



ClaimLeaf

Meet the Team



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Your AI-Powered Crop Claim Companion

An intelligent assistant that detects plant diseases from leaf images, generates instant insurance-ready reports, and streamlines claims for farmers, insurers, and agri-cooperatives



ClaimLeaf

Professor: Concepción Díaz
Deep Learning

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Why Traditional Crop Insurance Claims Are Slow and Inaccurate

Crop insurance claims today are slow, inefficient, and often unreliable:



- Farmers must submit manual documentation (printed photos, paper forms, ...)
- Manual crop insurance claim verification can take **14–21 days** and is only **~65% accurate** due to human error, travel delays, and inconsistent field reports.

Farmonaut Technologies – “7 Shocking GIS Insurance Claims Tech Hacks for Agriculture”



Insurers must deploy field agents to verify claims



Fraud is common, and delays reduce trust in the system

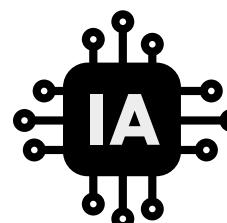


This disproportionately affects smallholder farmers who face the highest risk but have the least digital support

A Growing Demand for Faster, Smarter Crop Insurance

There is strong demand for fast, low-cost, and objective validation of agricultural damage – especially in emerging markets

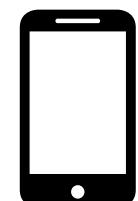
Crop Insurance Assistant offers:



AI-powered leaf disease detection

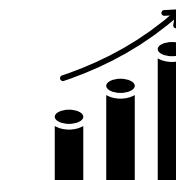


Instant generation of insurance claim reports



Deployment via web/mobile – even offline-ready for rural access

The solution supports:



