June 5, 2025

Verdus

verduslabs.com

Giving growers omniscience. Starting with grapes.

Problem

- Grape growers face **unpredictable diseases**, **environmental stressors, and inconsistent yields:** threatening entire harvests and millions in lost revenue
- Farmers lack
  - real-time, automated insights, forcing **reactive decisions** instead of proactive interventions
  - **structured historical data** that builds season over season, transforming gut decisions into data-driven strategy

Solution

AI-powered cameras mounted on drones scanning vineyards, detecting disease outbreaks, stress zones, and yield variations—*before* they cause damage.

We give growers real-time insights so they can:

1. detect diseases early
2. predict yield accurately
3. optimize labor, irrigation, and harvest decisions

Every flight compounds into a proprietary, high-resolution dataset: mapped by farm, varietal, and environment. This data becomes a **self-improving system for farm management**, and a **strategic asset for commodity traders**, crop insurers, and wineries.

Differentiation

1. **Ultra-High Resolution:** Unlike typical aerial shots, we fly drones through vineyard rows, capturing RGB-D, multispectral, or hyperspectral data at leaf-level. This gives us vine-by-vine visibility into disease, stress, and yield indicators that satellites or flyovers simply miss
2. **Extreme Flexibility:** Tractor-mounted systems are limited by terrain, scheduling, and scale. Our drone-based platform is fully autonomous, deployable daily, and scalable to farms of any size—including operations over 1,000 acres—without disrupting field work

Why start with vineyards?

- **High-Value, High-Risk:** One acre of wine grapes can be worth over $15,000. A single undetected outbreak can wipe out millions in revenue
- **Data Desert and Heavy ROI/pixel:** Vineyard monitoring is manual and episodic. Fields are highly sensitive to micro-variations in disease, water, and yield. Marginal yield improvements can drastically increase revenue

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Roadmap

Phase 1 – Vineyard Pilot (Summer 2025): Prototype v1 & deploy at test farms

- **Mid-June:** Build v1 drone system using off-the-shelf hardware + open-source CV models
- **Start of July:** Begin in-field testing at pilot farms, iterate hardware/software, refine data pipeline
- **End of July:** Convert 5+ paid growers into pilot partners to validate demand + generate early data moat

Phase 2 – **Regional Scale** (Next 12 Months):

- Expand pilots across Finger Lakes, NYS
- GTM campaigns in Napa Valley and San Joaquin County—high-density, high-value vineyard regions
- Optimize sensing workflows, farmer dashboards, and customer onboarding

Phase 3 – Expansion

- Extend models + sensing hardware to apples, orchards, and berries
  - **Why these crops?**
    - Morphological similarities: clustered fruits, canopy structures, visible leaf stress
    - Shared disease classes: fungal leaf spots, bacterial rots, drought signatures
    - Yield prediction models translate well with minimal retraining

Phase 4 – Intelligence Infrastructure for Earth and Beyond

- Sell aggregated vineyard/orchard sensing data to train predictive models for commodity markets, insurers, and governments
- Extend platform to support sustainable food production in controlled environments—including CEA, vertical farms, and extraterrestrial agriculture

Verdus Labs is building the nervous system for Earth's crops. We make all plant life machine-readable—so humans can see, understand, and act on the signals of the biosphere. **Our goal is simple: turn the living planet into a perceivable, computable system.**