

# AloeGreen

Smart Support System for Aloe Vera

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# Meet Our Team



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# Snaps From Our Field Visit



# Aloe Vera Yield & Forecasting Prediction System



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## How the Solution will Address the Sub-Problem / Prototype

### **Real-Time IoT Data Collection**

Sensors continuously capture soil moisture, soil pH, temperature, rainfall, and sunlight, eliminating reliance on manual observation.

### **Localized Environmental Adaptation**

The system adapts to region-specific soil conditions and micro-climates in Sri Lanka, unlike generic crop models.

### **AI-Based Yield Prediction**

Machine Learning and Deep Learning models analyze real-time and historical data to accurately forecast Aloe Vera yield.

### **Actionable Farmer Insights**

Provides expected yield, growth trends, and early warnings to support data-driven farming decisions.

### **Crop-Specific Prototype**

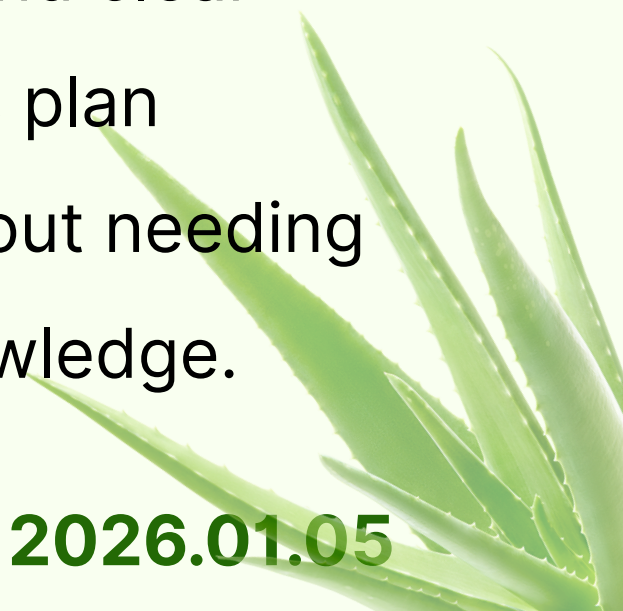
Designed exclusively for Aloe Vera cultivation in Sri Lanka, addressing the lack of localized solutions.

## User Requirements Addressed by the Solution

- Farmers can enter basic crop details such as plant stage into the system, while weather and soil data are collected automatically.
- The system shows the expected Aloe vera gel yield in a simple way.
- Farmers can know when to harvest to get better yield.
- The system helps farmers plan income and sales based on predicted yield.
- Farmers receive early alerts if the expected yield is low.
- All yield information is shown in a simple mobile app that is easy for farmers to understand.

## User Feedback on Prototype

- The solution combines sensor data, weather information, and machine learning into a single yield forecasting system.
- Farmers found the early yield predictions very useful for deciding whether it is a good time to cultivate or harvest Aloe vera.
- The simple yield forecasts and clear explanations helped farmers plan harvesting and income without needing technical or agricultural knowledge.



# Aloe Vera Disease Detection Using Leaf Images & Farmer-Reported Symptoms

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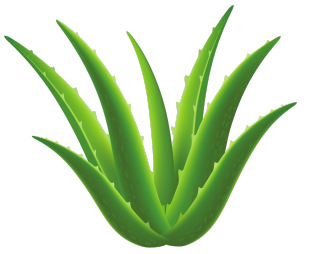


# Aloe Vera Disease Detection Using Leaf Images & Farmer-Reported Symptoms

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## How the Solution will Address the Sub-Problem / Prototype

- Real-time monitoring of plant health using images and user symptoms
- Early detection of Aloe Vera diseases using AI models
- Adapts to Sri Lanka's local climate and environmental conditions
- Provides early alerts, treatment recommendations, and notifications to nearby farmers
- Designed specifically for Aloe Vera disease prediction in Sri Lanka



# Aloe Vera Disease Detection Using Leaf Images & Farmer-Reported Symptoms

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## User Requirements Addressed by the Solution

- Farmers take a photo of an Aloe vera leaf using the mobile app.
- The app automatically detects the disease using an AI (CNN) model.
- The detected disease name is shown in a clear and simple way.
- The app provides basic treatment and prevention guidance.
- Early warnings help stop the disease from spreading.
- All information is displayed in an easy-to-use mobile interface.
- High-risk or contagious diseases trigger alerts to nearby farmers for early prevention.

