

Orum Vitae



Sustainable Pasture-Raised Egg Farm with Hydroponics, IoT and Energy Wind power for green food security

Applicant:

Walter Libaak/Orum Vitae, from Villa Mercedes, San Luis, Argentina.

Javier Castellino Local partner at Liborio Luna, San Luis, Argentina.

With pilot tests on hydroponic fodder for goats, sheep and cattle.

Duration and Financing Requested:

36 months. €1,500,000 (50% capital for scaling, 30% IoT/wind equipment, 20% R&D and certifications/export).

Executive Summary

Orum Vitae proposes a farm with 500 pasture-raised egg-laying hens in Liborio Luna, optimizing water (70% reduction via hydroponic recirculation), feed (60% reinforced hydroponic green fodder -HGF- with local protein) and energy (wind generators for 100% autonomy). Real-time IoT monitoring tracks avian health, egg quality, and operational efficiency. Previous trials in ruminants validate FVH, allowing for diversification. Financing will scale to over 3,000 hens, exporting fresh, liquid, or powdered eggs to the EU/Mercosur, aligned with the Green Deal (40% emissions reduction, zero waste).

1. Context and Problem

Intensive poultry farming in Argentina consumes 15,000 L of water per day per 1,000 hens and generates 20% of global methane emissions (FAO, 2023). In Liborio Luna (average winds of 8 m/s, ideal for wind power; arid soil), circular models are lacking. Solution: Integrate hydroponic fodder (10 times greater production than traditional soil, without pesticides) + IoT for production prediction (yield > +25%) + wind power (ROI 5 years).

2. Innovation and Methodology

- **Hydroponics FVH:** 1,000 m² vertical system produces 40 tons/year of forage (alfalfa + legumes), nutrition Reinforced (22% protein, reduces imported pellets by 60%). Trials in goats/sheep/cattle: +15% weight gain, -20% feed costs (local data 2025).
- **Water/Food Optimization:** Oz3 (Ozone 3) Recirculation + IoT sensors (humidity, pH, nutrients).
Water reduction: 2 L/hen/day vs. 15 L conventional.
- **IoT Monitoring:** Cloud platform (ESP32 + Arduino) measures temperature, O₂ in pens, egg quality (AI cameras). Predictive dashboard (ML for disease alerts).
- **Wind Energy:** 3 small turbines (10 kW total), covers 50 kWh/day (LED lighting, pumps, IoT).
Excess to local network.

- **Scaling:** From 500 to 3,000 hens (rotational pens, 5 ha). Processing: Egg line liquids/powder (shelf life +6 months for export).

Implementation Phases:

1. Months 1-6: Pilot 500 hens + IoT/hydroponics (investment €300k).
2. Months 7-18: Data optimization, organic certification (EU Reg. 2018/848).
3. Months 19-36: Scale-up to 3,000 hens, export plant (powdered eggs: €4/kg EU market). Diversification FVH to ruminants if demanded.

3. Expected Impact

Indicator	Current (Pilot)	Scaled Up (3,000 chickens)	Horizon Europe alignment
Egg production 150,000/year		900,000/year	+20% food safety
Water reduction	70%	75%	Water4All Objective
CO2 emissions	-40% (wind power)	-50%	Green Deal
Local jobs	5	25	Just transition
Export revenues	-	€2M/year (dust to EU)	Circular bioeconomy

4. Feasibility and Risks

- **Economic:** Initial cost €800k; ROI 3 years (pasture-raised eggs €0.4/unit vs. €0.25 conventional).
Market: EU exports grow 12%/year (2025 data).
- **Technique:** Successful ruminant FGH trials; partnerships with INTA Argentina/EU (e.g., Wageningen Univ.).
- **Risks:** Climate (IoT mitigated); regulatory (certifications in progress).

5. Team and Collaborations

Leader: Walter Libaak, Technology/Technical Education expert. Partners: INTA (hydroponics), National University of San Luis (IoT), Javier Castellino, local agro-entrepreneur. We are seeking an EU consortium for co-financing.

Detailed Budget:

- Equipment (IoT/wind/hydroponics): €600k
- Scaling/infra: €500k
- R&D/export: €300k
- Personnel/management: €100k

Contact: Walter Libaak. Ready for virtual pitch.