FarmWiz

— Agriculture Technology —

Smart Farming from Seed to Harvest

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Suriname | Future Caribbean 2026

The Caribbean Agricultural Gap

Caribbean farmers rely on visual guesswork. Without real-time data, minor environmental shifts rapidly escalate into severe crop stress, high pest pressure, and critical water mismanagement.

The Dutch Ideal



Netherlands: Controlled, Recipe-based Agriculture

The Caribbean Reality



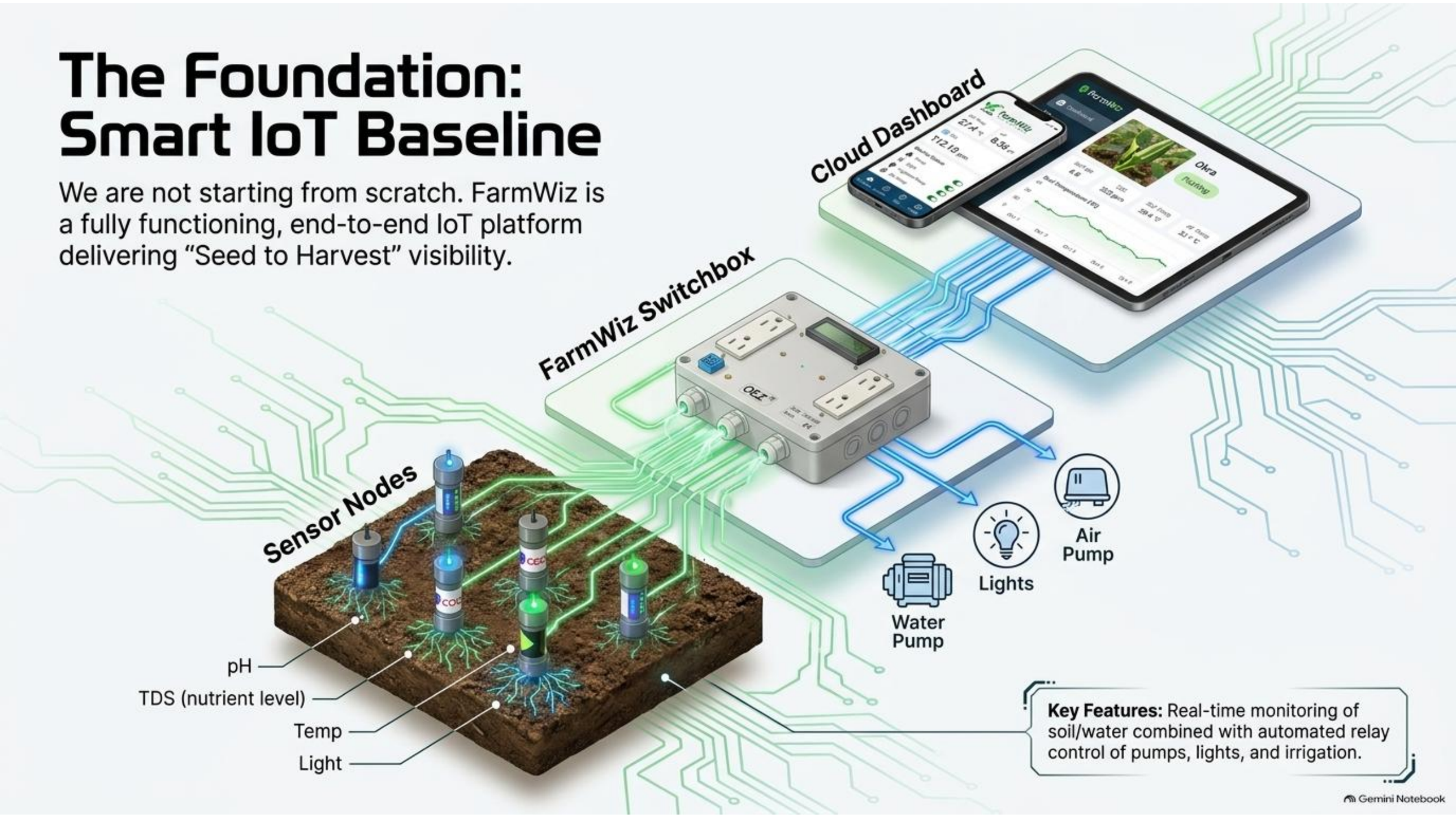
Suriname: Traditional, Visual Guesswork

The climate demands precision, but farmers lack real-time visibility.