Agri-insurers looking to scale coverage



Governments and NGOs distributing relief



Farmers and cooperatives needing transparency

What ClaimLeaf Does

- 1
- 2
- 3

Take a photo

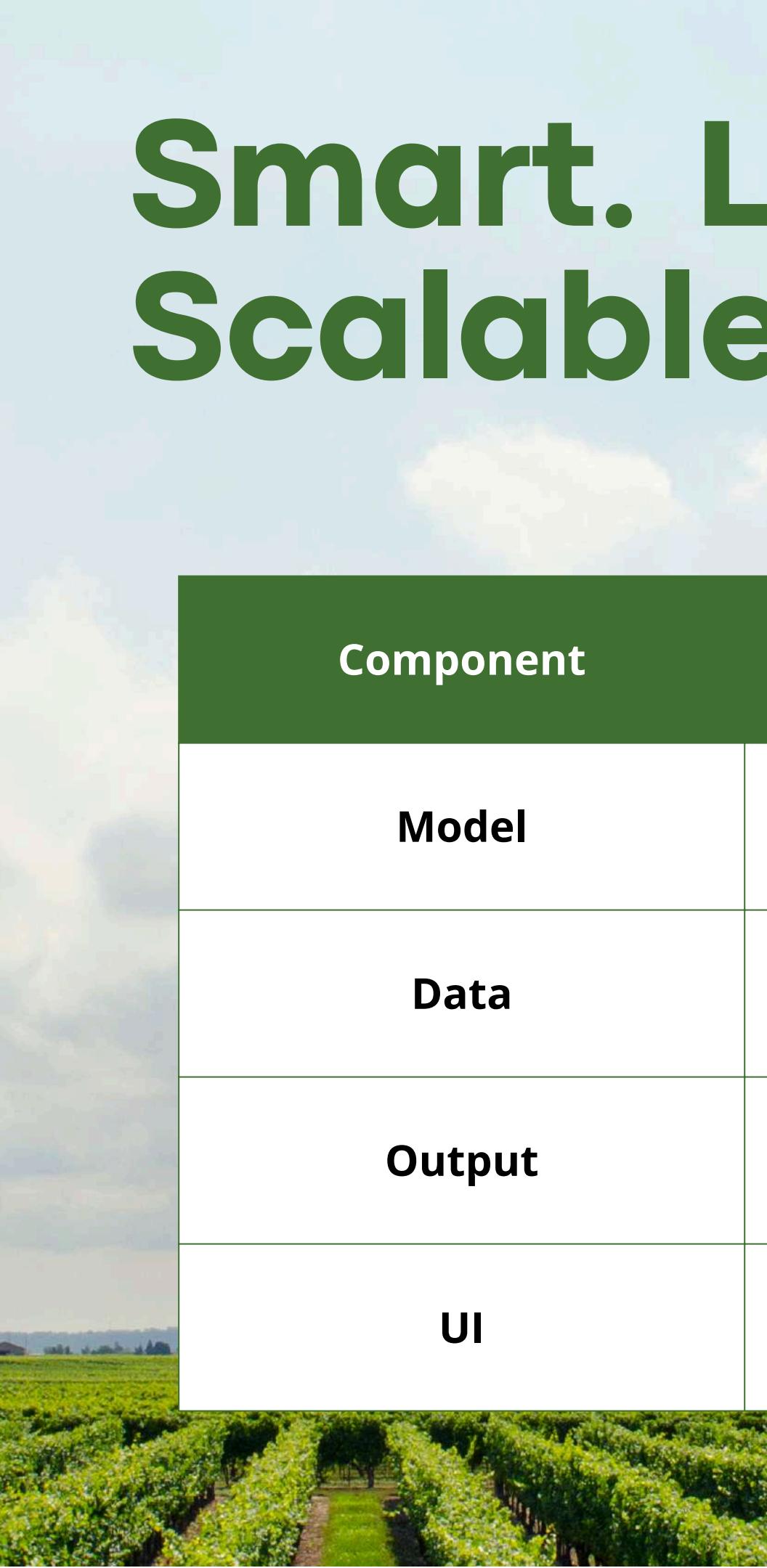
AI diagnoses leaf disease

Download PDF and submit claim



Smart. Lightweight. Scalable

Component	Tech Stack	Why It Works
Model	MobileNetV2 + Gemini 2.5	Accurate + fallback <70% conf
Data	PlantVillage (20K images)	Labeled, public
Output	FPDF	Offline-ready PDF
UI	Streamlit + Image Picker	Easy to test + deploy



Why MobileNetV2



- **Lightweight & Efficient:** Designed for mobile and embedded systems
- **Trained on ImageNet:** Already understands common visual patterns from over 1.2M images and 1.000 classes.
- **Fast Inference:** Suitable for rural or offline environments - <1 second per image
- **Transfer Learning Ready:** We reused feature extraction (include_top=False) to retrain on leaf disease images
- **Low Overfitting Risk:** Combined with augmentation and fallback logic for reliability
- **Compatible Input:** Accepts 224x224 RGB images - perfect for mobile cameras



Two-Phase Transfer Learning

Phase 1 – Feature Extraction

- Freeze the base model (MobileNetV2).
- Only the custom classification head (Dense layers) is trained.
 - Purpose: Prevent overfitting early on, since the base already learned generic features from ImageNet.

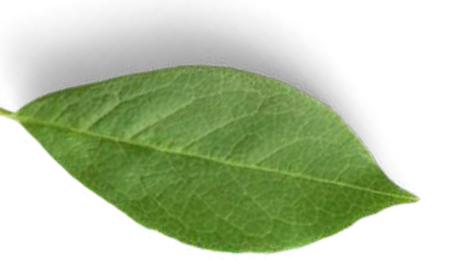
Phase 2 – Fine-Tuning

- Unfreeze the base model after the top layers have stabilized.
 - Purpose: Slightly adapt deeper features to better match the specifics of your domain (e.g., bacterial spots on leaves).



Setting	Feature Extraction	Fine-Tuning
Learning Rate	0.001	0.00001
Epochs	10	5
Final Accuracy	91%	93%

Two-Phase Transfer Learning



Layer (type)	Output Shape	Param #
input_layer_1 (InputLayer)	(None, 224, 224, 3)	0
sequential (Augmentation)	(None, 224, 224, 3)	0
rescaling (Rescaling)	(None, 224, 224, 3)	0
mobilenetv2_1.00_224 (Functional)	(None, 1280)	2,257,984
dense (Dense)	(None, 256)	327,936
dropout (Dropout)	(None, 256)	0
dense_1 (Dense)	(None, 13)	3,341

Fast & Accurate



> 93% accuracy

< 1s inference

Instant PDF report

Works offline* on mobile or desktop

*If not using Gemini helper



ClaimLeaf



A large aerial photograph of a green, agricultural field with several workers in the foreground and middle ground, harvesting crops with hand tools. A tripod-mounted device is visible in the upper left. The word "Demo" is overlaid in large, white, sans-serif letters in the center of the image.

