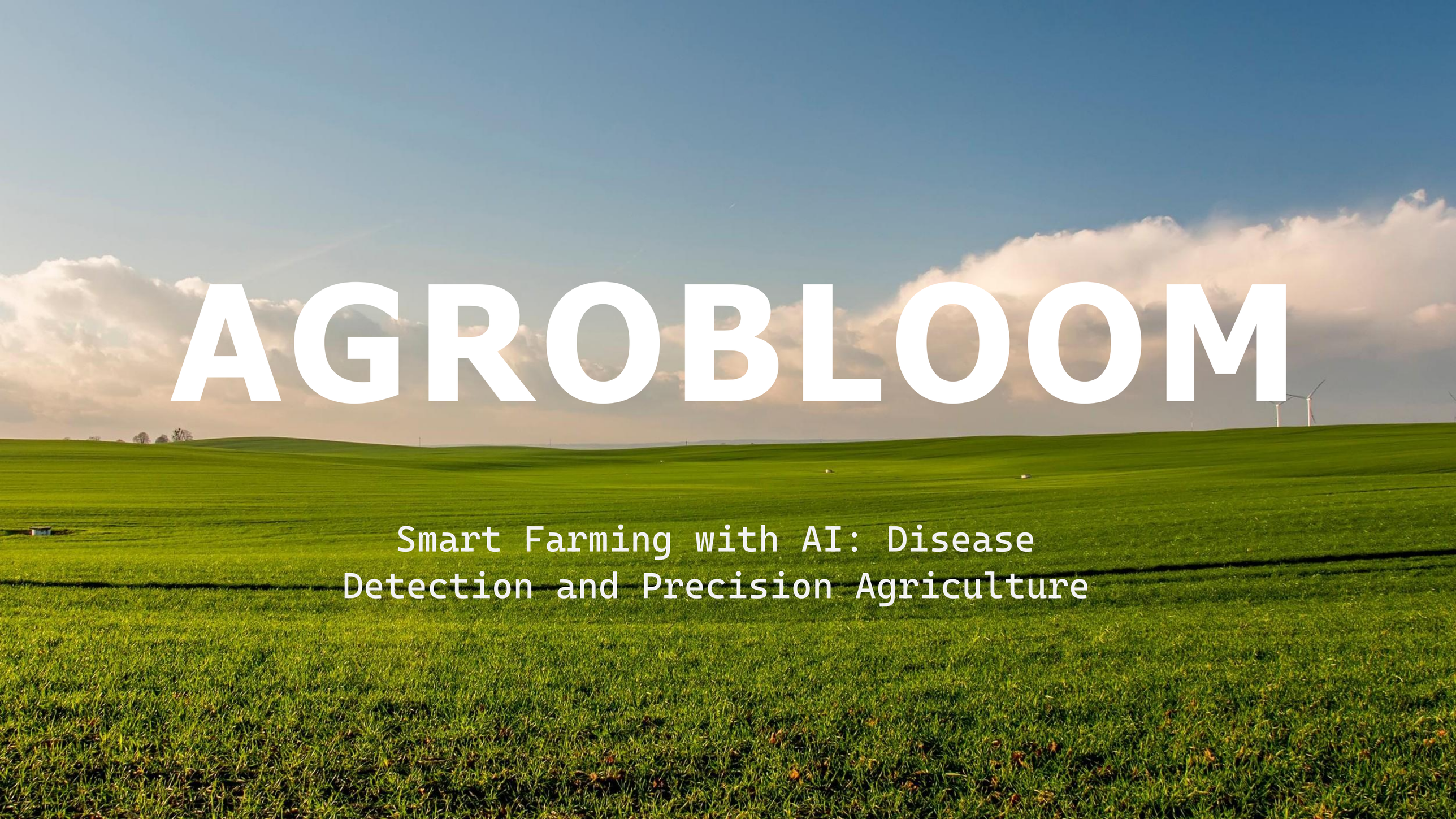
AGROBLOOM
Smart Farming with AI: Disease
Detection and Precision Agriculture

02

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About Us

Building an AI-Powered Crop Disease Prediction and Management System that goes beyond diagnosis- creating a real-time virtual farm twin to detect and prevent plant stress before diseases even emerge.

