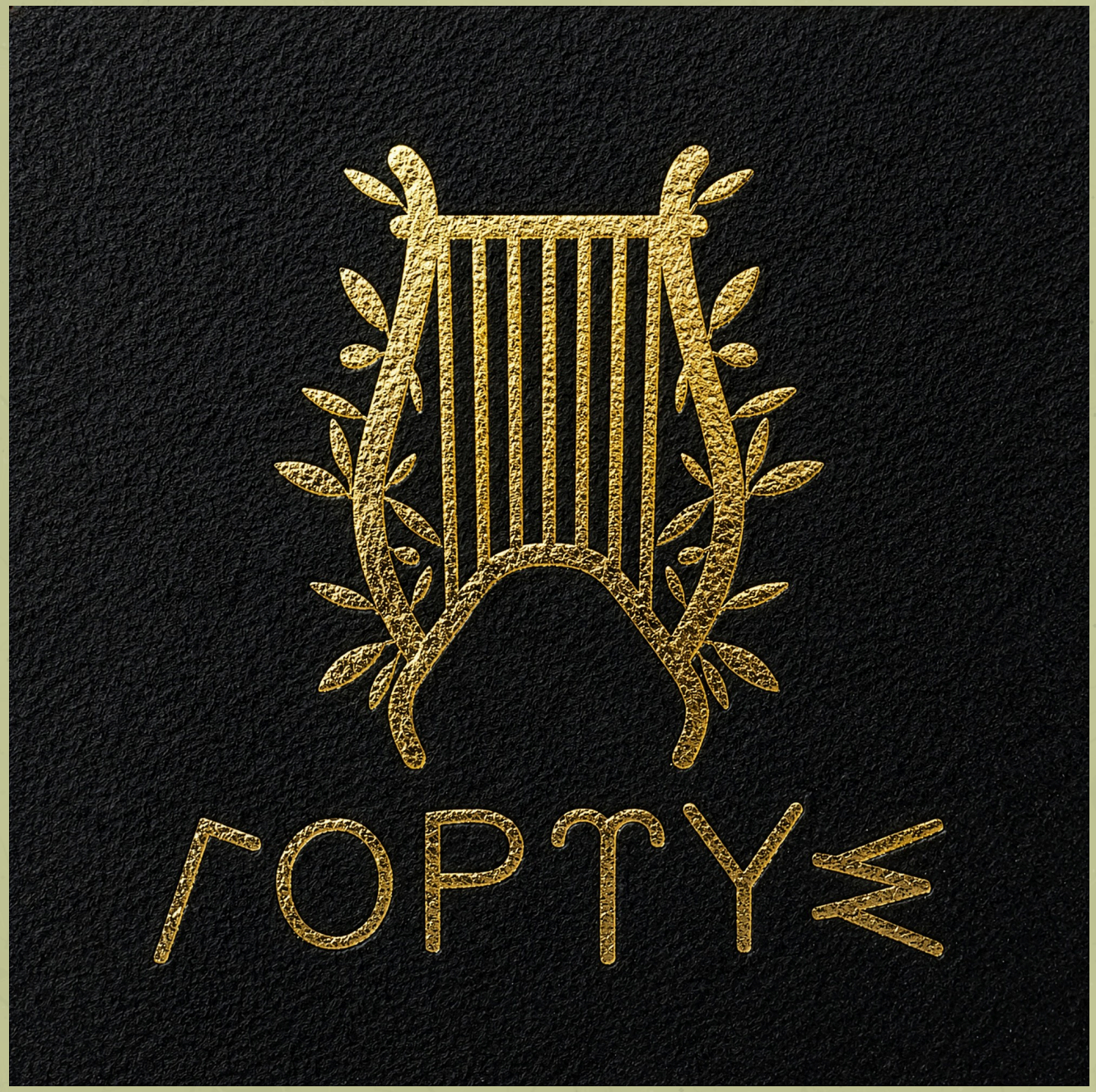
SINGLE ESTATE GORTYS · CRETE

From Ancient Gortys to the Mediterranean: A Self-Funded Model of Source-to-Sea Climate Resilience

Alexandros P. Arkoulakis

Founder & Producer
Single Estate Gortys Extra Virgin Olive Oil
www.gortysoliveoil.gr



