



Co-funded by
the European Union

SESSION 1 OF A 4-PART SERIES

NEXT-GEN FARMING: TECHNOLOGY IN ACTION

Are you a farmer, rural entrepreneur or
simply interested in the future of
agriculture & digitalisation?

10 June | 17:30 CEST



> Housekeeping Rules

1. Your **microphone should be muted** while others are speaking.
2. **Switch off your camera** during presentations to preserve bandwidth.
3. Post any questions in the chat.
4. Please note that this **session will be recorded** and shared on the PoliruralPlus channels. If you prefer not to appear on the recording, please keep your camera turned off.



Welcome to today's webinar!

Maria Elena Muscat

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What is PoliRural Plus?



Co-funded by
the European Union

- Horizon Europe project working across **9 European pilot regions + technical pilots**
- Strengthens **rural-urban cooperation.**
- Combines **local knowledge, stakeholder participation, foresight and digital tools.**
- Supports sustainable, inclusive and place-based regional development.
- Brings together farmers, businesses, public authorities, researchers and communities.
- Turns regional challenges into practical **Regional Action Plans.**

Malta Pilot – From Regional Challenges to Action

The **Malta Regional Action Plan** aims to strengthen a digitally enabled, sustainable and inclusive agri-rural ecosystem in Malta and Gozo.

1.

Build farmers' digital capacity through practical exposure to smart farming, e-commerce and decision-support tools.

2.

Engage young people through agritech ideathons, entrepreneurship and innovation pathways.

3.

Support climate-smart farming, including smart irrigation, water reuse, soil health, hydroponics and circular practices.

Malta Pilot – From Regional Challenges to Action

4.

Improve market access by strengthening branding, short food chains and links between farmers, consumers, tourism and digital markets.



5.

Connect the ecosystem by bringing together farmers, rural SMEs, public authorities, researchers, technology providers and community organisations.



6.

Turn ideas into implementable actions through initiatives such as Outreach at The Veg Box, the MaYA Agri-Tech Ideathon, the MALTESE training activities, prototype & demonstrations and peer learning.



NextGen Farming Webinar: Supporting Malta's RAP

Why does this event matter?

- Turns the **Malta Regional Action Plan** (RAP) into practical learning and dialogue;
- Exposes farmers and rural actors to usable agri-tech solutions;
- Supports RAP priorities: **digital skills, youth engagement, climate-smart farming and market access;**
- Connects farmers, youth, technology providers, educators and rural organisations;
- Feeds local needs and ideas back into the Malta pilot action process.
- Helps move from:



Session 1 **Setting the Scene: Technology, Innovation and the Future of Farming**



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Remote Monitoring of Crops

What is it?

- Using sensors, weather stations, drones, satellites and mobile applications to monitor crops without needing to physically inspect the field/s

Why?

- Detect issues earlier (early warnings)
- Save water
- Save time
- Improve crop health
- Climate conditions becoming less predictable



IoT Sensors

What they Do

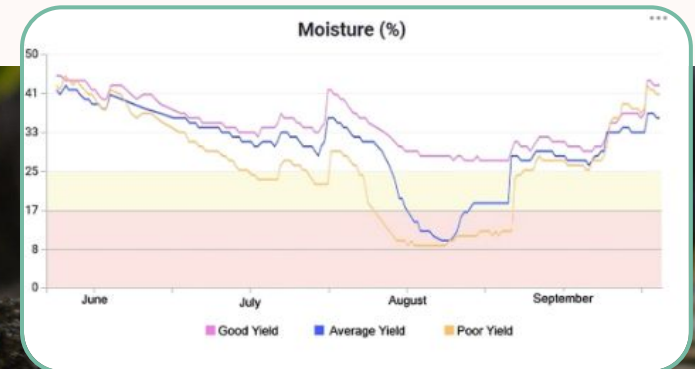
- Soil moisture sensors measure moisture levels in soil in real time
- Temperature and humidity sensors
- Soil fertility sensors (e.g. NPK [Nitrogen, Phosphorus, and Potassium] sensors)
- Water flow/pressure sensors

Key Benefits

- Water scarcity is a problem. With soil moisture sensors you can irrigate when needed
- Can integrate with automatic irrigation systems
- Optimise fertiliser application, protect local groundwater and reduce costs

Example:

A crop management system can be integrated with soil moisture and environmental sensors in order to automatically adjust irrigation systems. Commercially available sensors provide mobile applications with dashboards to view real-time data



