CoopAgri — Agricultural Cooperation Management System

A complete digital platform for managing agricultural cooperations, designed for real-world farming operations — not tech experts.

Whether you're a farmer, developer, researcher, NGO, or government agency, there's a way to contribute and benefit.

What It Does

Farm & Livestock Management

Manage multiple farms, each with production units (coops, fields, ponds, enclosures) and breeding units. Track every batch of animals or crops with detailed records: breed, variety, quantity, gender, placement dates, stage, and acquisition costs.

Full Product Traceability

Follow every product from origin to sale. Know exactly which batch produced which eggs, which animals went through slaughter, and what ended up in inventory — all linked and auditable through a unique content ID that travels with every record.

Breeding Lifecycle Tracking

Manage the full breeding pipeline from egg intake through incubation, hatching, brooding, and grow-out. Track fertility rates, hatch success, offspring parentage, and age-dependent feed schedules at every stage.

Health & Mortality Monitoring

Record disease incidents and mortality events against specific batches. Track treatments, veterinary costs, affected numbers, and whether losses were preventable — giving management clear visibility into problem areas.

Feed & Supplies Management

Monitor feed stock levels across central warehouses and individual farms. Set minimum thresholds, track purchases and distributions, and get automatic consumption projections based on each batch's actual feed requirements. Feed brands are tagged with functional types (Starter Feed, Grower Feed, Finisher Feed, Layer Mash, etc.) so the right product is always selected at every stage.

Slaughterhouse Records

Record live weight, dressed weight, and goblets weight per carcass with unique tag IDs. Automatically calculate dressing percentages to benchmark processing efficiency.

Product Processing

Convert raw produce into refined outputs — portion cuts, packaged products, value-added lines. Each processing batch is linked to the source stock and creates new inventory records that appear in the shop immediately, with full traceability back to the origin batch.

Customer Portal & Webshops

Cooperative customers register and sign in through a dedicated portal (`/mercado`), which gives them access to two webshops — a Farm Shop for produce and a Live Animals Market. Registration, profile management, delivery address, GPS location, and password resets are all self-service. Confirmation and notification emails are sent automatically in the customer's preferred language (Portuguese or English) through the cooperative's own email address.

Order Management & Delivery Routing

From the moment an order is placed to the moment it is delivered, staff track status through a full order lifecycle. A driver routing module groups customer orders and farm supply deliveries into optimised route plans — with GPS stop ordering, map integration, and live status updates for each stop.

Workforce & Equipment

Track workers, log hours by unit or task, manage equipment inventory, and record equipment rentals and sales — keeping operational costs fully visible.

Environmental Monitoring

Integrate IoT sensors (Tuya Cloud) to monitor temperature, humidity, and precipitation inside production and breeding units in real time. Sensor readings are stored historically for trend analysis, with configurable alert thresholds per unit.

Reports & Analytics

Generate feeding reports, egg production summaries, meat yield analyses, supplies cost breakdowns, and sales trend charts — all printable and available to authorised users only.

Role-Based Access

Assign roles (Admin, Farm Worker, Sales Worker, etc.) with granular permissions so each team member sees exactly what they need and nothing more.

Security & Data Integrity

Access control is enforced on the server, not just hidden in the interface — every data-changing action checks the user's role and farm assignment before it runs. Passwords are encrypted, customer-facing forms are protected against malicious input, and the webshop checkout is tamper-resistant: prices are calculated on the server and orders require staff verification before being marked paid.

Works Anywhere

Built as a Progressive Web App — works on phones, tablets, and desktops, with offline support and a mobile-optimised interface for use in areas with unreliable connectivity.

How You Can Contribute

Farmers & Cooperations

Use the platform, share feedback, and help shape features that solve real problems on the ground. Your experience is the most valuable input.

Developers

The codebase is built with Python (Dash/Flask), PostgreSQL, and standard web technologies. Contributions in UI improvements, new reporting features, API integrations, or mobile optimisation are welcome.

Researchers & Academics

Access to structured agricultural data enables studies on feed efficiency, mortality patterns, breeding outcomes, and supply chain optimisation. Help us build better analytics and decision-support tools.

NGOs & Development Organisations

CoopAgri supports smallholder farming cooperations with practical tools for transparency, performance tracking, and resource management. Partner with us to deploy it in communities that need it most.

Government & Agricultural Agencies

The platform provides the traceability and reporting infrastructure needed for food safety compliance, subsidy tracking, and agricultural programme monitoring.

Designers & UX Specialists

Help make the interface even more accessible for non-technical users in rural settings — better layouts, clearer workflows, and localisation for different languages and regions.

Technical Overview

Component	Technology
Frontend & Backend	Python Dash 4.2 (Flask-backed)
Database	PostgreSQL — 64 tables, SQLAlchemy ORM
UI Framework	Dash Bootstrap Components
Data Visualisation	Plotly, Pandas
Customer Portal	Flask Blueprint — registration, login, profile, password reset
Transactional Email	Zoho SMTP — bilingual, async, via cooperative's own domain

IoT Integration	Tuya Cloud API — temperature, humidity, rain sensor
Deployment	Gunicorn WSGI — scalable worker/thread config, `post_fork` DB safety
Mobile	Progressive Web App — installable, offline-capable
Languages	Portuguese (primary) and English — bilingual customer-facing interface

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Get Involved

Whether you want to use, improve, fund, or deploy CoopAgri — every contribution matters. Reach out to learn more about how you can be part of building practical technology for agriculture.