Gemini Notebook

The Foundation: Smart IoT Baseline

We are not starting from scratch. FarmWiz is a fully functioning, end-to-end IoT platform delivering “Seed to Harvest” visibility.



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TRL 6 Validation: Proven in the Field

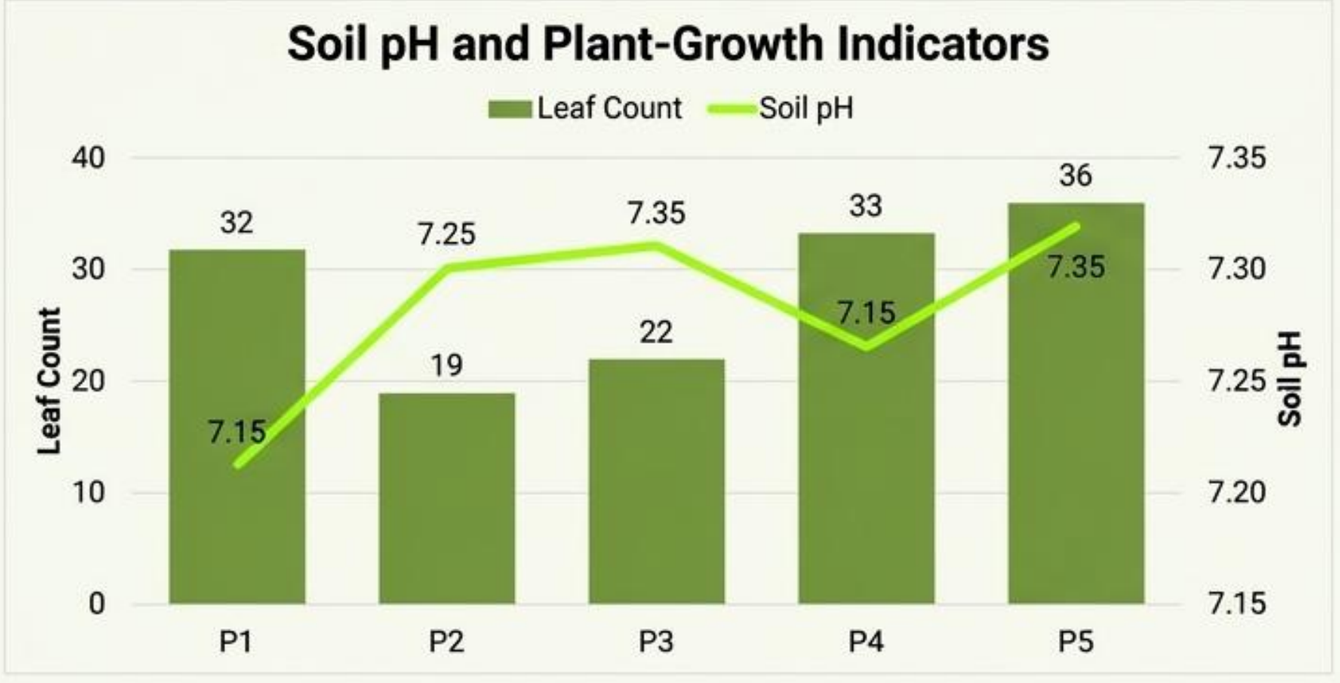
Validation: Technology Readiness Level (TRL) 6 Achieved.

Traction: 6+ months of live, continuous field testing in both soil and hydroponic environments.

Results: Healthy leaf development, successful automation cycles, and actionable life-cycle data tracked from germination to fruiting.







Crop Life-Cycle Tracker - Okra (Fruiting)

Germination	Baseline: 12 Jun-21, Actual: 7 Jun (Early by 5 days)
Ready for Transplant	Baseline: 28 Jun-5, Actual: 13 Aug (Delayed)
First Flowers	Baseline: 27 Jul-11, Actual: 7 Oct (Delayed)
First Pods	Baseline: 1 Aug-16, Actual: 8 Oct (Delayed)

Pump Light Irrigation Air Pump

AI Insights:
Your okra is currently in the fruiting stage, with the first pods recently observed.
Current Stage: Fruiting.
Ready for Transplant (if started indoors) needs attention.
Nest Focus: First Harvest (Watch for this between 13 Oct and 2 Nov).
Current fruiting tip: Pods develop quickly after flowers fade. Continue consistent watering.