1. Merges AI-powered disease detection (Agrobloom) with Digital Twin technology.

2. Vision Transformer (ViT) – Applies attention mechanisms from NLP to computer vision task.

3. Generative AI – Chatbots that assist farmers in diagnosing crop diseases.

4. Convolutional Neural Networks (CNNs) – Used for image-based disease detection

03

TECHNICAL APPROACH & TECHNOLOGY STACK

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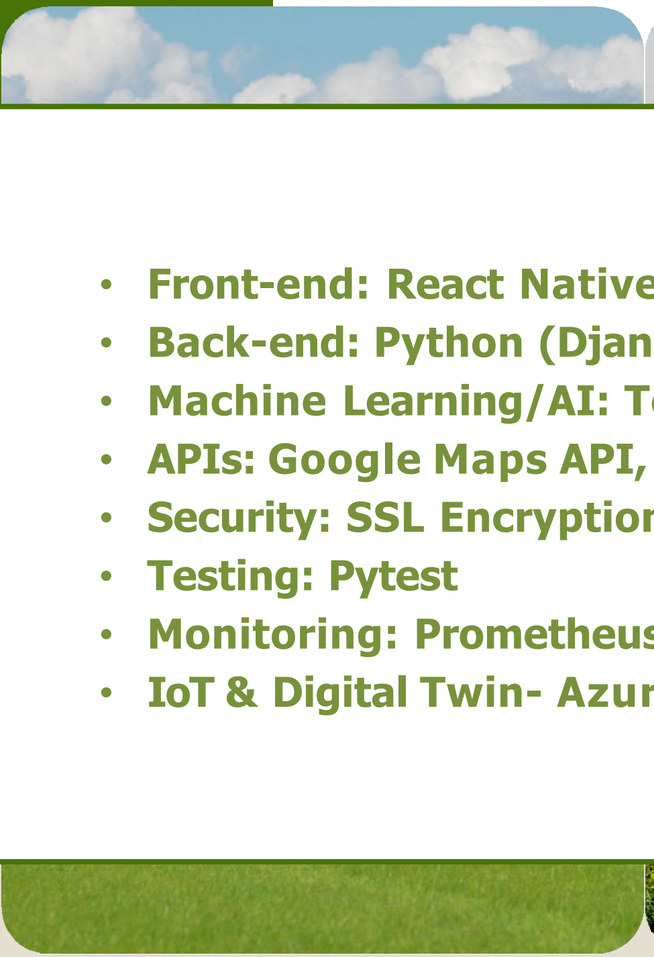

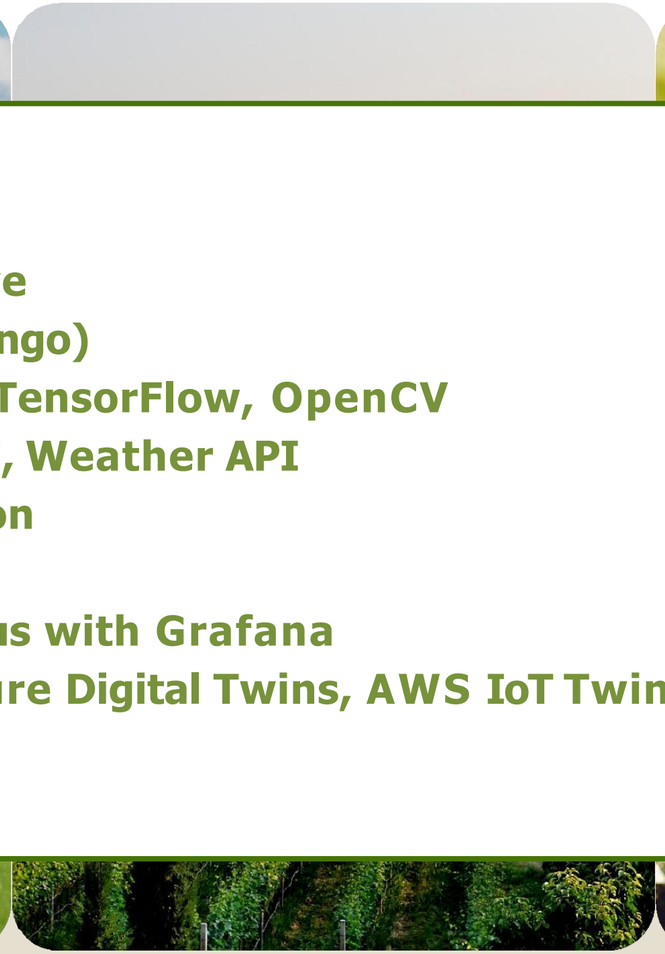

- **Front-end: React Native**
- **Back-end: Python (Django)**
- **Machine Learning/AI: TensorFlow, OpenCV**
- **APIs: Google Maps API, Weather API**
- **Security: SSL Encryption**
- **Testing: Pytest**
- **Monitoring: Prometheus with Grafana**
- **IoT & Digital Twin- Azure Digital Twins, AWS IoT TwinMaker**

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NOVELTIES:

1.Early detection of crop stress (before visible symptoms).

2.Plant Card – The system has a separate folder to track each plant’s health and growth using AI.

3.Live Interaction – Provides real-time chat or video call with agricultural experts.

4.Agrirecommendations – suggest farmers necessary nutritions and fertilizers based on the crops current condition using AI.

5.Live tracking– Tracks the crops conditions using computer vision with regular intervals and provides updates instantly.

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FEASIBILITY AND VIABILITY

IoT Sensors collect live data (like soil moisture, temperature, humidity).

AI& Machine Learning analyze this data to predict plant health risks.

Virtual Simulation mirrors real-world farm conditions, allowing farmers to test different strategies before applying them.

