WORLD BANK GROUP | KOREA GREEN GROWTH TRUST FUND | Ministry of Finance and Economy | SEJONG CITY

KGID 2026 SEJONG

Making the Invisible Visible: Vision AI for Climate-Resilient Agriculture

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We build Vision AI that sees what others miss.

We turn invisible environmental signals into early warnings that protect crops, communities, and ecosystems.

Purpose-driven, outcome grounded

We build where the need is clearest. Underserved, high-stakes problems create the most defensible markets.

Scientific Rigor

Validated performance standards. A product that keeps getting better.

Responsible AI

Technology designed to protect humanity and nature from climate-driven risks.

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Problem Statement

We focus on critical blind spots in environmental monitoring

Crop Disease & Pests

Current focus

The Challenge:

- ✕ **Manual limitations:** Human scouting is labor-intensive and prone to error.
- ✕ **Detection is late:** Symptoms are subtle until significant damage has occurred.
- ✕ **Economic Impact:** Delayed response leads to yield loss and excessive pesticide use.

Air Pollution Monitoring

Proven foundation

The Challenge:

- ✕ **Sparse coverage:** Expensive stations leave "blind spots" between monitoring points.
- ✕ **Missing visual data:** Haze and visibility shifts are not captured by standard sensors.
- ✕ **Public safety gap:** Citizens lack real-time, street-level air quality data

VisionPlus is built on a flexible core. Applicable wherever subtle visual signals carry high-stakes consequences.

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Where Conventional Vision AI Falls Short

Conventional Vision AI:
Standard Object Detection

Works well when:

- **Discrete, Well-Defined Objects**
  Cars, faces, defects, license plates
- **Strong Visual Signals**
  High contrast, clear edges, consistent shape
- **Controlled Environments**
  Consistent lighting, fixed camera angles

VS

Deep Visions:
Unstructured Environmental Data Analysis

deep visions

Required for environmental risks:

- **Weak, Diffuse Signals**
  Haze, blur, texture shifts, chroma changes
- **Early-Stage Detection**
  Subtle changes in colour and texture difficult to detect early
- **Quantifying the "Invisible"**
  Particulate matter visibility, crop diseases

Traffic counting

Face ID

Fine Dust Visibility

Crop Disease

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VisionPlus: Ultra-precise analysis of unstructured visual data

1

Image Collection

Captures raw visual input from drones, CCTV, or smartphones.

2

Preprocessing & AI Analysis

Proprietary preprocessing prepares raw input for analysis; Models identifies pests and diseases.

3

Visualization & Delivery

Actionable insights delivered via web dashboard, with GPS-mapped heatmaps, block-level severity scores, and real-time alerts.

Validation

Certified Performance & Global Recognition

Validated by international innovation bodies and government standards.

2024

CES Innovation Award

Honoree in AI & Robotics for environmental monitoring technology.

2026

Finalist Selection

Recognized for breakthrough innovation in Energy & Climate Resiliency.

Certified

Grade 1 Performance

Top-tier certification for Fine Dust Measuring Devices (KOTITI).

Government

Innovative Product

Public Procurement Service designation allowing direct B2G contracts.

Intellectual Property Portfolio

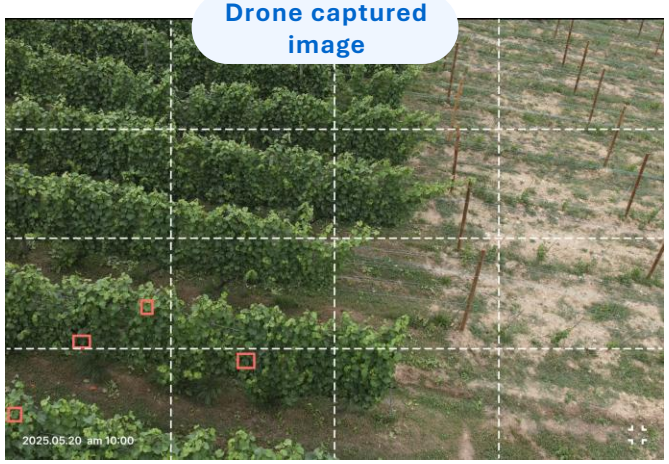
10	3	3	
Registered Patents	Pending Applications	PCT International Applications	*Core IP covering unstructured data refinement, micro-signal analysis, and AI-based fine dust measurement methods.*

