DECENTRAGRI

WHITEPAPER

VERSION 1.1 LAST UPDATE 07/17/2025

1 Introduction

Agriculture remains one of the most vital yet undervalued sectors in the global economy, especially in developing nations like the Philippines, where millions of smallholder farmers continue to live in poverty despite cultivating high-value commodities. This paradox stems not from a lack of potential but from systemic inefficiencies, limited market access, capital constraints, and information asymmetry. The result is a cycle of underdevelopment, where farmers produce globally demanded goods but remain disconnected from global value chains.

Decentragri aims to disrupt this cycle.

At the core of Decentragri is a mission to empower farmers through the convergence of blockchain, AI, and Web3 infrastructure. By tokenizing real-world agricultural assets (RWA), such as pili nut trees, we are transforming traditionally illiquid, locally bound agricultural goods into globally accessible, data-rich, and investable assets. This digital transformation bridges farmers with consumers, investors, and supply chain partners across borders, without the middlemen that traditionally absorb value and distort incentives.

Our platform also utilizes AI-driven analytics and IoT sensors to monitor soil health, weather conditions, crop performance, and harvest timelines. These insights feed into decentralized smart contracts that automate escrow, logistics, and payment flows, ensuring trust and transparency across all parties. With blockchain-based traceability and NFT-backed crop claims, we build a new form of agricultural trust—verifiable, programmable, and censorship-resistant.

Ultimately, Decentragri is not just a digital farming platform; it is an inclusive economic movement. Unlocking the hidden value of crops like pili nuts and ensuring that farmers are fairly compensated can drive sustainable development, climate resilience, and a future where agriculture becomes a force to eliminate poverty, rather than perpetuate it.

To truly uplift farming communities, technology must meet farmers where they are: in the fields, under open skies, with limited signal and basic smartphones. Decentragri is built mobile-first, designed for real-world, low-connectivity environments. Our offline-first capabilities allow farmers to input data, capture images, scan soil conditions, and receive AI-generated recommendations even without internet access. Once connectivity resumes, this data is seamlessly synchronized to the blockchain, ensuring continuity and reliability without requiring constant connectivity.

At the heart of Decentragri is an AI-powered smart farming assistant. Leveraging machine learning models trained on regional crop cycles, soil behavior, and environmental variables, our system provides real-time, localized, and actionable insights to farmers. From predicting optimal harvest times to early pest and disease detection using computer vision, the platform transforms raw farm data into intelligent decisions. These insights are delivered in local languages through an intuitive visual interface that accommodates all literacy levels.

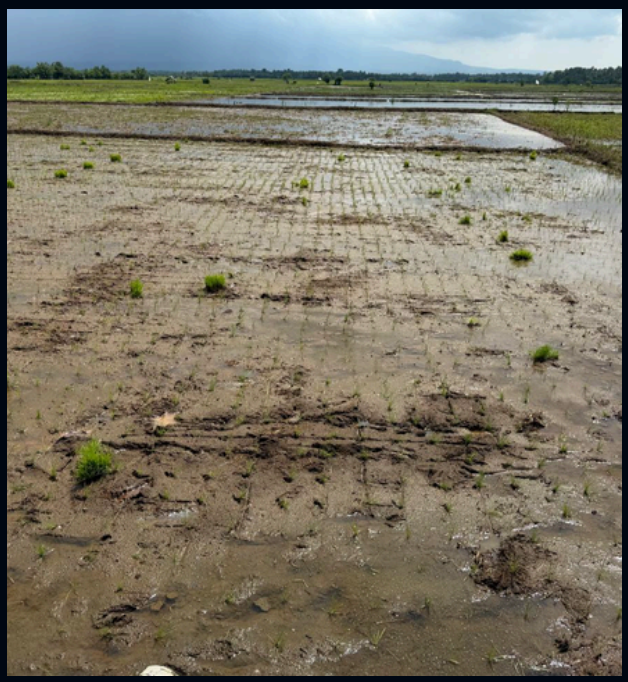
All sensor readings, field activity logs, AI assessments, and tokenized crop records are stored on-chain. This ensures that all data is immutable, auditable, and accessible to all stakeholders. Buyers, certifiers, financial institutions, and climate monitors can directly access verifiable farm-level data without relying on unverifiable third-party reports. Smart contracts automatically execute fair trade payments, incentive disbursements, and insurance triggers, ensuring that value flows directly and transparently to the farmers.

Decentragri does not just digitize agriculture; it redefines it. By integrating AI-powered precision farming, offline-first mobile access, and blockchain transparency, we are creating an inclusive agricultural ecosystem. In this ecosystem, farmers are not left behind but become the central drivers of a smarter, fairer, and more sustainable agricultural future.

About Decentragri

At Decentragri, we believe that innovation and nature are not opposing forces, but partners in shaping the future of agriculture.