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How FarmWiz Works

From real-world data to smart decisions — helping farmers monitor, automate, and grow healthier crops throughout the entire life cycle.

FarmWiz
Smart Farming from Seed to Harvest

1 Sensor Nodes
Collect real-time data



- Soil pH
- TDS (nutrient level)
- Soil temperature
- Light (LDR)
- Air temperature & humidity

Wireless, low-cost IoT sensors monitor soil and environmental conditions in real time.

2 Data Transmission
Send data to the system



Wi-Fi / LoRa / ESP-NOW

- Wi-Fi
- LoRa (long range)
- ESP-NOW (local)

Sensor nodes wirelessly send data to the FarmWiz switch box and cloud dashboards.

3 FarmWiz Switch Box
Automate and control equipment



- Pump (Relay)
- Light (Relay)
- Irrigation Pump (Relay)
- Air Pump (Relay)

The switch box receives sensor data and can automatically control pumps, lights, irrigation, and other farm equipment based on conditions or user settings.

4 Dashboard
Monitor crops and conditions



- Real-time sensor data
- Crop life-cycle tracking
- Device control
- Alerts & notifications
- Historical trends

A web and mobile dashboard shows real-time data, crop life-cycle progress, and allows farmers to control equipment from anywhere.

5 AI Roadmap
From data to insights

Ask FarmWiz

How is my okra doing? Ask

Your okra is currently in the fruiting stage, with the first pods recently observed.

CHECK **Ready for Transplant (if started indoors)**
Delayed by 39 days. Check light, watering consistency, temperature, and root health before adding more feed.

NEXT **Next focus: First Harvest**
Watch for this between 13 Oct and 2 Nov.

TIP **Current fruiting tip**
Pods develop quickly after flowers fade. Continue consistent watering. Harvest pods frequently to encourage more production.

AI analyzes your crop data, identifies trends, and provides personalized recommendations at every stage of the growing cycle.

Crop Life Cycle Monitoring

Track each stage with data, photos, and AI insights



1. **Planting** — Day 0
2. **Germination** — 5–14 days
3. **Growth** — 2–6 weeks
4. **Flowering** — 7–11 weeks
5. **Fruiting** — 8–16 weeks
6. **Harvest** — Ongoing

