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| crop pulse  **YOUR FARMING FRIEND** | **Abstract**  **AI-Driven Crop Health Surveillance for Early Detection and Precision Agriculture.**  **TEAM NAME**  **TEAM SPARKS** |

**Problem Statement**

An AI Powered Crop Health Monitoring Assistant Using LIVE API’S And Satellite Image Data to Analyze Crop Health, pest risks ,suggestions and recommendations for using fertilizers and to increase yield productivity.

**1. Project Title**

CROP PULSE: AI-Driven Crop Health Surveillance for Early Detection and Precision Agriculture

**2. Abstract**

This work presents CROP PULSE, a computer vision-based system that uses image processing and machine learning to diagnose crop health. Based on satellite imaging and instant analysis, the system identifies early symptoms of disease, nutrient lack, and pest infections. The vision is to equip farmers with actionable information, minimize crop loss, and encourage sustainable precision agriculture.

**3. Introduction**

**Agricultural Challenges**: Disease outbreaks, erratic climate, ineffective monitoring

**Need for Automation**: Manual inspection is slow, subjective, and labor-intensive

**Role of AI**: Enables scalable, consistent, and real-time analysis

**Project Goals:**

> Detect crop diseases at early stages

> Provide geotagged health reports

> Support decision-making for farmers and agronomists

> **Target Crops**: Initially focused on tomato, rice, and cotton

**4. Existing System**

**Manual Inspection**:

> Dependent on visual inspection and farmer experience

> Error-prone and time-consuming

**Satellite Imaging:**

>Poor spatial resolution

>Restricted update frequency

**Mobile Apps:**

>Frequently do not provide real-time feedback

>Restricted to predefined sets of diseases

**Limitations:**

>Reactive in nature rather than proactive

>Admin integration with geospatial data

>No scalability with large farms

**Main Features:**

>Disease detection in real time

> Health reports that are geotagged

> Farmer-friendly dashboard

**Benefits:**

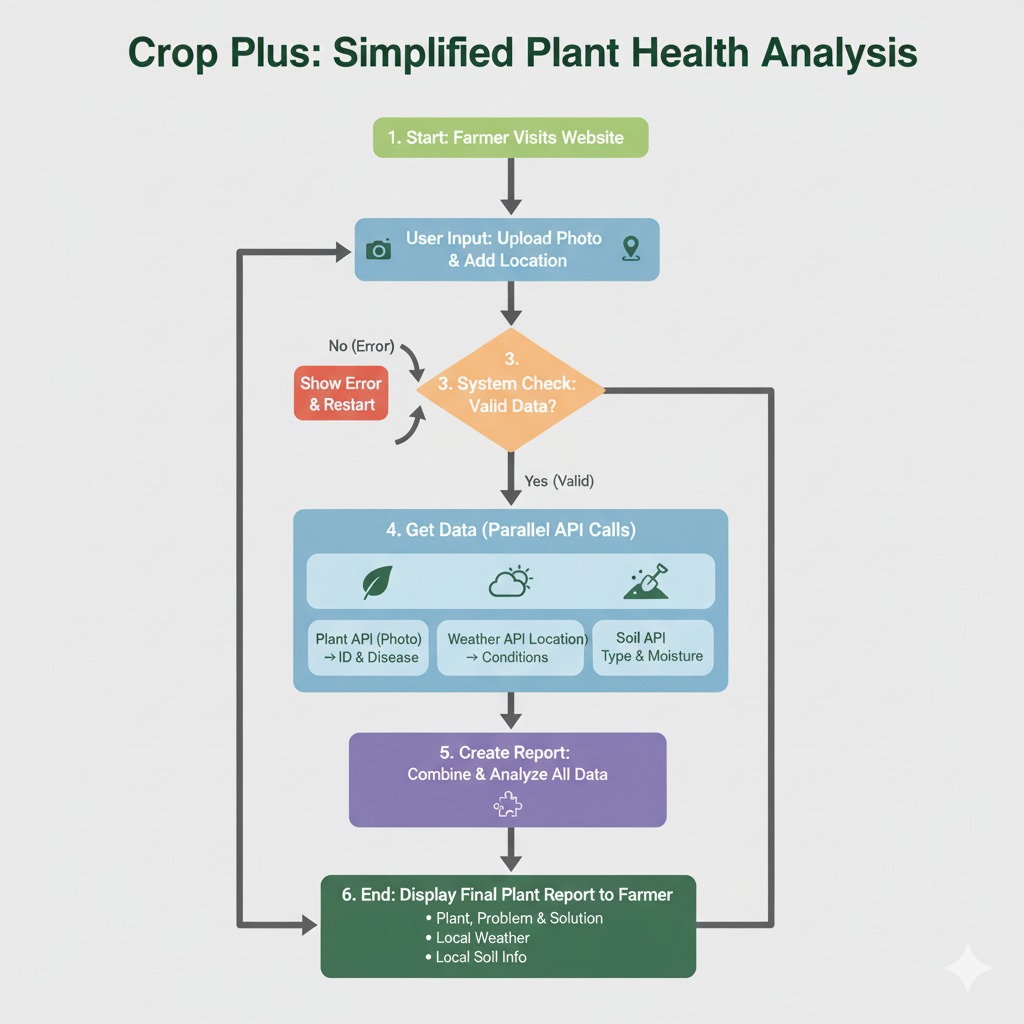
>Early intervention

>Reduced pesticide usage

>Increased yield and profitability

**5. Proposed System**

**System Design:**



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