We are building a platform where cutting-edge technology meets the wisdom of the land, where artificial intelligence, blockchain, and environmental sensors empower farmers without replacing the soul of their work.



Our journey began with a simple but powerful realization: the backbone of our food systems, the farmers, are often those left furthest behind. In places like Bulacan and Camarines Sur, we met farmers who rise before dawn, work tirelessly under the sun, and grow the food that nourishes entire communities. Yet, despite their dedication, they remain under-supported, under-connected, and underpaid. Decentragri is born out of the belief that these hardworking men and women deserve more than gratitude; they deserve tools, visibility, and a fair share of the value they create.

Our platform is mobile-first and offline-capable, built to work even in the most remote areas with limited internet access. Farmers can log data, scan soil, take photos of crops, and receive AI-driven recommendations, all without needing constant connectivity. Once back online, their data syncs to the blockchain, where it becomes immutable, verifiable, and shareable.

We envision a future where humanity's ingenuity and the Earth's resilience coexist in harmony, enriching lives today and securing a better tomorrow for generations to come.

Empowering agriculture, and farmers with technology

The problem

The Real Crisis: Food Insecurity and Malnutrition

While we innovate in AI, satellites, and crypto, over 735 million people still go hungry every day, almost 1 in 10 globally.

Among them, 148 million children under 5 suffer from stunting due to chronic undernutrition (UNICEF, 2023). The burden is greatest in rural, agricultural regions, paradoxically, where food is grown.

In the Philippines, 26% of children under 5 are stunted, and 1 in 3 farmers live below the poverty line (PSA, 2022).
We're not just facing a hunger crisis, we're failing the very people responsible for feeding the world.

The Root of the Problem: Broken Agricultural Data

Despite advancements in digital agriculture, most smallholder farmers remain disconnected from life-saving insights. Why?

Data Silos

Valuable environmental and crop data are locked away in corporate platforms or fragmented systems.
Research institutions, cooperatives, and governments are forced to work blind, unable to access vital data that could help optimize food production or prevent crop loss.

Tech Inaccessibility

Precision agriculture is often built for large-scale, high-income farms, not for the 500 million smallholders who produce 80% of food in Asia and Africa. These farmers lack the tools, training, or connectivity to monitor soil health, rainfall, or temperature shifts in real time.

The Real Crisis: Food Insecurity and Malnutrition

Lack of Data Standards

Even when data is collected, it’s messy and inconsistent. There's no common structure, making it hard to compare conditions between regions, seasons, or crop types, limiting innovation and AI-driven insights.

No Trust or Traceability

Data without transparency can be manipulated. It undermines climate claims, funding decisions, and policy-making. If we can't trust the data, we can't scale solutions or secure the future of farming.

Unsustainable Agricultural Practices

Today’s agricultural practices account for over 30% of global greenhouse gas emissions, drive 90% of global deforestation, and consume 70% of all freshwater (UNEP, FAO).

Overuse of fertilizers and poor soil management degrade land at an alarming rate, leading to 12 million hectares of arable land lost each year (UNCCD, 2022). These trends are not just harmful they are unsustainable.

Sources:
FAO & UNEP, The State of the World’s Land and Water Resources for Food and Agriculture (2021)
UNCCD, Land Degradation Neutrality Report, 2022

Our Solution:

Decentragri — Data for Food, Not Just Finance

Breaking Down Data Silos

Decentragri stores all environmental and crop sensor data on the InterPlanetary File System (IPFS). Every dataset is tokenized as an NFT, not to trade or speculate, but to ensure it's verifiable, immutable, and interoperable.

Anyone from local cooperatives to global researchers can access a growing repository of real farm data to power solutions, predict threats, or share best practices.

Enabling Last-Mile Smart Farming

We design affordable, plug-and-play sensors that record real-time measurements of soil pH, moisture, temperature, sunlight, and more.
No IT degree needed, just a phone or solar gateway. The data syncs to the cloud or mesh networks, visualized via a mobile dashboard with real-time recommendations.

Impact: Gives even off-grid smallholders the power to make data-driven decisions when to plant, when to irrigate, and how to protect their crops.

Structuring the Future of Farm Data

All Decentragri data follows open agricultural schemas like AgroVoc or custom Decentragri schemas. Each record includes a timestamp, GPS coordinates, device ID, crop type, and calibration details.

Impact: Unlocks AI-ready, cross-regional analysis, enabling scalable benchmarking, diagnostics, and intelligent recommendations.

Why It Matters?

Feeding children should never be a guessing game. Climate-resilient, data-driven agriculture isn’t just innovation, it’s a moral obligation.

Decentragri is not just building tech. We’re building a shared foundation of truth, so that every decision from a farmer planting seeds to a government allocating grain is based on real, open, verifiable data.
Because the future of food depends on the freedom of data.