## User Feedback on Prototype

- Combines image-based disease detection and AI in one easy-to-use system
- Farmers can quickly identify plant diseases without expert help
- Clear disease names and simple treatment advice make it easy to take action
- Sends early alerts for high-risk or contagious diseases
- Helps prevent disease spread and protect nearby crops

# Aloe Vera Price Forecasting System



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## How the Solution Addresses the Sub-Problem / Prototype

- Farmers face two major uncertainties:  
**Price changes** and **unexpected natural disasters**.
- This solution combines price forecasting + profit analysis + early disaster warning in one system.
- The backend uses the **OpenWeatherMap Weather API** to monitor rainfall and **temperature in real time**.
- Based on defined thresholds, the system automatically detects:
  - Flood risk (high rainfall)
  - Drought risk (low rainfall + high temperature)
- The detected risk is displayed in the Risk Management screen with clear warnings and recommendations.

```
API_KEY = os.getenv("WEATHER_API_KEY")
CITY = os.getenv("WEATHER_CITY")

def detect_natural_disaster():
    url = (
        f"https://api.openweathermap.org/data/2.5/weather"
        f"?q={CITY}&appid={API_KEY}&units=metric"
    )

    response = requests.get(url, timeout=10)
    data = response.json()

    if response.status_code != 200:
        return "No disaster"

    rainfall_1h = data.get("rain", {}).get("1h", 0)
    temperature = data.get("main", {}).get("temp", 0)

    daily_rainfall = rainfall_1h * 24

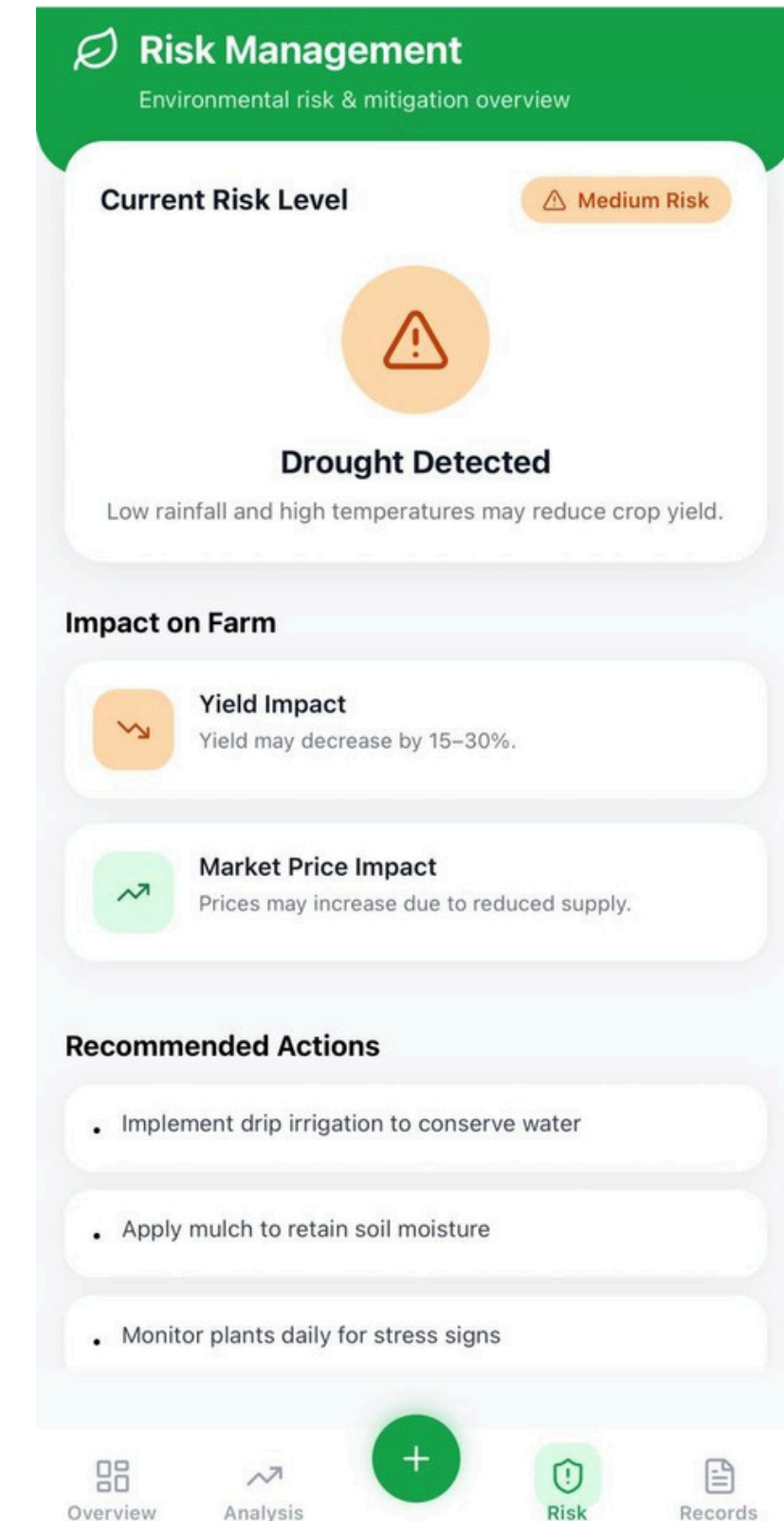
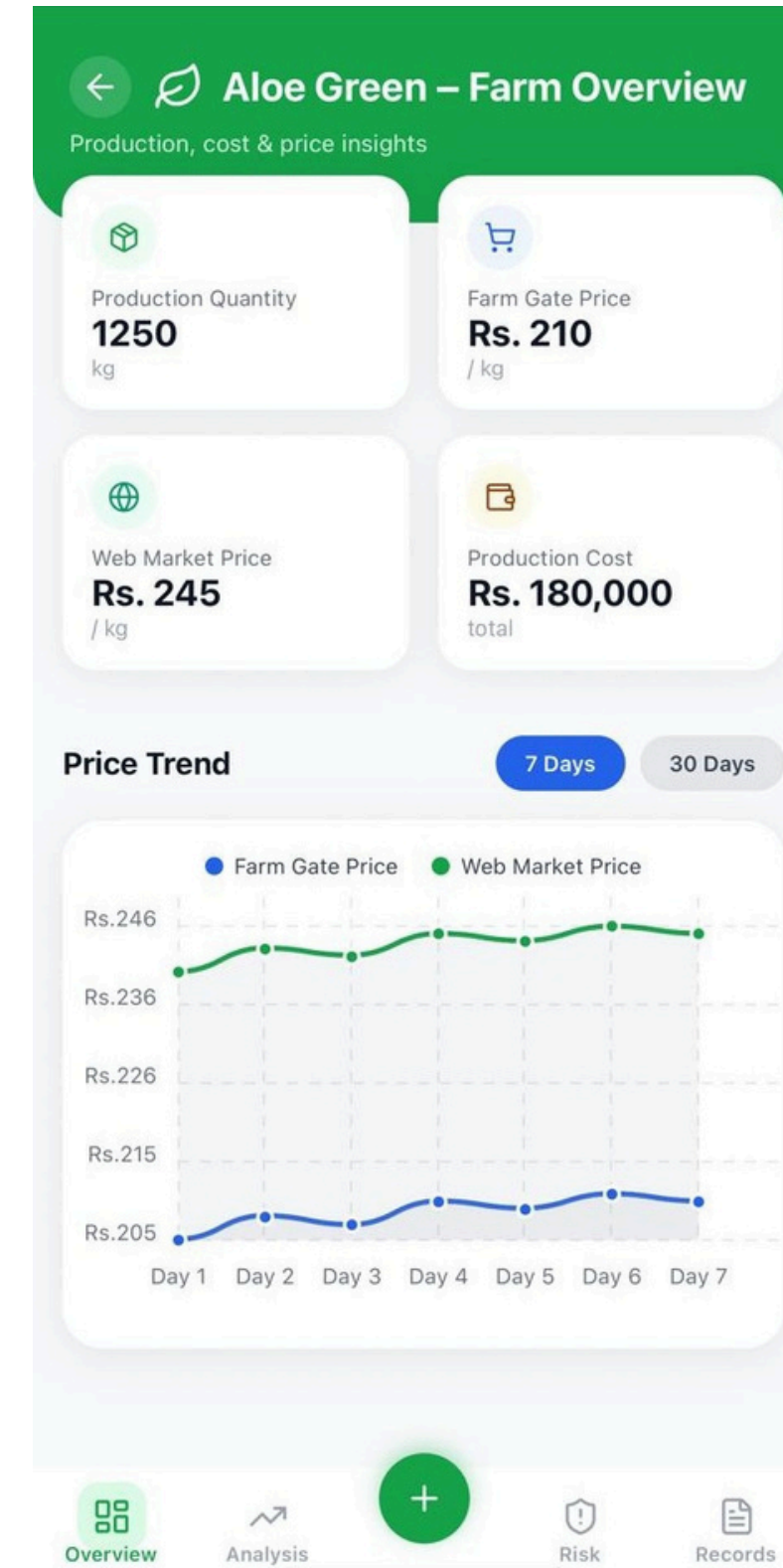
    if daily_rainfall >= 200:
        return "Flood"

    if daily_rainfall < 5 and temperature >= 32:
        return "Drought"

    return "No disaster"
```

