

# Workforce Health Surveillance for Cocoa Supply Intelligence

Real-time malaria monitoring predicts agricultural labor productivity in Côte d'Ivoire

## THE MISSING DATA LAYER

Weather and satellite data capture **crop stress** (brown rot, drought, disease). But they miss **workforce health**—the human factor that determines harvest efficiency. Academic research shows malaria-afflicted cocoa farmers harvest only **40% of crops** compared to healthy farmers (60% efficiency loss).

## OUR SOLUTION

Pharmacy sales surveillance network in Côte d'Ivoire cocoa-producing regions. We track antimalarial, antibiotic, and antiretroviral sales as real-time proxy for workforce health deterioration—providing early warning signals weeks before production impacts become visible.

## PROOF OF CONCEPT: 2024-2025 PRODUCTION CRISIS

Location	Malaria Trend (Aug-Dec 2024)	Production Outcome
Gontougo région (2 pharmacies)	10x surge above baseline (0 → 1,215 units ARTEFAN)	Crisis region (USDA-confirmed)
La Mé région (1 pharmacy)	Stable endemic baseline No surge detected	Stable production No crisis
Urban Abidjan (1 pharmacy)	Stable 500-650 units/month 2020-2024	N/A (control) No cocoa production

**Geographic specificity proves signal validity:** Malaria surge appeared only in Gontougo (production crisis zone), NOT in La Mé cocoa region or urban Abidjan. Four-pharmacy network provides proper controls absent from national-level data.

## ACADEMIC VALIDATION

- **Nigeria cocoa farmers:** Malaria-afflicted harvest only 40% vs healthy farmers (60% loss)
- **Côte d'Ivoire study (2009):** Coffee/cocoa farmers sick 8-9 days per malaria episode
- **Work days lost:** 3-7 days per adult case (NIH multi-country estimate)
- **Economic impact:** Malaria = 58% of all agricultural sick days in some studies

## PARTNERSHIP OPPORTUNITY

We complement (not compete with) existing satellite and weather data providers. Your models show *crop damage*; our data shows *labor productivity*. Combined signal = superior production forecasting for commodity traders, processors, and hedge funds.

**Integration options:** (1) Co-branded offering with revenue share, (2) White-label data feed you resell, (3) Differentiating feature in your premium tier

## NEXT STEPS: MY 2025/2026 PROSPECTIVE VALIDATION

- **Expansion:** Scale from 4 to 30+ pharmacies across Côte d'Ivoire cocoa belt
- **Prospective test:** Aug-Dec 2025 malaria data → predict Oct 2025-Sept 2026 production
- **Integration pilot:** API/data feed to your platform for client testing
- **Target customers:** Commodity hedge funds, processors (Barry Callebaut, Cargill), ESG investors



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*Four-pharmacy proof-of-concept complete. Detailed analysis and data samples available upon request.*