Our Mission

Why We Exist

At Decentragri, our mission is to empower smallholder farmers, especially in underserved regions like Bulacan and Camarines Sur, by providing them with cutting-edge tools and data-driven insights aimed at ending poverty, hunger, and unsustainable farming for good.

Alleviate Hunger & Stunting

Globally, nearly 757 million people experienced chronic hunger in 2023, roughly 1 in 11 individuals, and children are most affected. In the Philippines, over 26 % of children under five suffer stunting due to malnutrition and limited food access. Decentragri's technology strives to ensure consistent access to data-driven nutrition through improved farm yields.

Double Farmer Productivity to Combat Poverty

Agriculture productivity increases are up to two to three times more effective in reducing poverty among the rural poor than growth in other economic sectors. A 1 % increase in agricultural GDP can reduce poverty by 0.6% to 1.2% in low-income areas.

Bridge the Global Yield Gap

In many developing nations, average crop yields fall far below their theoretical potential, creating a gap of several tons per hectare. Decentragri aims to bring smart farm monitoring and AI intervention to narrow that gap.

Reverse Unsustainable Practices

Agriculture currently contributes to over 30% of global greenhouse gas emissions, and drives deforestation and water overuse. We provide eco-aware tools that optimize resource use and reduce environmental footprint.

How We Empower Farmers

AI & IoT Smart Farming

By deploying low-cost sensors and predictive AI models, we bring precision agriculture to the farmer's field. By monitoring parameters like soil moisture, pH, ambient temperature, and crop health, we deliver interpretable, localized insights that help farmers plant better, water smarter, and harvest more.

Open, Immutable Data Infrastructure

Farm data is stored on IPFS and minted as traceable NFTs, not for speculation, but for ensuring interoperability, auditability, and open access across researchers, cooperatives, policymakers, and developers. This breaks down data silos and fosters collaboration.

Mobile-First & Offline-Capable Platform

Our mobile application is fully functional on low-end devices and designed to operate offline. Field data entries, image uploads, and sensor readings sync automatically when connectivity is available, expanding inclusion to every farmer, regardless of location or technology access.

Community-Centered Design

Built with farmers in mind, we start in the regions we know, Bulacan and Camarines Sur. Our values, Sustainability, Innovation, Farmer First, Data-Driven, and Community, guide our development. We listen, adapt, and iterate alongside the people who depend most on agriculture.

In Summary

Our mission is to prove that when innovation meets the land, real change happens. By equipping farmers with smart tools, transparent data systems, and inclusive technologies, Decentragri seeks not only to boost productivity but to rewrite the narrative of poverty, hunger, and agricultural exclusion. We believe this is the way forward for farmers, for global food security, and a fairer world rooted in sustainable agriculture.

Ensure Universal Inclusion via Mobile-First Design

With smartphone penetration reaching 76% globally and growing in rural regions (Statista, 2024), our mobile app is built to work offline, run on low-end Android phones, and operate smoothly in areas with poor signal, ensuring no farmer is left behind.

Become the World's Largest Open Agri Data Network

We will make Decentragri the largest decentralized agricultural data repository, recording and sharing farm-level telemetry and images as on-chain NFTs, contributing to global food security, policy, and research. By 2035, we project over 100 million plant scans and soil data entries stored immutably on-chain.

Foster a Thriving Community of Donors, Consumers, and Tech Advocates

By offering transparent funding routes, verifiable impact, and direct farmer engagement, we aim to build a 10 million-strong global community of conscious donors, agri-investors, and citizen scientists who co-create and support a more equitable food system.

Revenue Strategy

Decentragri stands at the intersection of strong macro trends: surging global demand for agritech, blockchain traceability, and data-driven farming solutions. We plan to capitalize directly on this convergence through diverse revenue streams

Subscription & Platform Fees

- Farmer tiered subscriptions (Free / Basic / Pro) offering progressively advanced features: AI-driven recommendations, traceability, and crop certification.
- Cooperative and enterprise plans, with tools for fleet sensor management and aggregated analytics.
- Estimated Revenue: At PHP 1,200/year/user (≈$22), reaching 1 million users by 2030 yields $22 million/year, with doubling users and price tiers pushing $100 million+ by 2035.

Hardware & Sensor-Kit Sales

- Plug-and-play multi-parameter environmental sensors (soil, moisture, sunlight) sold to farmers and cooperatives.
- Bundles are priced between $50–$150 per kit.
- At initial penetration (100,000 kits), we anticipate $7.5 million in immediate hardware revenue, with recurring firmware/ZT updates.