Weather Stations

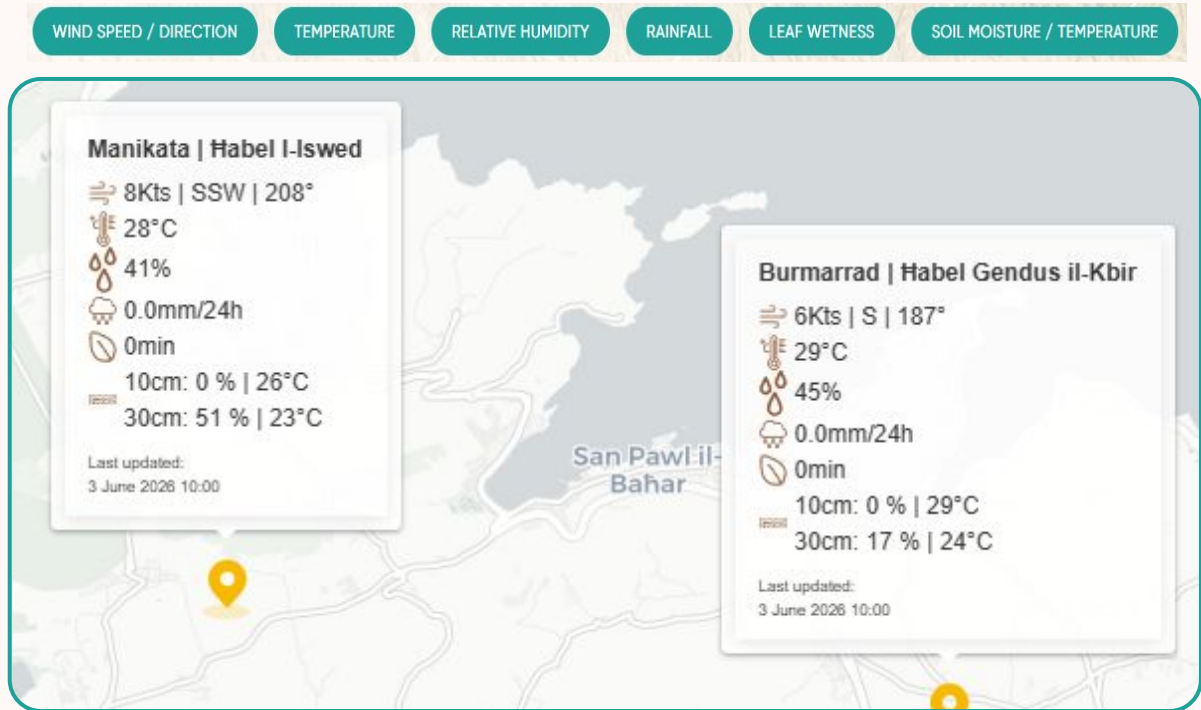
Key Benefits

- Irrigation planning
- Disease risk prediction
- Spray timing
- Weather alerts & warnings

Local Access & Real-Time Data

Farmers can access tailored agrometeorological data from a network of stations tracking conditions at soil level. All data is public.

maltametoffice.com/en/weather-stations-agricultural/



Pest Monitoring and Management

What is it?

- Smart traps use pheromones or other attractants plus cameras and AI to detect pest pressure earlier
- If using regular pest traps, mobile scouting apps can handle automating counting and analysis of pests

Key Benefits

- Lower risk of crop loss
- Real-time viewing of traps
- Real-time alerts to farmer when pest numbers rise
- Help time and quantify spraying more accurately

Example: Vines, orchards and vegetables

With smart traps, instead of checking traps manually every few days, farmers can receive pest alerts and decide whether to inspect or spray

Locally



Pest monitoring stations equipped with AI capabilities are being deployed across the Maltese islands within pilot fields. Pest Prediction Models are being used to understand how pest populations react to environmental changes and a platform is being developed by Agrihub for farmers to observe forecast conditions.