The Vision of Gortys: Quality versus Quantity

- **The Core Question:** Responding to the Mediterranean water crisis does not require multi-billion mega-projects, but begins with a model already tested in practice.
- **Realistic Scaling Goal:** Potential for overall water savings exceeding 99% compared to conventional irrigation practices, with €0 state subsidies.
- **Historical & Geographic Identity:** Messara plain (Crete), in the shadow of millennia-old Ancient Gortys — where, according to mythology, Zeus united with Europa.
- **Third Generation of Cultivation:** Organic olive grove of "Single Estate Gortys Extra Virgin Olive Oil".
- **Cultural Mission:** The olive tree and olive oil are cornerstones of Greek Civilization, as its ambassador, Gortys must strive for perfection.
- **Strategic Doctrine:** "Quality versus Quantity" — the foundation of the entire design.

16 Years of Strategy, International Acclaim & The Collector's "Edition Genesis"

- **Seeking the Golden Mean:** 16 years of strategic planning and 12 years of field implementation in demanding soils.
- **Dispelling an Agricultural Myth:** Drastic water conservation does not reduce yield — on the contrary:
  - **Tree production volume:** Relatively stable.
  - **Gortys olive oil quality:** Steadily rising.
- **Global Recognition (in 3 years of standardization):**
  - 7 International Gold Quality Awards.
  - Top "Best in Class" title in Geneva (2026).
- **"Edition Genesis":** A collector's edition of 6 high-art metalwork bottles, in collaboration with distinguished metalsmith Kostis Dolapsis Krasanakis, crowning the connection to Greek Civilization.
- **Official Website:** www.gortysoliveoil.gr

Phase 1 – Applied Irrigation System (24 L/Day per mature olive tree), Advanced Nutrition & Silicon

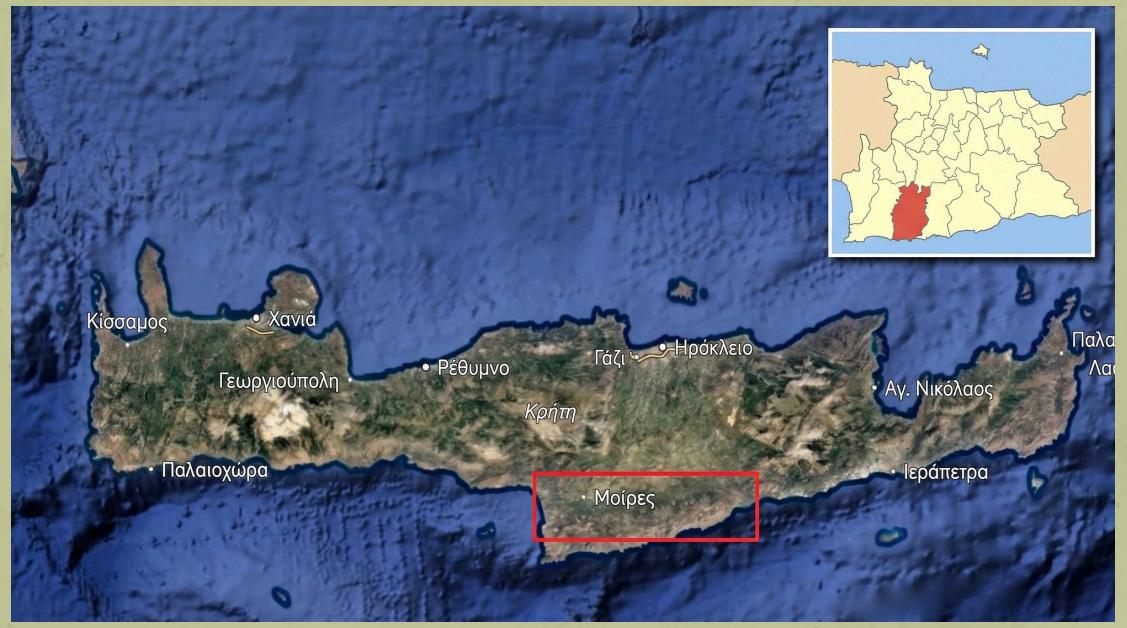
- **WEFE Nexus:** Simultaneous response across the Water, Energy, Food, and Ecosystems pillars.
- **The Question That Paved the Way:** "What would happen if we provided the olive tree with the smallest possible amount of water, but continuously and consistently?"
- **1. Infrastructure & Water Management:**
  - Lined reservoir/pond (280 m^3) and precision irrigation network.
  - Delivery of just 24 liters daily per mature olive tree.
  - Sandy soils: Zero leaching of water and nutrients into deeper strata & a sharp drop in water and energy consumption.
- **2. Soil Improvement & Advanced Fertigation:**
  - Targeted humic and fulvic acids for maximum moisture retention in the rhizosphere.
  - Advanced fertilizers via the irrigation network: targeted nutrition, olive oil quality enhancement, and resilience to heat/drought stress (excellent vegetative growth without yield loss).
- **3. Foliar Thermal Shielding:**
  - Application of natural silicon → significant reduction of water loss via evapotranspiration during summer.
  - Critical Parameter: All formulations are top-tier quality and strictly specific types.