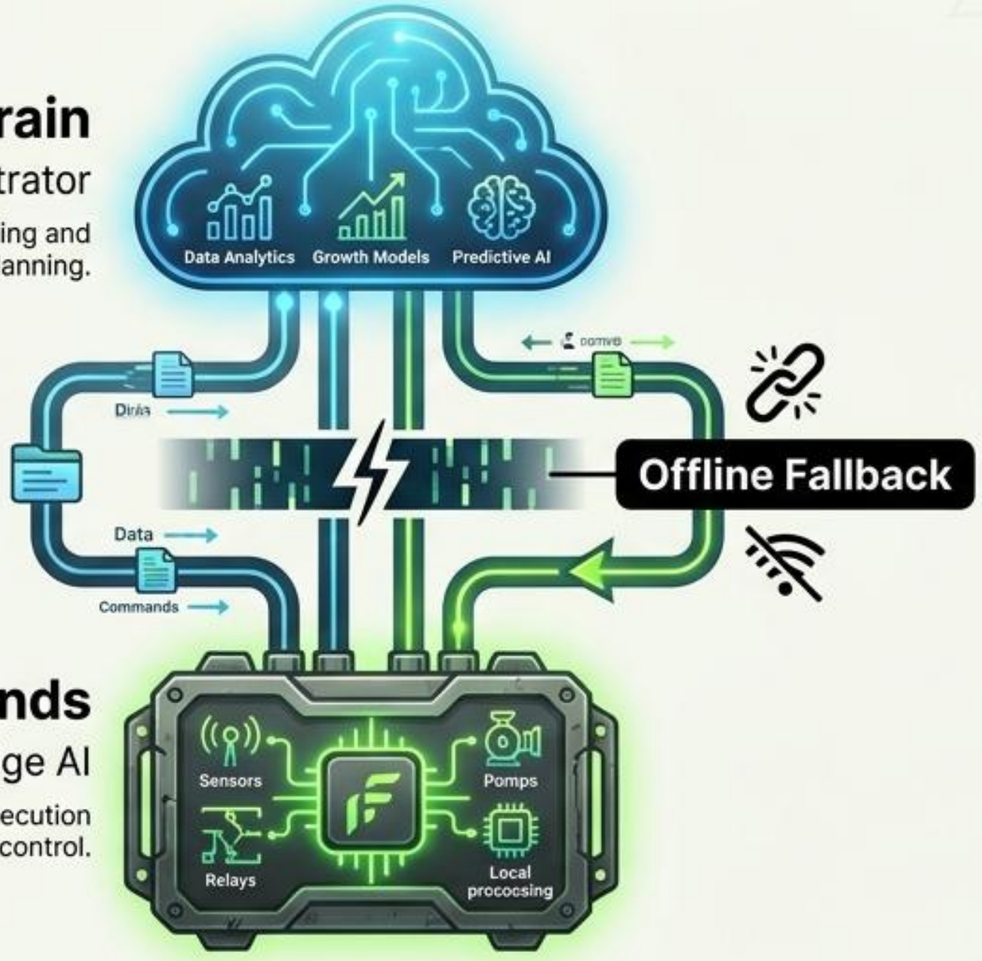
The Next Leap: Multi-Level Agentic AI

Moving from monitoring to understanding. We engineered a **dual-layer AI architecture** designed specifically for the connectivity realities of the Caribbean.

The Brain

Cloud Farm Orchestrator

Deep reasoning and strategic planning.



The Hands

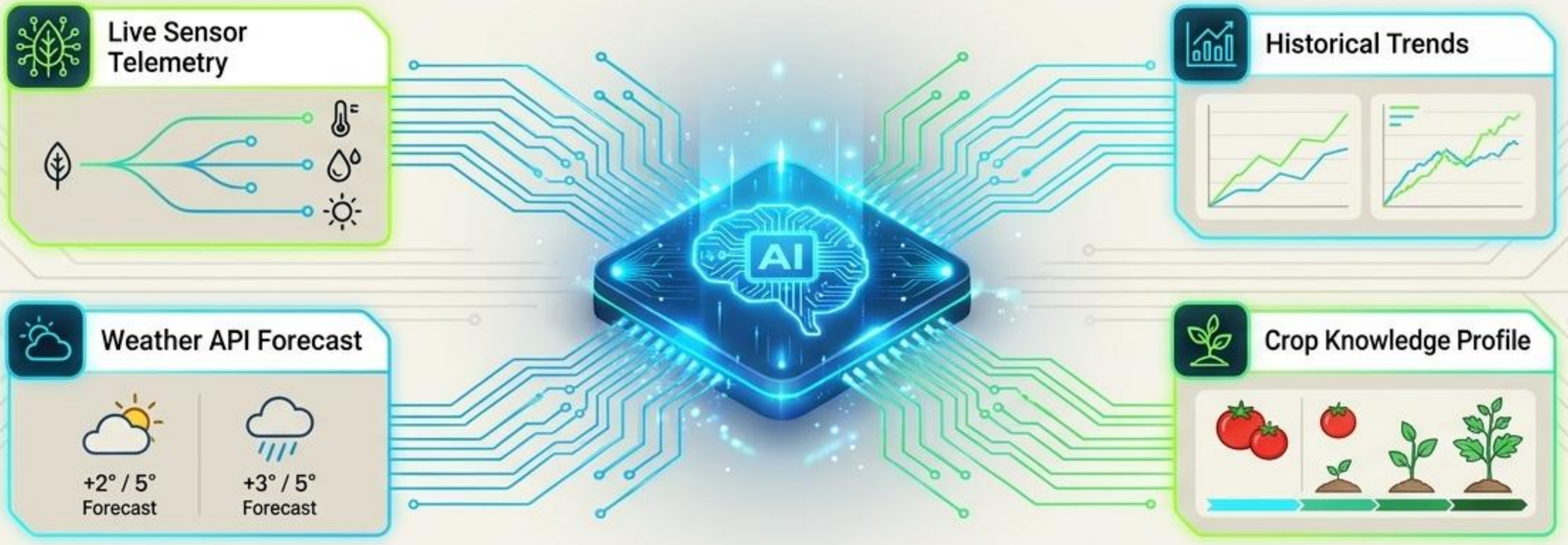
FarmWiz Switchbox & Edge AI

Offline, on-device execution and hardware control.