<https://fondi.eu/wp-content/uploads/2025/06/agrihub-presentation.pdf>



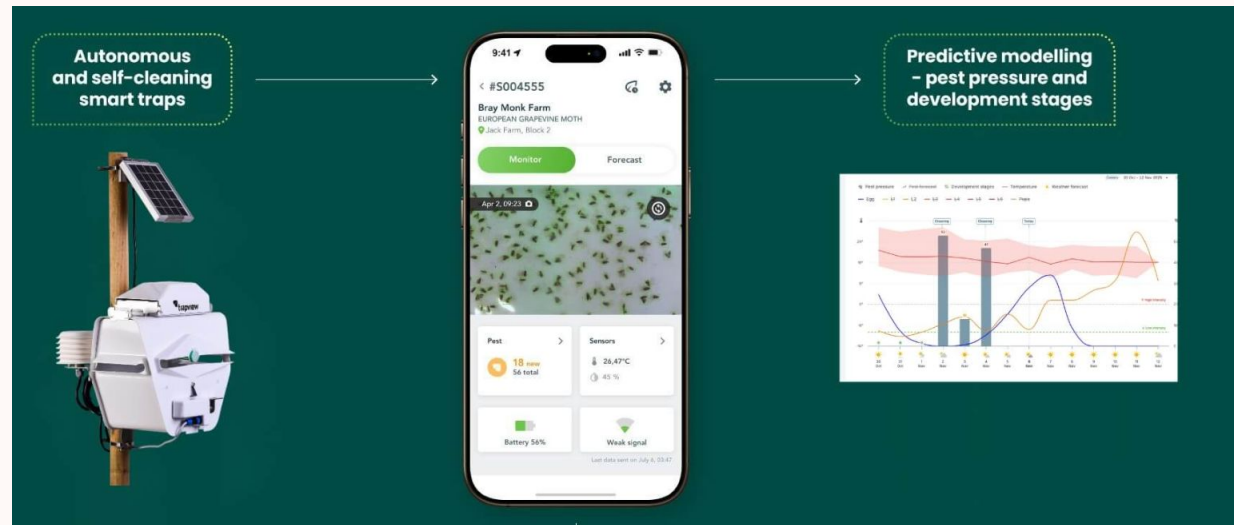
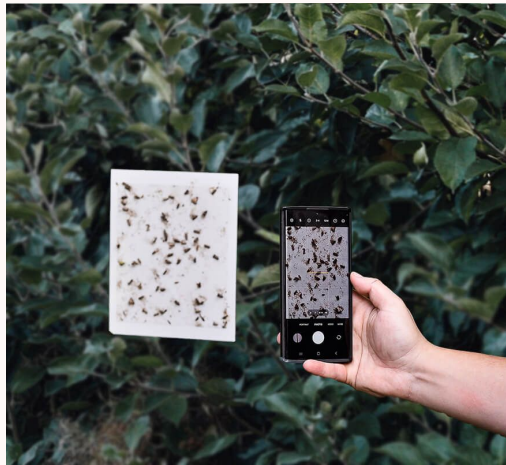
Pest Monitoring and Management

Europe



The EU-funded smart pest monitoring app Trapview allows farmers to upload photos of their pest trap and handles automatic counting and pest detection.

<https://trapview.com/scouting/>



Remote Monitoring of Animals

What is it?

- Using sensors, cameras, mobile applications and alerts to understand what is happening with your animals when you are not physically there.

Why?

- Animal health
- Movement/activity
- Feeding and rumination
- Heat stress
- Fertility/breeding
- Location



IoT Devices for Animal Monitoring

What are they?

- GPS collars or ear tags
- Activity sensors
- Feeding level or water flow sensors

Measure:

- Movement
- Resting time
- Feeding activity
- Ruminating
- Body temperature
- Location
- Breeding behaviour

Example: GPS collars

A GPS collar helps track animals in outdoor or semi-outdoor areas and activity patterns can help detect timing for mating



IoT Devices for Animal Monitoring

Case Study

In the WELLNESS project in Greece, GPS trackers were fitted to sheep and goats to monitor movement patterns and behaviour. Weather stations were also used to connect animal behaviour with environmental conditions.

https://www.researchgate.net/publication/388075278_Enhancing_Precision_Livestock_Management_with_IoT_Insights_from_the_WELLNESS_Project



Detecting Heat Stress

Monitor both environmental and biological conditions:

- Temperature
- Humidity
- Ventilation
- Breathing/movement changes

Why?

- Summer heat can affect fertility, milk production, feed intake and animal welfare;
- Can be used to trigger automated sprinklers, ventilation, or other cooling systems.

Example:

A combination of wearable sensors (to track body temperature, breathing rate), climate sensors (temperature-humidity index), weather station data, and thermal monitoring (Infrared Thermography) can give an indication of conditions.



Smart Fences and Virtual Fences

Smart Fences

Real fences, usually electric, connected to sensors and a mobile app. Alerts are sent to your phone when fence voltage drops. Farmer can draw zone on a phone and update boundaries without moving physical fencing.

Benefits:

- Keep animals safe and within the enclosure or defined boundary
- Review alerts if animals leave zone

Virtual Fences

Smart fences use GPS collars and a mobile app to create boundaries without needing a physical fence. Alerts are received if animals leave the area.

Case Study



The Sheep and Goats Breeders Association in the Czech Republic have used a Smart fencing system to monitor electric fences remotely. The system allows users to see the condition of the fence and receive alerts on a phone if the voltage drops below the required level. This reduces the need for constant manual fence checks.

<https://www.fencee.eu/en/m-807-smart-farm-fencee-protects-animals-in-the-sheep-and-goat-farmers-association>

Smart Fences and Virtual Fences



Smart fence in practice

An energiser powers and monitors the fence, the gateway connected in to the internet, and the app alerts the farmer if voltage drops, power fails or the fence is damaged.