Data Monetization & Insight Services

- Revenue from anonymized data sales to:
  - Agrifood companies (seed, fertilizer firms).
  - Governments & NGOs (for food security analytics).
  - Insurance & carbon-credit providers.
- Based on current agritech data market forecasts, this sector is valued at $782 million today, growing at 8% YoY to exceed $1 billion by 2033.
- Decentragri aims to capture 1–3% of that market (~$10–30 million/year) within 5 years.

Traceability & Certification Fees

- Companies and exporters pay for verified chain-of-custody data on blockchain for sustainability, organic, or certified pili exports.
- With the blockchain-in-agriculture market valued at $6.6 billion in 2024, growing at ~46% CAGR to $28.6 billion by 2031, even modest capture can drive significant fees (e.g. $5–10 per shipment).

RWA/NFT Asset Issuance & Agrifinance

- Tokenize assets like pili trees, harvest yield futures, carbon credits, etc.
- Platform takes a 1–3% issuance fee, akin to financial securities issuance.
- Projected issuance volume of $50–100 million/year by 2030 supports $1–3 million/year in revenue.

Market Segment	2024 Value	Projected 2030/32	CAGR
Global Agritech	$24.4 B (2024)	$49 B (2030)	12.30%
Agriculture 4.0 (AI + IoT)	$67.7 B (2023)	$143 B (2030)	11.60%
Food & Agri Tech Products	$0.78 B (2024)	$1.58 B (2033)	8.10%
Blockchain in Agriculture & Supply Chains	$6.6 B (2024)	$28.6 B (2031)	46.30%

Tokenizing Pili Nut Trees, Pili Nuts, Cacao, and Coffee

Why These Crops?

We’re starting with pili nuts, cacao, and coffee for three reasons:

1. They're high-value, export-driven commodities.
2. They grow in climate-vulnerable regions that need resilient, decentralized infrastructure.
3. Their growth and harvest cycles make them ideal for seasonal yield tokenization.

Some quick numbers to show why:

- Pili Nut Market: $180M in 2023, projected to hit $320M by 2033 (7% CAGR) — DataHorizzon
- Coffee: $245B in 2024, forecasted to grow to $381B by 2034 (4.5% CAGR) — Precedence Research
- Cocoa Beans: $13.5B in 2023, climbing to $23.5B by 2030 (8% CAGR) — Grand View Research
- Real World Asset Tokenization: $0.66B in 2024, could reach $1.67B by 2032 (12.9% CAGR) — Dataintelo

How Tokenization Works

We’ll use two types of on-chain tokens to represent the assets:

- Tree NFTs (ERC-721):
- Each verified tree (pili, cacao, coffee) is minted as a unique NFT. It includes metadata like:
  - GPS coordinates
  - Farmer ID
  - Soil data or sensor hash
  - Planting and last-audit date
- Yield Tokens (ERC-20):
- After each harvest, a farmer receives a set amount of yield tokens that represent the quantity produced — for example:
  - 1 Yield Token = 1 kg of dried pili nut or cacao beans
  - Tokens can be redeemed for the actual harvest, sold on DEX, or rolled over to the next cycle

What’s the On-Chain Flow?

Here’s our step-by-step:

1. Farm Onboarding:
2. The farmer signs up, provides ID and farm photos, and the location is geofenced.
3. Sensor Connection:
4. We connect to their IoT soil/water sensors or satellite monitoring.
5. Tree Minting:
6. Each tree is minted as an NFT and sent to their wallet. Decentragri covers gas fees.
7. Investor Participation:
8. Investors can fund new trees via fractional ownership. Their capital is locked in milestone escrow:
    - 30% on planting
    - 20% mid-season
    - 50% on verified harvest
9. Yield Token Minting:
10. Once the season ends, yield data is verified by oracle. Tokens are minted and distributed to holders.
11. Utility Options:
    - Hold and redeem the physical produce
    - Auto-sell on DEX
    - Rollover to next cycle

Pilot & Rollout Plan

- **2025–26: Pili Nut Pilot**
    - 10,000 pili trees (≈50 hectares) in Camarines Sur and Bulacan
    - Expected output: 250 metric tons
    - Target raise via NFTs: ~$1.2 million
- **2026–27: Cacao Cluster (Davao Region)**
    - 100 hectares of cacao trees
    - Estimated yield: 80,000 kg beans per year
- **2027–28: Highland Coffee (Benguet + Mt. Province)**
    - 20,000 Arabica coffee trees
    - Yield projection: 60 tons of green coffee per year

Profit Model & Valuation Potential

With an integrated model of hardware, software, data, and tokenization fees, **Decentragri targets:**

- Breakeven: Achievable between 2026–27, with initial revenue from sensors and subscriptions.
- Year 5 Forecast (2030):
  - Users: 1 million smallholders
  - Subscriptions: $22 million/year
  - Hardware Sales: $7.5 million
  - Data & Traceability Services: $15–20 million
  - Tokenization Fees: $2–4 million
  - Total Revenue: ~$50–55 million/year

Assuming a 30% EBITDA margin, Decentragri would be producing $15+ million EBITDA by 2030.