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The Brain: Cloud Farm Farm Orchestrator

The Cloud AI Agent acts as the master planner. It does not just read data; it benchmarks lifecycles.



Live pH (5.3) + Historical EC (1.9) + Hot Weather Forecast + Tomato Growth Recipe
= Proactive, explainable recommendation to flush the hydroponic line.

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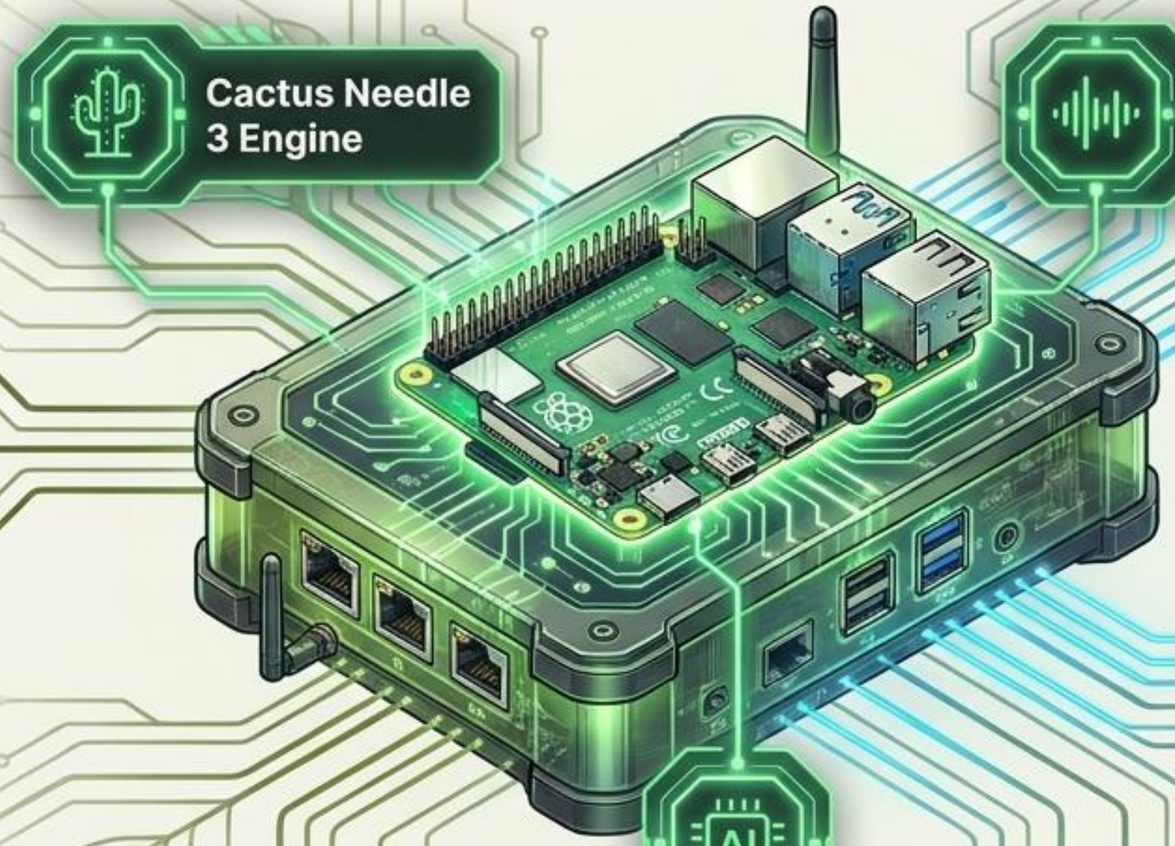
The Hands: Embedded Edge AI

Caribbean internet is unreliable. Our Edge AI ensures physical operations never stop.

Zero Cloud Dependency: Runs localized SLMs (Small Language Models).

