

In the Ñan Valley, there are no farmers

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There are 9 billion inhabitants on Earth and 3 billion robots. Here in the Ñan Valley, which in the Micronesian Marshallese language means food or nourishment, there are no tractors and no farmers. Only the low and constant hum of drones, the muffled sound of autonomous vehicles speeding between crops, and the cold lights of an LED system nourishing plants in orderly rows, as tall as miniature skyscrapers.

Welcome to what they call AgroNet, the most advanced autonomous agricultural ecosystem on the planet. Once, there were family farms here; today, there's a stretch of vertical greenhouses, geothermal domes, and data centers. Here, no human touches the soil.

AgroNet Valley is not a district but a fully integrated artificial ecosystem, in the heart of the Pacific Ocean, where once there were only islands, palms, and wind. A completely enclosed agricultural area, operating 24 hours a day without any human intervention, spread over 12,000 hectares divided into climate modules, optimized through sensors, drones, and AI

Parameter	Value
Average yield per hectare (bio-vegetables)	+321% compared to global average
Water consumption per kg produced	-72%
Harvest waste	0.4%
Human interventions needed	-89% (100% renewable energy)

La fase di crescita è interamente controllata da matrici LED multispettrali per la fotosintesi modulata, vaporizzatori idrointelligenti che dosano l'acqua goccia per goccia secondo il feedback biochimico delle radici (monitorato da sensori BioRoot v3), e microcapsule PHA nutrienti che rilasciano molecole attive solo quando la pianta lo richiede. Il sistema analizza i VOC (composti volatili organici) emessi dalle foglie per anticipare stress, carenze o infezioni: in caso di minaccia, attiva nanobot molecolari BioGuard, programmati per riconoscere sequenze RNA patogene e disattivarle senza intervento sistemico. La raccolta è gestita da manipolatori robotici Karm S-18, con bracci prensili sensibili al millinewton, che analizzano la frutta singolarmente mediante spettrometria NIR, pressione interna, struttura epidermica e

segnali aromatici. Solo i prodotti che superano tutti i filtri vengono raccolti: gli altri restano a maturare. Tutti i dati raccolti sono criptati e registrati in un sistema blockchain alimentare (FoodChain-7), che assegna un'identità digitale a ogni unità vegetale.



Everything begins well before sowing: Gaïa-7, a distributed neural intelligence, continuously receives data from geostationary satellites, atmospheric probes, and field sensors to generate predictive models of global demand, climate variability, and environmental stress. This artificial intelligence doesn't just plan: it designs the crops. It decides which varieties to use based on 128 parameters (including metabolic efficiency, viral resistance, nutrient response, robotic compatibility), selecting them from a dynamic genetic archive integrated into the system.

Sowing is performed by RoboSeed S9 swarm robots, equipped with artificial vision and LIDAR mapping, following adaptive paths generated by swarm optimization algorithms: they deposit seeds with an error margin under 2 mm, adjusting depth and orientation based on the soil's microstructure detected in real time.

The growth phase is entirely controlled by multispectral LED matrices for modulated photosynthesis, hydro-intelligent vaporizers that dose water drop by drop according to the biochemical feedback of the roots (monitored by BioRoot v3 sensors), and PHA nutrient microcapsules that release active molecules only when the plant requires them.

Agriculture in AgroNet Valley is no longer a biological cycle: it is a closed algorithmic process, a cybernetic circuit where humans have been completely expelled.

Indicator	Result	Comparative reference
Average fruit yield (kg/ha)	+342%	OECD 2020 average
Reduction uso acqua	-74.1%	Conventional agriculture
Photosynthetic efficiency	+56%	vs standard greenhouses
System failure rate	0.03% yearly	Within aerospace standards
Direct employment rate	<0.5 h/ha/yr	Organic agriculture >600 h

Outside the enclosure, the agricultural world has emptied. “When they dismissed us, they handed me a USB stick with the user manual of the new system,” says Amin, 57, a field technician now unemployed. “All the knowledge I had acquired in forty years, condensed into a 94-page PDF.”

In many areas, the district replaced the local supply chain in less than nine months. Traditional varieties, excluded from automated production standards, have been archived as

non-compliant relics.

“The eggplants from my land don’t enter their greenhouses. They don’t have the right genetic profile. They grow crooked,” says Lucy, a farmer from a nearby island.

In the automated world, curves and irregularities equate to inefficiency. Farmers resist in residual, often illegal spaces, producing food that no longer fits official dietary parameters. Governments don’t intervene: food arrives, it’s safe, traceable, sellable. But in case of system crashes, blackouts, or network collapse, the chain breaks. The estimated urban resilience time is 27–32 hours. After that, hunger begins.

“We accepted total control in exchange for absolute availability,” wrote Nerō Jorban, the last Minister of Agriculture of the Federated States of Micronesia, before his resignation. “We won the war against uncertainty, but we lost the right to choose.”



Five multinational corporations hold the entire cycle – seed, land, system, distribution – and any attempt to produce food outside these networks is considered inefficient, non-competitive, marginal. Traditional agriculture was abandoned in less than a decade: in Central Asia, Sub-Saharan Africa, South America, entire agricultural civilizations have been dissolved by the inability to compete with a model that produces three times as much with a tenth of the resources.

Global agricultural unemployment has surpassed 90% in non-automated areas, and the reintegration rate into new sectors – AI mechanics, agritech data analysis, robotic maintenance – remains below 30%. Farmers' skills are considered obsolete. The knowledge passed down through generations is irrelevant in a world where the soil is an artificial substrate and biodiversity is reduced to a patented catalog.

In the Ñan Valley, we walked with one idea in mind and left with a conviction: something must be done. Leaving this dependency doesn't mean renouncing technology, but redesigning the relationship between automation and autonomy. An operational bioethics is needed in agricultural robotics: transparent, modular algorithms, with real margins for human intervention.ruralhack.org+2italiachecambia.org+2ruralhack.org+2

A public agricultural AI is needed, managed by the community, non-proprietary, to support – not replace – family and territorial agriculture. Mixed networks must be built, where human and automated labor balance: machines for labor and precision, humans for vision and adaptation.

Indigenous varieties must be digitized and integrated into automated systems, not excluded. Agricultural data must be common goods, not private assets. Agritech must remain a tool, not a regime.

Agriculture remains the foundation of every civilization: those who control it, control everything. The risk is not technological: it's political, cultural, existential. Food is not just nourishment. It's power. And we can't afford for it to be distributed only by those who know how to program.

Above all, we cannot sacrifice global biodiversity and technodiversity on the altar of unified efficiency. Every territory has an agriculture born from climate, culture, genetic variety, and centuries-old cultivation methods. Standardizing robotic systems to a global standard means sweeping away thousands of local adaptive solutions that AI cannot replicate.

Technodiversity – the variety of agronomic solutions, robotic architectures, and decision-making models – is the digital equivalent of natural biodiversity: it's what ensures resilience, adaptability, survival.

If we entrust production to five global platforms, we lose not only freedom but also ecological flexibility. A modular, decentralized, hybrid agriculture is needed: an alliance between local technologies, peasant networks, and targeted automation.

Because a living system is not one that produces the most, but one that knows how to change when the world changes. And the world is changing much faster than any algorithm.

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Fonte: <https://www.ruralhack.org/en/the-nan-valley-farming-without-farmers/>