With SaaS-like multiples (8–12× EBITDA), platforms of this profile often reach $120–180 million valuation, rising further with hardware, data analytics, and token-fintech synergies.

By 2035, scaling to 5+ million users and broader markets (Africa, Latin America) could elevate revenues past $200 million/year, potentially valuing the company in the $1 billion+ unicorn territory.

Why We Will Win

- First-mover advantage in Southeast Asia for mobile-first, offline precision farming plus traceability NFTs.
- Diversified revenue, reducing dependence on any single segment.
- Strong market tailwinds across agritech (≈12% CAGR) and blockchain traceability (≈46% CAGR).
- High margins from software and data services, with scalable global licensing.
- Compelling impact narrative aligns with international funding and climate-finance priorities.

Decentragri is uniquely positioned to capture a meaningful share of these massive markets while delivering measurable impact in food security, farmer prosperity, and environmental sustainability.

Roadmap

Stages of our journey

Q3 2025

- Release Decentragri mobile app
- Deploy environmental IoT sensors on 100 pilot farms
- Local cooperative and government partnerships
- Implement on-chain data tracking for soil and yield metrics
- Launch pilot projects in Bulacan and Camarines Sur, Philippines
- Collect baseline sustainability and productivity data

Q4 2025

- Begin decentralized soil & plant genome mapping pilot
- Tokenize 10,000+ trees (including pili nut, mango, banana, cacao)
- Tokenized identity system for farmers
- Deploy educational programs in 5+ municipalities
- Collect baseline sustainability and productivity data

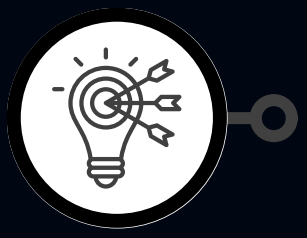
Q2 2026

- Award 1,000+ farmer grants via DAO-led funding pools
- Launch an AI + LLM platform for full-cycle autonomous smart farming
- Standardize Decentragri protocols with ISO / FAO-compliant formats
- Launch Farmer to Consumer farm produce marketplace

Q3 2026

- Advocate for blockchain agriculture policies in 10+ countries
- Launch open-source genome + biotech data
- Tokenize 100 million hectares of land & trees
- Reach 100,000+ smallholder farmers globally
- Integrate with UN SDG metrics and carbon markets at scale

Q4 2026



- Expand to arid and disaster-prone regions using AI for crop adaptation
- Introduce satellite data integrations for macro-level insights
- Begin carbon offset marketplace integration
- Enable regenerative farming incentives directly via smart contracts

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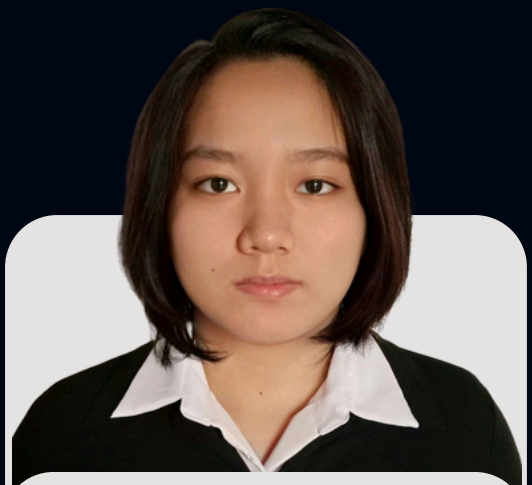
MEET OUR TEAM

Yehna Lee
CEO

Khyle De Jesus
CPO



Carmela De Guzman
Regional Director

Anthony Arriola
CTO

In addition to our founding team, Decentragri is supported by a dedicated in-house team comprising blockchain and web developers, graphic designers, social media strategists, and partnership managers.