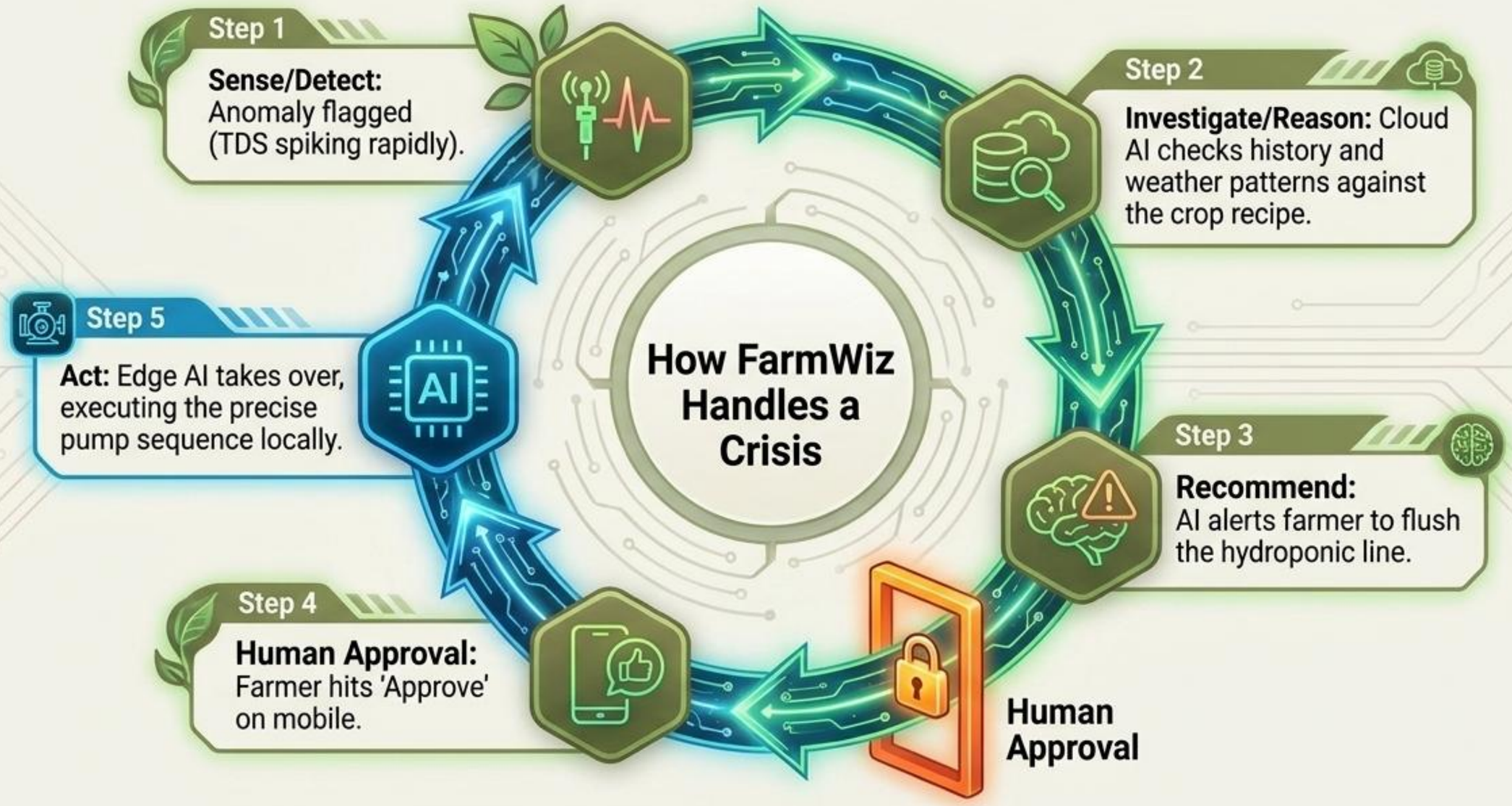
Offline Autonomy: Maintains critical schedules using local ESP-NOW fallback.

Strict Tool Calling: Forces JSON payloads to execute physical hardware (pumps, valves) via C++ libraries even when Wi-Fi is entirely down.