Soil Circularity & 100% Self-Funded Economic Model

- **Core Circularity Principles in Soil (Phase 1):**
  - Mechanical shredding of pruning residues within the olive grove and incorporation into the soil.
  - Incorporation of green manure into the soil → enrichment of organic matter, moisture retention across the entire olive grove, and natural nitrogen supply.
- **Project Financing – Zero Subsidies:**
  - 0% state or European subsidies.
  - Combination of scientific data, know-how, insights, and ingenuity.
- **100% Private Investment & Personal Commitment:**
  - Funded entirely by the founder (holding up to 3 professional jobs concurrently at times).
  - Reinvestment of 100% of sales revenues back into the olive grove (€0 personal dividend).
- **Economic Proof:** The drastic reduction in irrigation costs combined with the premium added-value of quality creates a self-sustaining economic model.

Regional Scaling & Case Study: 60,000 Trees = 60 m³/h

- **Geographic Scale (Red Map Frame):** The Messara plain in southern Crete is geographically composed of 4 municipalities in total.
- **Municipality of Gortyna "In the Red" (Inset Map Top Right):** In the absence of central planning, the geographically and demographically small Municipality of Gortyna counts > 2,000 legal boreholes and an unknown number of illegal ones.
- **Case Study (Dionysios–Panagia Community):** Theoretical expansion of the 24 L/day rule to all ~60,000 mature olive trees of the community.
- **Hydraulic Equation per Tree:** 2 pressure-compensating drippers × 0.5 L/h each = just 1 L/h per mature tree (24 L / day).
- **Revealing Result (60,000 trees):** Total hourly requirement of just 60 m³/h (cubic meters per hour) — a volume more than covered by only 2 existing public boreholes!



Voluntary Decommissioning of Boreholes: Reduction from 95.7% to 97.9%

- **Economic Incentive instead of Policing:** With centralized implementation of the model, the 47 legal private boreholes (as well as illegal ones) are deemed economically unviable by their own owners.
- **Voluntary Closure:** The irrigation challenge — a constant headache and massive expense for the farmer — is definitively and irrevocably resolved.
- **Immediate Drop (-95.7%):** From 47 active boreholes, we immediately drop to 2 public ones.
- **Automatic Aquifer Recovery:** Once the 47+ boreholes are closed, the water table rises automatically and borehole yield increases.
- **Final Outcome (-97.9%):** Only 1 single public borehole is now required — nearly 98% fewer boreholes in the field!

Evolution Phase	Active Community Boreholes	Reduction Rate & Outcome
Current State	47 Legal Private (+ Illegal)	Huge pumping cost & aquifer depletion
Step 1: Central Implementation (24 L/day)	2 Public Boreholes	-95.7% (Voluntary closure of all 47+ private boreholes)
Step 2: Automatic Aquifer Rise	1 Single Public Borehole	-97.9% (Nearly 98% fewer boreholes in the field)