Demo

Our Competitive advantage



Leaf-level AI Detection



PDF claim reporting



Offline Support

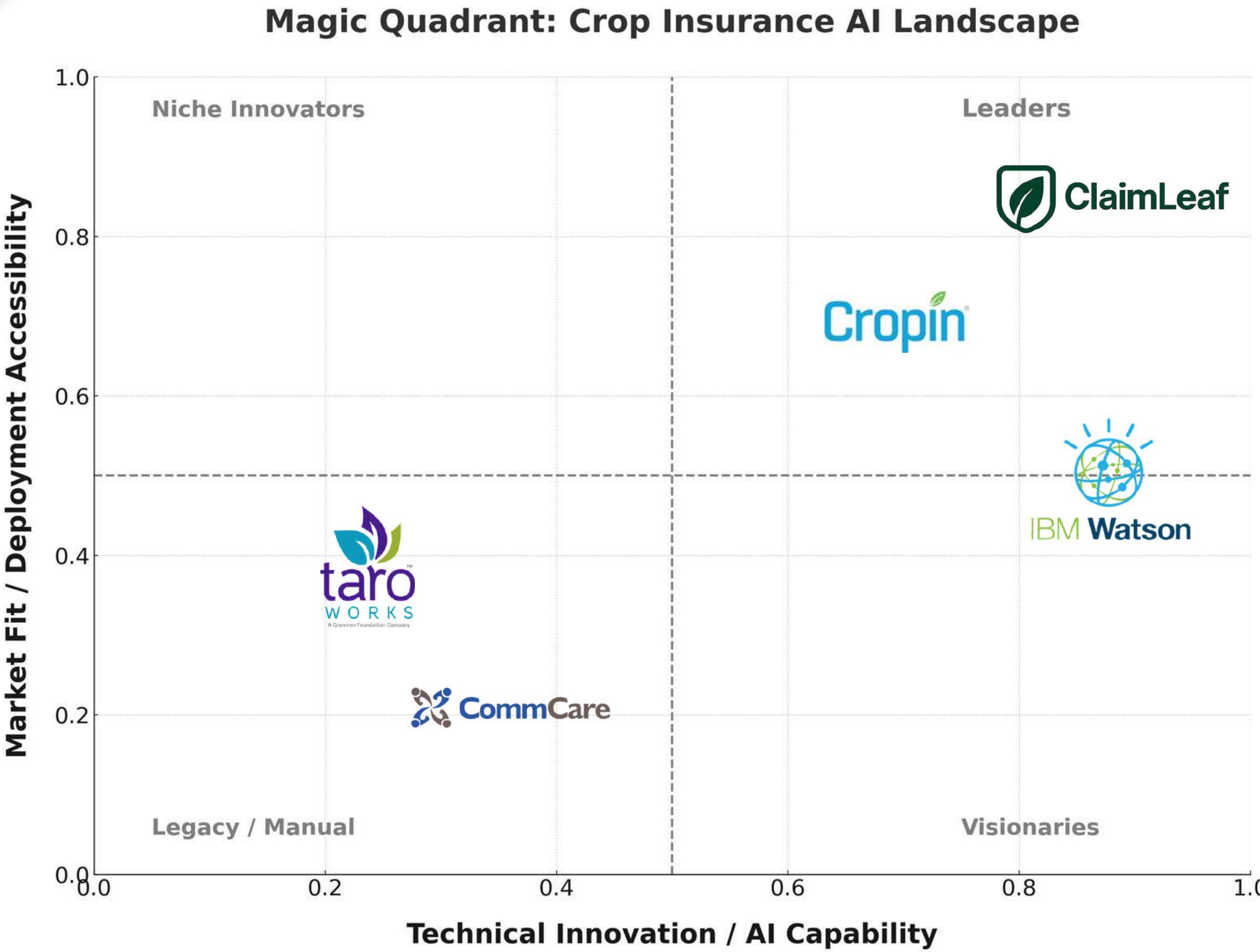
AI Claim Tools Landscape

CropIn - Remote sensing + manual claim app

IBM Watson Ag - Field analytics, cloud-only

TarоШorks - Manual forms, no image intelligence