Predictive Insights help prevent diseases and optimize resources(eg., irrigation,fertilizers)

Viability:

1. Data quality
2. Optimized resource use
3. Environmental factor
4. Technological limitations
5. Societal concerns

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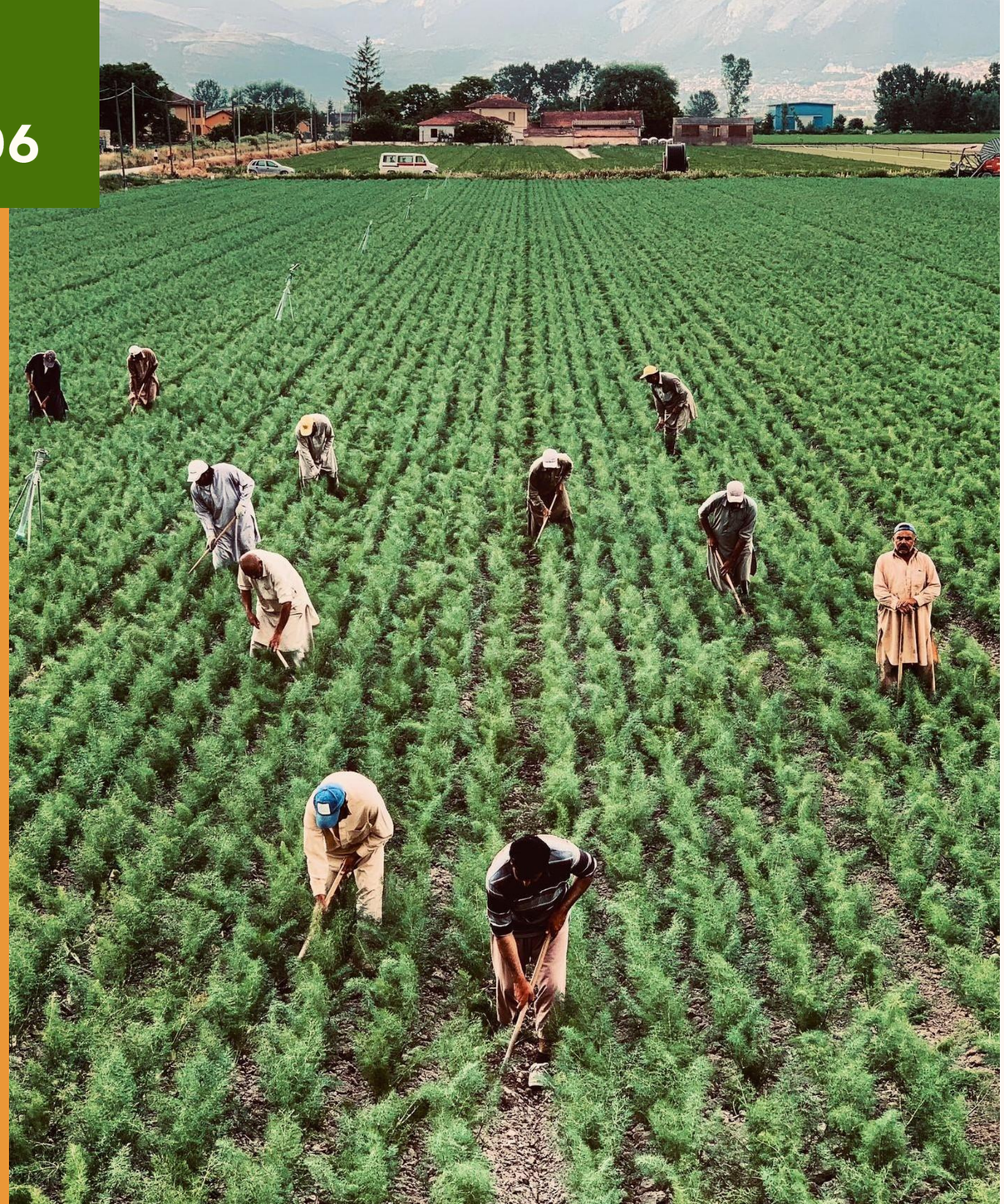

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IMPACTS:

Accurate Disease Diagnosis – Farmers can upload a photo to get crop management insights, reducing uncertainty.

Economic Stability for Farmers – Features like crop selling and loans provide financial support and direct market access.

Increased AI Adoption in Agriculture – Attracts tech-savvy farmers and agribusinesses.

Community Building – Live interaction fosters a knowledge-sharing farmer network.

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BENEFITS

Social benefits

Empowering Farmers

Improved Education

Increased Connectivity

Economic benefits

Increased Income

Reduced Crop Losses

Optimized Resource Usage

Environmental benefits

Sustainable Farming Practices

Biodiversity Conservation

Climate Resilience

09

Future Growth

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Agrobloom has immense potential for future growth through advanced AI models, IoT integration, and blockchain for secure data management. By incorporating smart sensors, drone-based disease detection, and multilingual AI assistants, the platform can provide real-time insights and predictive analytics for farmers. Expansion into global markets with region-specific disease detection and scalable cloud-based solutions will enhance adoption. Additionally, partnerships with agribusinesses, financial institutions, and government agencies can further drive its impact, making precision farming accessible, cost-effective, and sustainable.

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Thank You!