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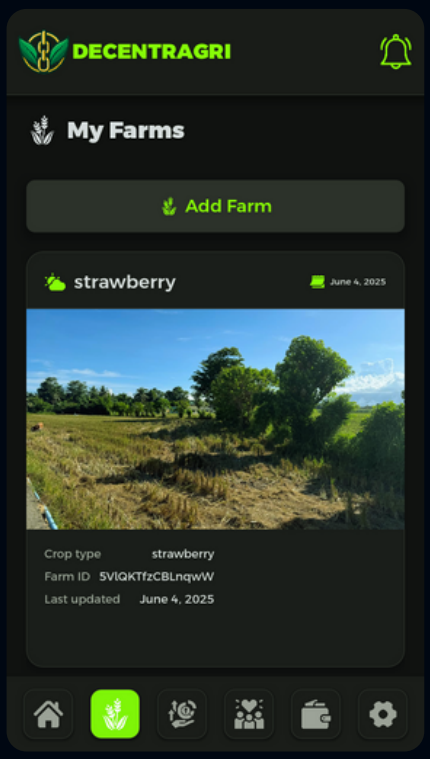
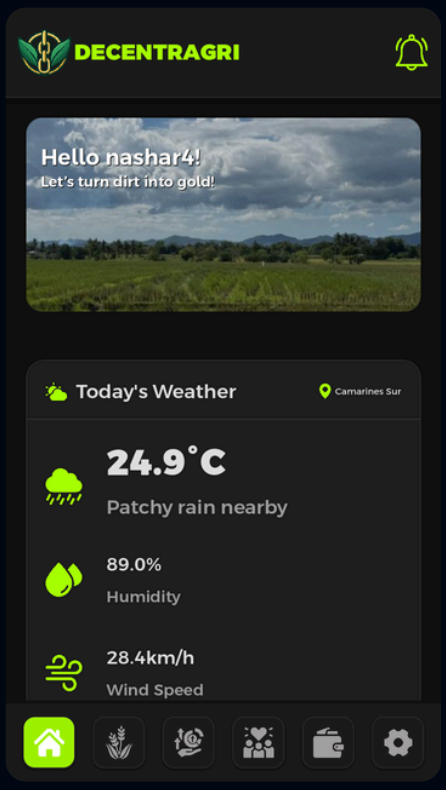
Decentragri App

Your agriculture buddy

The Decentragri mobile application serves as the primary gateway for farmers and agricultural stakeholders to engage with the platform, seamlessly integrating environmental sensor data with real-time, AI-powered insights. Purposefully designed with usability, affordability, and accessibility at its core, the app delivers powerful tools through an intuitive interface that supports users at every level of digital literacy





Home Screen

The main screen of the DecentrAgri app gives users a quick and clear view of essential farming information. Right away, it greets the user and shows a live snapshot of the weather in their location, including temperature, humidity, wind speed, and upcoming conditions like rain. This helps farmers make real-time decisions about their crops, irrigation, and field activities. Everything is displayed in a clean, easy-to-read layout that works well even on basic smartphones.

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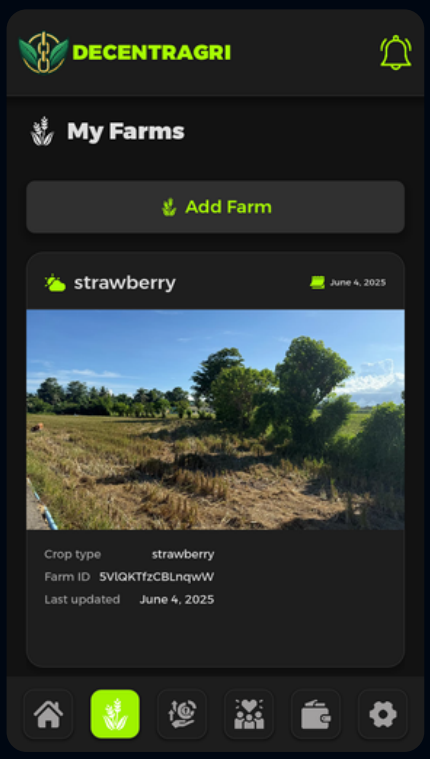
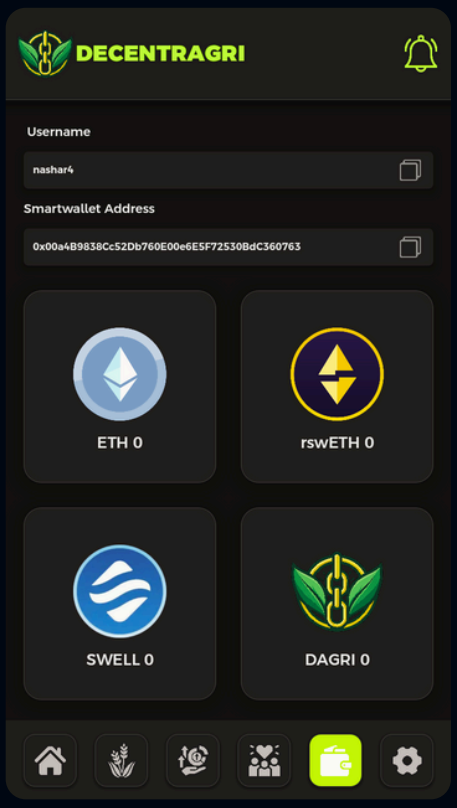
My Farms

This screen shows the “My Farms” section of the DecentrAgri app, where users can manage and keep track of their individual farms. Farmers can easily add a new farm with a single tap and view important details about each one, like the crop type, unique Farm ID, and the last update date. A photo of the actual farm helps the user remember the farm. This feature makes it simple for farmers to organize multiple farms and stay updated on their status, all in one place.