CommCare - NGO mobile forms, no AI



Business impacts



Faster payouts, less paperwork
more trust



Lower costs, less fraud

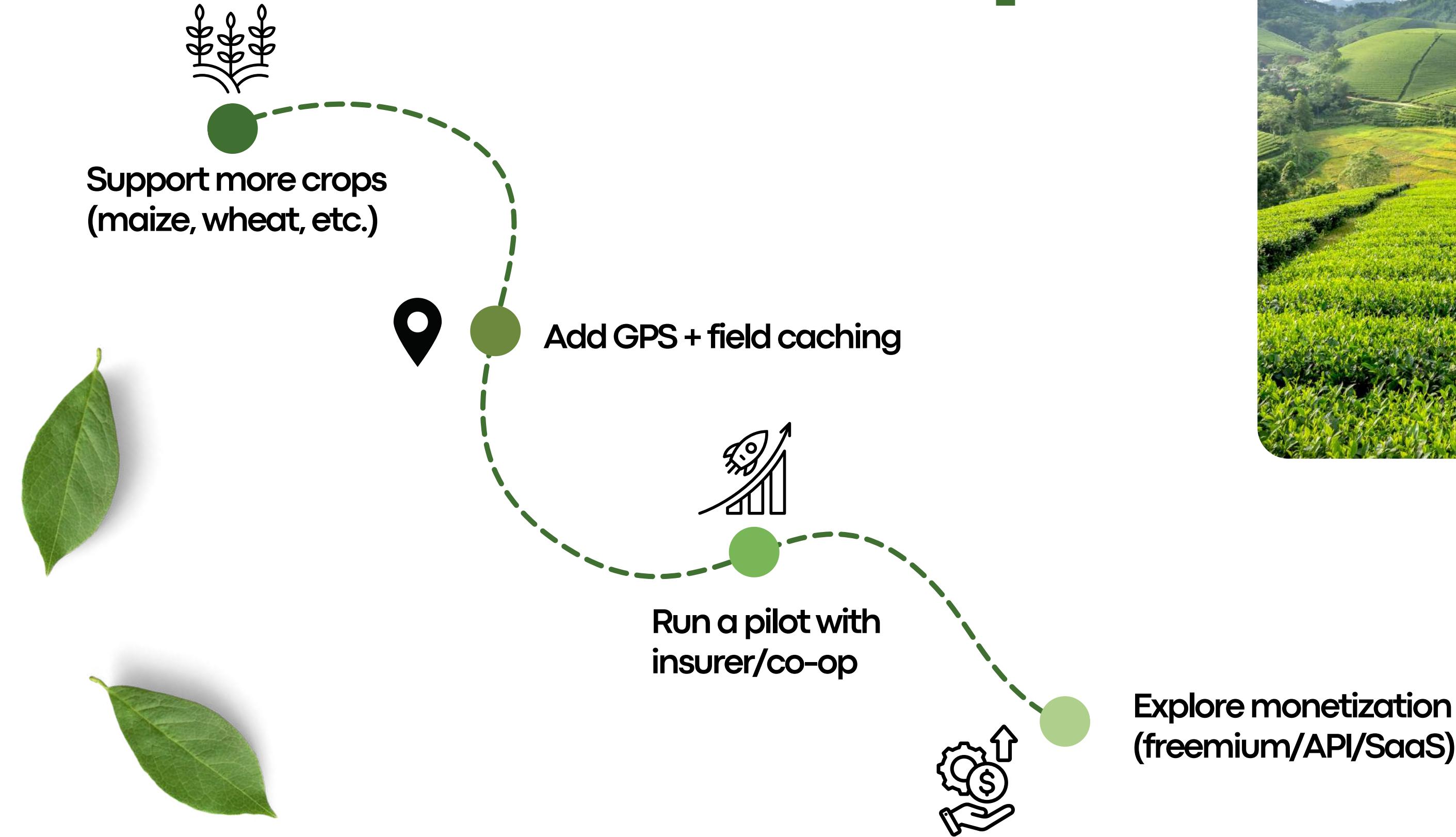


Rapid disease detection
and disaster response

NGOs/Govs



Roadmap





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Thank You