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The Intelligence Cycle in Action



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Natural Language to Physical Action

Lowering the barrier to entry for non-technical farmers. Complex scheduling is executed through simple conversation.



Physical Output:
Executing Command

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FarmWiz

Agentic Farm Assistant

From real-time data to real actions.

SENSE Soil, water, light, temp, pH → **REASON** AI agents analyze & decide → **ACT** Automatic control & farmer guidance

1 Select or Create a Crop

Choose a crop from the library, or create a new crop profile. The agent sets optimal growing conditions.

Okra pH 6-7 65-95°C

- Full sun (at least 6-8 hours daily)
- Well-drained soil rich in organic matter
- Consistent moisture, especially during flowering and pod development
- Warm soil temperatures (above 65°F / 18°C) for germination and growth
- Protection from frost
- Adequate spacing for air circulation

LIFE CYCLE TRACKER — LAST LOGGED: 8 OCT

Fruiting

WHAT HAPPENED? Fruiting — DATE 10/08/2026

PLANT / GROUP: Plant 1 or bed A — NOTE: e.g. leaves only, del

Save observation

FOCUS NOW

- Pods develop quickly after flowers fade. Continue consistent watering. Harvest pods frequently to encourage more production. Check plants daily once fruiting begins.

2 AI Life Cycle Monitoring

Track your crop's progress, compare with expected timeline, and get alerts for delays or risks.

Suggestrad Assistant — UPDATED FROM ACTUAL FIRST PODS DEVELOP / 8 OCT

Germination
Baseline suggested: 12 Jun-21 Jun
· Actual: 7 Jun · Early by 5 days
OBSERVED DATE 06/07/2026 — EARLY
Save actual

Ready for Transplant (if started indoors)
Baseline suggested: 28 Jun-5 Jul
·Actual: 13 Aug · Delayed by 39 days)
OBSERVED DATE — DELAYED
08/13/2026
Save actual

First Flowers Appear
Baseline suggested: 27 Jul-11 Aug
·Actual: 7 Oct · Delayed by 57 days)
OBSERVED DATE — DELAYED
10/07/2026
Save actual

First Pods Develop
Baseline suggested: 1 Aug-16
·Actual: 8 Oct · Delayed by 53 days)
OBSERVED DATE — DELAYED
10/08/2026
Save actual

3 Ask the Farm Advice Agent

Get evidence-based advice using your farm data, photos, and real-time sensor information.

ASK ONE EVIDENCE-BASED QUESTION

How is my okra doing? — Ask →

LAST AI ANALYSIS · GEMINI

Your okra is currently in the **fruiting stage**, with the first pods recently observed.

Here's a breakdown of your okra's progress and current conditions:

Current Stage: Fruiting
Your okra plants are developing pods, with the first pod observed on October 8th, 2026. This is an exciting time, as you're moving towards harvest!

OBSERVATIONS

CHECK — **Ready for Transplant (if started indoors) needs attention**
Delayed by 39 days. Check light, watering consistency, temperature, and root health before adding more feed.

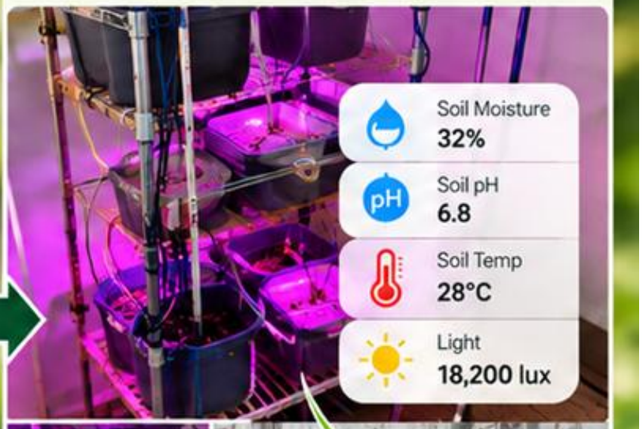
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TIP — **Current fruiting tip**
Pods develop quickly after flowers fade. Continue consistent watering. Harvest pods frequently to encourage more production. Check plants daily once fruiting begins.

Ask FarmWiz anything...

4 Edge Agent Auto Control

The edge agent uses IoT sensor readings to automatically control irrigation and other systems based on crop needs.