Wallet Screen

This is the Wallet screen of the DecentrAgri app, where users can view their crypto balances and manage their on-chain identity. It shows the username, the user's Smart Wallet address, and balances for supported tokens. With one tap, users can copy their wallet address for sharing or transactions. This screen makes it easy for farmers and stakeholders to manage their digital assets within the app, bridging agricultural activity with Web3 finance in a seamless way

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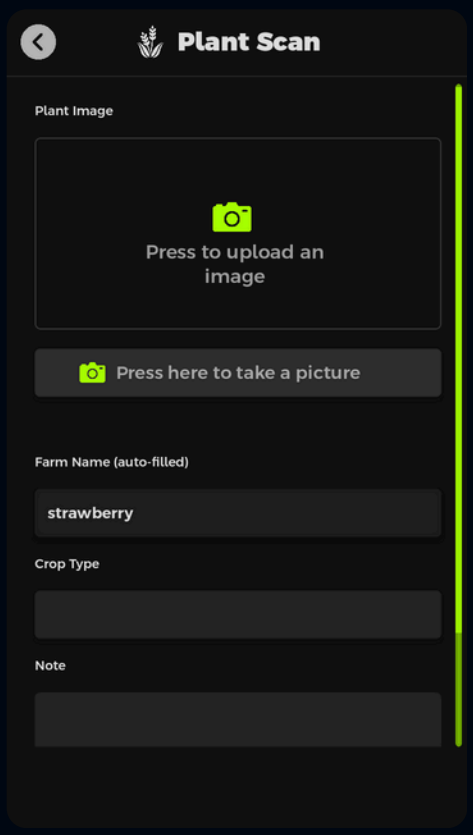
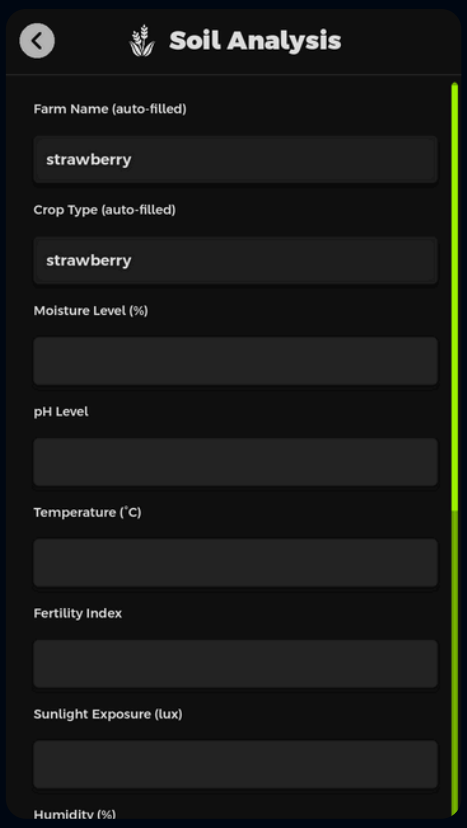
Plant Scan Screen

This is the Plant Scan screen of the Decentragri app, designed for users to upload or take pictures of plants for analysis. It features a prominent area to upload a plant image, with an option to directly take a picture. The screen also includes fields for auto-filled farm name, crop type, and an open text field for additional notes, allowing users to provide context for their plant scans.





Soil Analysis Screen

This is the Soil Analysis screen of the DecentrAgri app, designed for recording and viewing crucial soil data. It features auto-filled fields for Farm Name and Crop Type for convenience. Users can input various soil parameters, including Moisture Level (%), PH Level, Temperature (°C), Fertility Index, Sunlight Exposure (lux), and Humidity (%), enabling comprehensive tracking of soil health.

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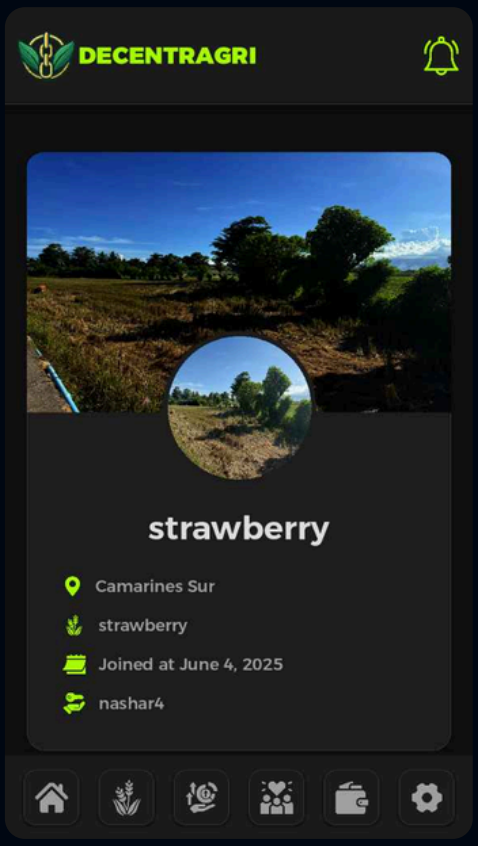