## User Requirements Addressed by the Solution

- Farmers can view predicted market prices and compare selling options.
- Users can calculate profits automatically without manual math.
- Farmers receive early warnings about droughts or floods before damage occurs.
- All features are available through a simple mobile interface, no technical knowledge needed.



# Aloe Vera Fertilizer Plan Recommendation System



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## How the Solution will address the Sub-Problem / Prototype

- **Collects real-time soil data (pH, NPK, moisture) using smart sensors**
- **Eliminates guesswork by using AI-based analysis for fertilizer decisions**
- **Provides crop-specific recommendations based on Aloe Vera growth stage**
- **Delivers exact fertilizer type, dosage, and application timing via mobile app**
- **Improves plant health and yield while reducing fertilizer waste and cost**

## User Requirements Addressed by the Solution

- Farmers can enter basic soil details and plant stage into the system and other environmental factors will be read by sensors
- The system tells farmers which fertilizer to use and how much to apply per plant.
- Farmers get guidance on the correct time to apply fertilizer.
- The system gives simple farming advice to improve soil and plant health.
- Farmers receive alerts to apply soil nutrients.
- All recommendations are shown in a simple mobile app, easy for any farmer to use.

## User Feedback on Prototype

- This solution combines soil analysis + plant growth stage + machine learning into one fertilizer recommendation system.
- Farmers found the fertilizer recommendations very useful for deciding what type of fertilizer to apply and in what quantity.
- The simple fertilizer plans (fertilizer type, dosage, timing) helped users understand recommendations without needing agricultural or scientific knowledge.

# Thank You!