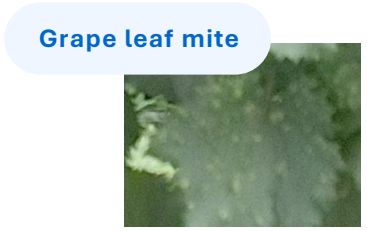
Japan Winery | Precision Pest Control

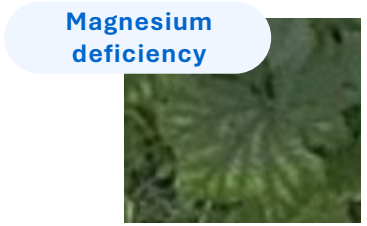
DEPLOYMENT PARTNE NAVER

Leveraging VisionPlus drone analysis to quantify vineyard health and optimize treatment.

Our Approach







1. **Frame-by-Frame Segmentation**
   Drone video is split into high-res frames. AI isolates individual vines, leaves, and fruit clusters.
2. **Pest and disease detection**
   Models detect abnormalities. E.g., early fungal patterns (gray mold, downy mildew) and pest indicators.
3. **Targeted Prescription**
   Generates precise GPS heatmaps for spot-spraying rather than blanket application.

Customer Voice

> *"With labor shortages, it was difficult to manage such a vast vineyard. After adopting VisionPlus, **even a small team can monitor the entire site continuously.**"*
>
> — Winery Owner

> *"VisionPlus catches what the naked eye misses. That golden window before an outbreak spreads — that's where **we cut pesticide use and saved the harvest.**"*
>
> — Cultivation Manager

> *"We used to walk every row just to understand what was happening. Now the **whole vineyard is visible in one screen.** It's a completely different way of working."*
>
> — Field Staff

Expected Outcomes

Input Efficiency

20%

Reduction in Pesticide Usage

Production Value

10-20%

Increase in Harvest Yield

Vietnam Vineyard | Precision Pest Control

DEPLOYMENT PARTNER KOICA

Leveraging VisionPlus smartphone analysis to detect and prevent crop disease

Problem

Khánh Hòa Province — Vietnam's largest grape region (26,000–28,000 tons/yr) — faces recurring disease outbreaks that intensify during the wet season

Grapes for **direct consumption are especially high-stakes**: Vietnamese farmers currently identify pests only once visible — reactive rather than preventive, and without data-driven decision-making.

Lack of on-the-ground data means farmers and cooperatives cannot make informed choices about where to direct infrastructure and capital investment (e.g., rainfall protection, monitoring placement)

Key Pests

- Downy Mildew
- Powdery Mildew
- Black mold
- Anthracnose

30–50% Yield loss from untreated pest damage

Our Approach

1 Data collection & AI training

Build pest image database and labeling system; develop diagnostic AI model for 4 target diseases.

2 Smartphone app development

Deploy real-time camera scan with AI-powered pest ID, confidence score display, and treatment guidance.

3 Farmer rollout & field scaling

Train farmers to self-diagnose using the app; build early-warning system across Khánh Hòa Province.

Expected Outcomes

10%+

Reduction in harvest loss rate

300+

Farmers enabled to self-diagnose

20%+

Reduction in pesticide use

Africa Maize | Food Security

Deploying VisionPlus AI pest detection to protect smallholder maize farmers

DEPLOYMENT PARTNER World Vision

Problem

Fall Armyworm (FAW) causes widespread maize crop damage across Africa, Asia, and Central/South America — with no accessible early-warning system for smallholder farmers.

Maize harvest losses directly threaten household food supply, income, and children's nutrition.

Protecting maize yields is critical for food security and poverty reduction - yet detection remains late and manual.

Partnership — MOU Signed April 2026

World Vision
100+ country network
Last-mile field access

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DeepVisions
VisionPlus AI
Pest detection technology

A new model: NGO field expertise + AI technology = last-mile food security

Our Approach

1 AI-based maize pest detection PoC

Validate field applicability of VisionPlus for early detection of FAW and key maize diseases in African conditions.

2 Deployment via World Vision network

Work with World Vision's local field teams and community access to reach smallholder farmers at the last mile.

3 Scale-up & farmer capacity building

Expand early intervention model across Africa; train farmers in digital agriculture tools and AI-powered diagnostics.

Expected Impact

100+
countries
World Vision deployment network

Early
detection
FAW & disease caught before spreading

Smallholder
access
AI tools reaching last-mile farmers

Food
security
Yield protection for vulnerable households

Thank you for your time

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