Completing the WEFE Nexus: Energy, Ecosystems & Education

- **1. Energy – Pumping Reduction, Solar Power & The Messara Dams:**
  - **95.7% – 97.9% Borehole & Energy Drop:** Voluntary closure of 47+ private boreholes in favor of 1 public borehole (60 m^3/h in Phase 1; <6–10 m^3/h in Phase 2) slashes pumping electricity accordingly.
  - **Solar PV & 24/7 Operation:** Daytime continuous drip irrigation can be heavily powered by solar panels (PV), while night hours require a supplementary energy source.
  - **Zero-Energy Gravity Solution (Messara Dams):** The Messara Plain possesses two dams — **Faneromeni Dam** (active in the east) and **Plakiotissa Dam** (uncompleted, lacking pipe networks). With our water-saving model, these two dams fully suffice to irrigate the entire olive-growing Messara plain via **natural gravity flow, requiring ZERO pumping energy**.
- **2. Ecosystems – Agro-Ecological Balance & Modular Bio-Protection:**
  - **Water & Soil Protection:** Up to **>99% water savings** remain in natural ecosystems, alongside an already achieved **drastic reduction in chemical fertilizers** (zero leaching & circularity).
  - **Drastic Reduction of Pesticides (Universal Application):** Scientific studies confirm that integrating **fertile Carob trees** significantly reduces chemical use against the olive fruit fly, further reinforced by **bait-spraying via Drones**.
  - **Modular Scalability:** Easy modular addition of many more solutions for all agricultural challenges, as the know-how is established.
- **3. Education & Community – Hybrid University of Asterousia:**
  - **Knowledge Transfer:** Actively educating students, the local community, and fellow producers through school lectures and in-field olive grove demonstrations.

Phase 2 (Part A): Biotechnology, Sensors & Subsurface Reservoirs (>99% Savings)

- **Phase 2 Objective:** Deploying advanced biotechnology and technical infrastructure that reduce water consumption far below 60 m^3/h.
- **First – Root Biotechnology:** Introducing beneficial symbiotic fungi (mycorrhizae) and nitrogen-fixing bacteria → increasing the active absorptive surface of the root system by up to 1000%.
- **Second – Periodic Sensor-Based Irrigation:** Maintaining moisture just below the level of the canopy's surface rhizosphere through digital sensors.
- **Third – Subsurface Canopy Reservoirs:** A specialized method for creating subsurface water reservoirs on 2 or more sides of the canopy.
- **Result in Clear Numbers:** Filling reservoirs just once every 10+ days → 80% to 90% further savings → Demand for 60,000 trees falling to <6–10 m^3/h → Total savings exceeding 99%!

Phase 2 Innovation Pillar	Mechanism & Measurable Result
1. Mycorrhizae & Nitrogen-Fixing Bacteria	Increase in active root absorptive surface up to +1000%
2. Digital Rhizosphere Sensors	Periodic irrigation exactly below the canopy's surface rhizosphere
3. Subsurface Canopy Reservoirs	Localized water reservoirs on 2+ sides of the tree canopy
Reservoir Filling Frequency	Just once every 10 days (or at longer intervals)
Further Consumption Reduction (versus Phase 1)	**-80% to -90%** (Drop from 60 m^3/h to <6–10 m^3/h)
Total Savings vs. Conventional Irrigation	**>99% TOTAL WATER SAVINGS**

Phase 2 (Part B): Full Circularity, Olive Mill Waste (Katsigaros) Valorization & Strategic Partnerships

- **Full Zero-Waste Circularity:** Zero residue disposal and a drastic reduction in fertilizer use.
- **Agro-Pastoral Synergy:** Mowing green manure to feed local sheep and goats, in exchange for returning processed and enriched manure to the olive grove.
- **Definitive Solution to Olive Mill Waste (Katsigaros):** Specialized physicochemical method for "quenching" acidity (alkaline neutralization, pH regulation, molecular binding, and adsorption of toxic polyphenols and heavy metals by specific natural minerals).
- **Circular Outcome:** Transforming olive mill waste (katsigaros) from a polluting waste into a safe, slow-release, and exceptionally rich soil conditioner.
- **Call for Partnership:** Phase 1 has been proven in the field with our own resources. For Phase 2 and scaling across the Mediterranean, we are open to strategic partnerships and institutional collaborations.

Phase 2 Closed Loop	Processing Method	Final Product & Environmental Benefit
Loop 1: Agro-Pastoral Exchange	Mowing green manure for sheep & goat feed	Returning processed & enriched manure to the olive grove (Drastic fertilizer reduction)
Loop 2: Olive Mill Waste (Katsigaros) Valorization	Physicochemical "quenching" of acidity, pH regulation & molecular adsorption of polyphenols/heavy metals by specific natural minerals	Conversion of toxic waste into a safe, slow-release soil conditioner
Investment & Institutional Call	Phase 1: 100% Proven in the field	**Phase 2:** Open to Strategic Partnerships & Institutional Collaborations in the Mediterranean

Thank You for Your Attention

"Quality versus Quantity — From Ancient Gortys to the Mediterranean"

Open to Strategic Partnerships & Institutional Collaborations (Phase 2)

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