Automatic Actions

- **Irrigation** — Turns ON when soil moisture is low
- **Ventilation** — Activates if temperature is too high
- **Lighting** — Adjusts based on light conditions
- **Alerts** — Notifies you of issues or unusual readings

The Path to Autonomy

Standard IoT gives you data. FarmWiz gives you **decisions** and **offline resilience** via **ESP-NOW** and **localized execution.**

	Traditional Farming	Standard Cloud IoT	FarmWiz Agentic AI
Real-time Data	✗	✓	✓
Proactive Reasoning	✗	✗	✓
Offline Automation	✗	✗	✓ ESP-NOW & Local AI
Human-in-the-Loop Control	✗	✗	✓

Gemini Notebook

Scalable Deployment & Go-to-Market

Moving from validated prototype to the Caribbean regional standard.



Phase 1: Prototype

Validated concept & limited trials.

Phase 2: Pilot Deployment

Active execution, multi-farm pilot across key Caribbean locations.

Phase 3: Regional Standard

Wide-scale adoption, standardized platform across the Caribbean.

Target Markets: Commercial vegetable growers and hydroponic operators currently facing severe climate variability and pest pressure.

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Strategic Ask & Financial Plan

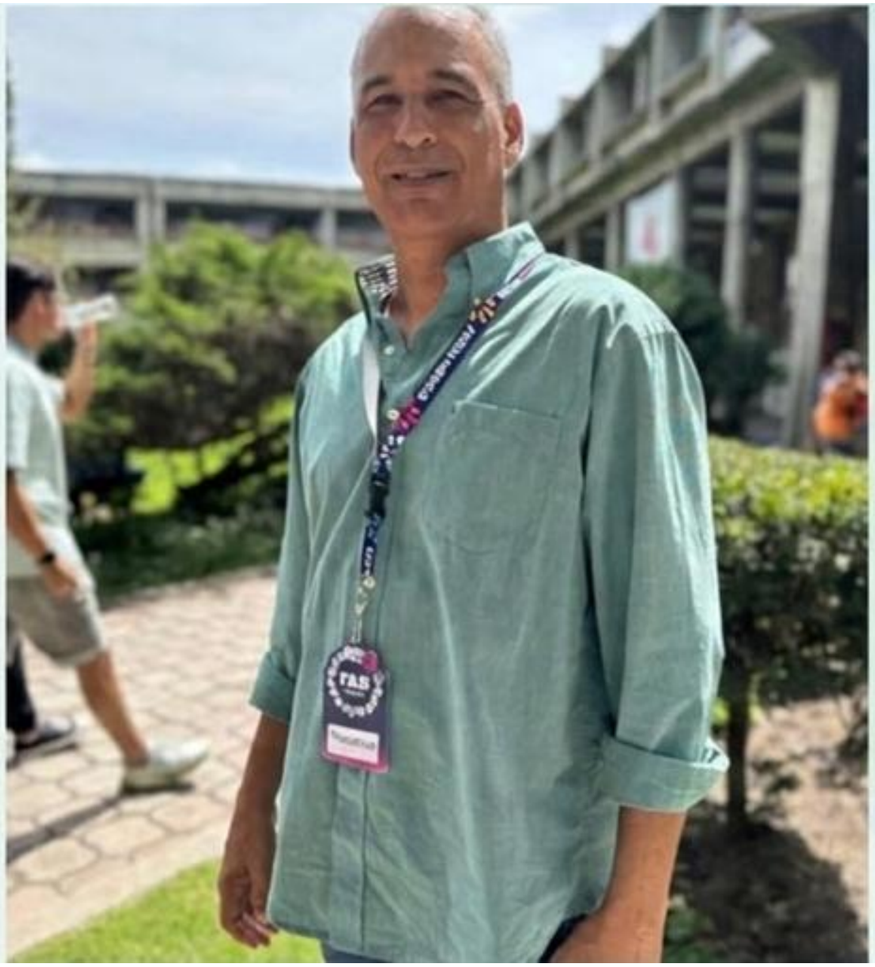
The Target: $75,000 – $150,000 USD Seed Funding.



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FarmWiz AI
Agentic AI & Smart IoT for the Future of Caribbean Agriculture.
Julie Sundar & Theo Boomsma
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