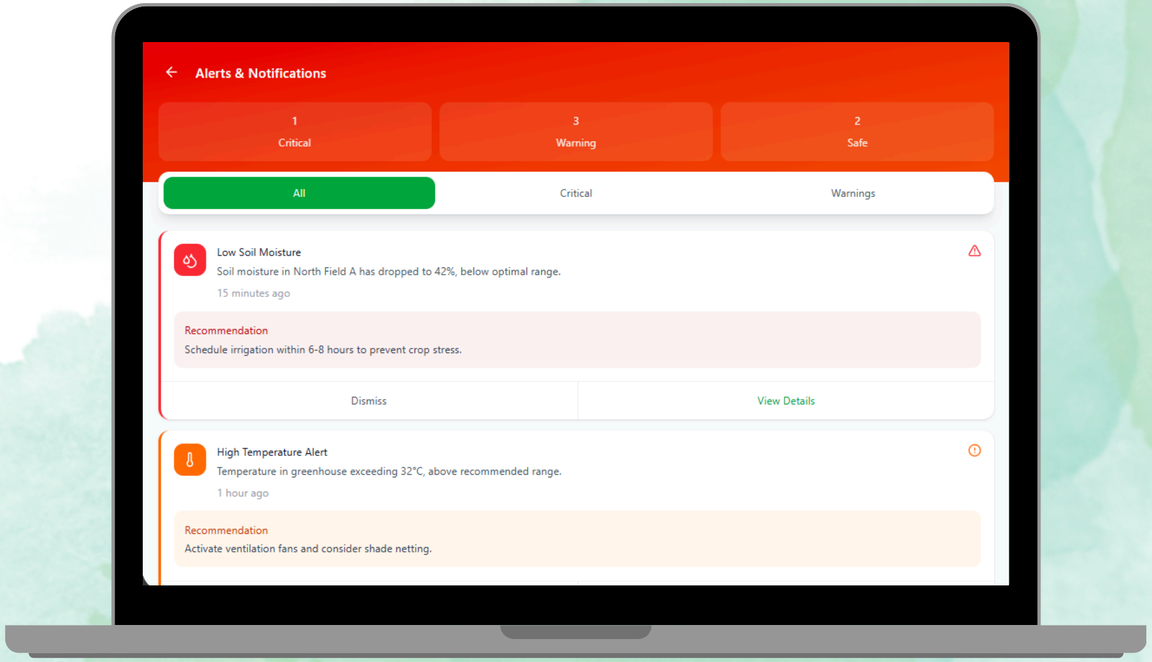

Soil Moisture
42%
-8.3% from yesterday
Below Optimal Range
AI Prediction
Based on current trends, soil moisture will reach critical levels (<30%) in approximately 18 hours. Immediate irrigation recommended.
24 Hours
Weekly
Monthly
Trend Analysis
60
45
30
15

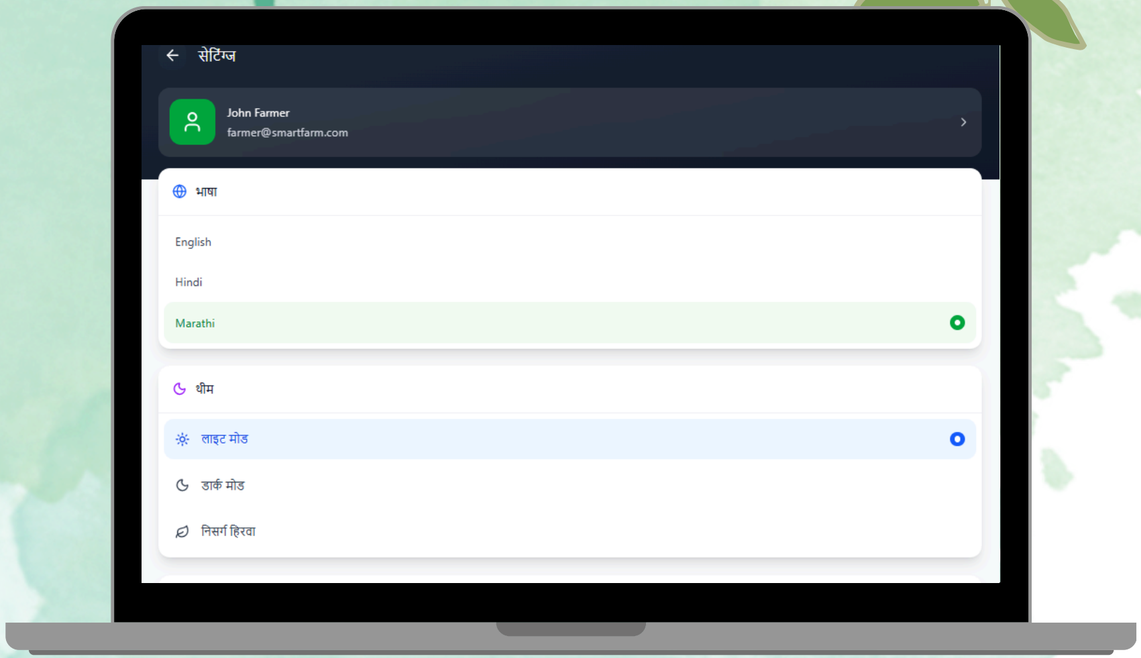

Automation Control
2
Active
4
Auto Mode
5
Devices
Quick Actions
Start All
Stop All
Water Pump
Next run in 4h 23m
Auto Mode
Daily 6:00 AM
Timer Schedule
Daily 6:00 AM
Schedule
Settings
Irrigation Valve


Next run in 4h 23m
Auto Mode
Daily 6:00 AM
Timer Schedule
Daily 6:00 AM
Schedule
Settings
Irrigation Valve
Running - Zone A
Auto Mode
Schedule
Settings
Fertilizer Sprayer
Scheduled for Dec 16
Auto Mode
Weekly Mon 7:00 AM


Running - High speed
Auto Mode
Auto when >30°C
Timer Schedule
Auto when >30°C
Schedule
Settings
Grow Lights
Starts in 8h 12m
Auto Mode
Daily 6:00 PM - 10:00 PM
Timer Schedule
Daily 6:00 PM - 10:00 PM
Schedule
Settings
Add New Device

PROTOTYPE


Alerts & Notifications
1
Critical
3
Warning
2
Safe
All
Critical
Warnings
Low Soil Moisture
Soil moisture in North Field A has dropped to 42%, below optimal range.
15 minutes ago
Recommendation
Schedule irrigation within 6-8 hours to prevent crop stress.
Dismiss
View Details
High Temperature Alert
Temperature in greenhouse exceeding 32°C, above recommended range.
1 hour ago
Recommendation
Activate ventilation fans and consider shade netting.


सेटिंग्ज
John Farmer
farmer@smartfarm.com
भाषा
English
Hindi
Marathi
थीम
लाइट मोड
डार्क मोड
निसर्ग हिरवा

CONCLUSION — IMPACT OF AGRISENSE

Key Achievements

✓ Faster irrigation decisions through clear sensor cards

✓ Reduced crop damage using AI-driven early alerts

✓ Intuitive automation control improving efficiency

✓ Multilingual support increasing accessibility

✓ Visual analytics improving long-term planning

UX Impact

- Farmers felt confident interpreting live field conditions
- App reduced dependency on guesswork
- Increased adoption due to simple UI + local language

Future Enhancements

🔹 Voice Assistant for low-literacy users

🔹 Predictive disease detection

🔹 Offline mode for rural areas

Thank You