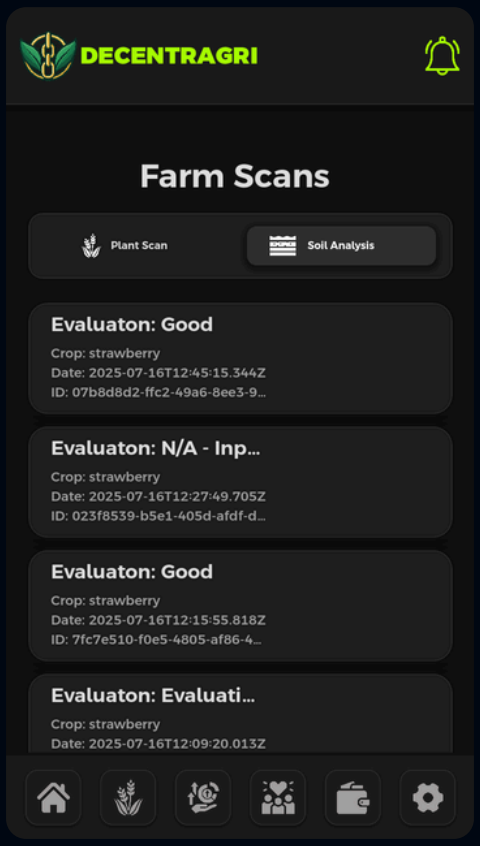

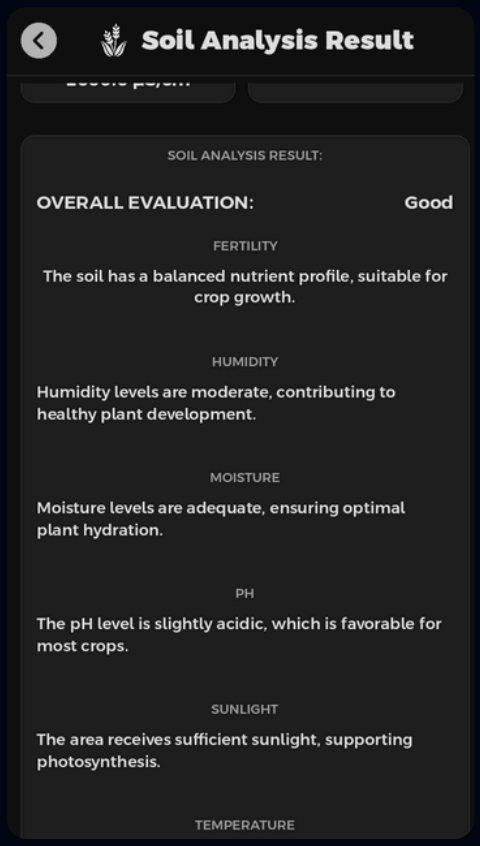

Farm Profile Screen

This is the Farm Profile screen of the DecentrAgri app, showcasing details of a specific farm. It prominently features a large panoramic image of the farm with a circular inset image, providing a visual overview. Key information displayed includes the farm's name ("strawberry"), its location ("Camarines Sur"), the primary crop cultivated ("strawberry"), the date the farm joined the platform ("Joined on June 4, 2025"), and the associated username. This screen serves as a quick glance at the farm's identity and basic details within the app.

Farm Scans Screen

This is the Farm Scans screen of the DecentrAgri app, which serves as a centralized hub for managing and viewing past plant and soil analyses. At the top, there are toggle buttons to switch between "Plant Scan" and "Soil Analysis" views. Below, a list of past evaluations is displayed, each showing the "Evaluation" result (e.g., "Good", "N/A - Inp..."), the "Crop" type, the "Date" and timestamp of the scan, and a unique "ID." This screen provides a clear history of all scans performed, making it easy to track the health of various crops over time.

Soil Analysis Result Screen

This is the Soil Analysis Result screen of the DecentrAgri app, presenting the detailed findings from a soil analysis. The screen provides an "OVERALL EVALUATION" (e.g., "Good") at the top. Below this, it offers specific evaluations for various soil parameters such as "FERTILITY," "HUMIDITY," "MOISTURE," "PH," and "SUNLIGHT." Each parameter includes a descriptive assessment, explaining its current state and implications for crop growth. This screen delivers actionable insights derived from the soil data, helping users understand and improve their soil conditions.

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