Cameras

Monitor:

- Lambing/kidding/calving
- Feeding behaviour
- Animal movement
- Sick/isolated animals
- Night-time checks
- Security

How?

- Real-time video transmission
- Motion detection
- Alarm functions
- Can be solar-powered and 4G enabled

Example: Goat farm

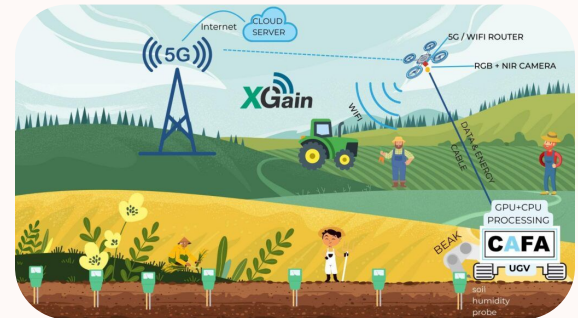
A camera installed in a goat farm enables a farmer to check the live feed and only visit when intervention is needed.

AI-powered cameras can spot limping, aggression or signs of illness.

Case Study

One of the use cases in the XGain Project explored how camera-based precision livestock farming (PLF) technologies can improve animal monitoring in rural dairy systems in Belgium. Other use cases explored the use of drones with computer vision to identify and prevent soil damage, crop loss, or the presence of foreign objects in the field.

<https://xgain-project.eu/use-cases-in-living-labs/>



Farm Management Apps

Can help with:

- Field records (crops, planting date)
- Irrigation records
- Spray/fertiliser records
- Livestock records
- Stocks and Costs
- Reminders to irrigate, harvest, treat

Can help answer questions:

- Which crop is actually profitable?
- Which field uses the most water?
- What has been sprayed and when?
- What needs to be done this week/month?

Example: Farm management app for small field

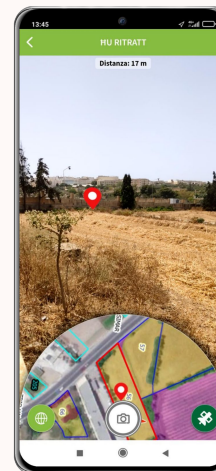
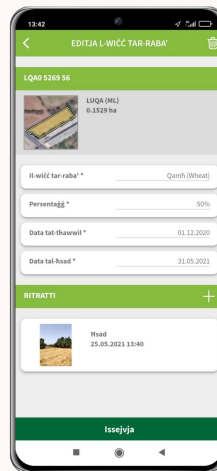
A farmer growing some crops and herbs to sell to restaurants can record irrigation, harvest quantities and deliveries to see which crop or customer is actually profitable.

Locally

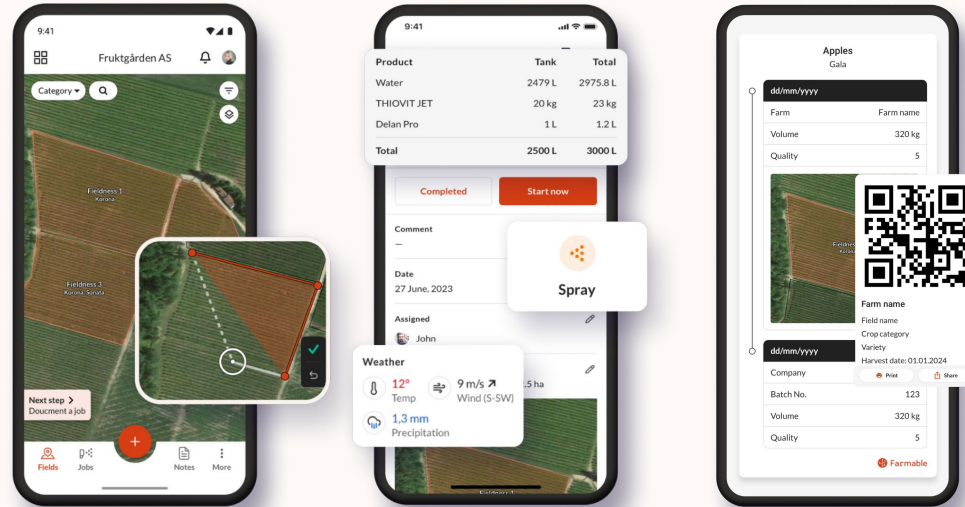


BiedjaCam is a crop plan management app which allows farmers to insert crops growing of fields and allows you to track their growth progress whilst also streamlining storm damage application processes and allowing farmers to receive any important information from the Agriculture and Rural Payments Agency ARPA.

<https://arpa.gov.mt/en/mobile-app-information/>



Farm Management Apps



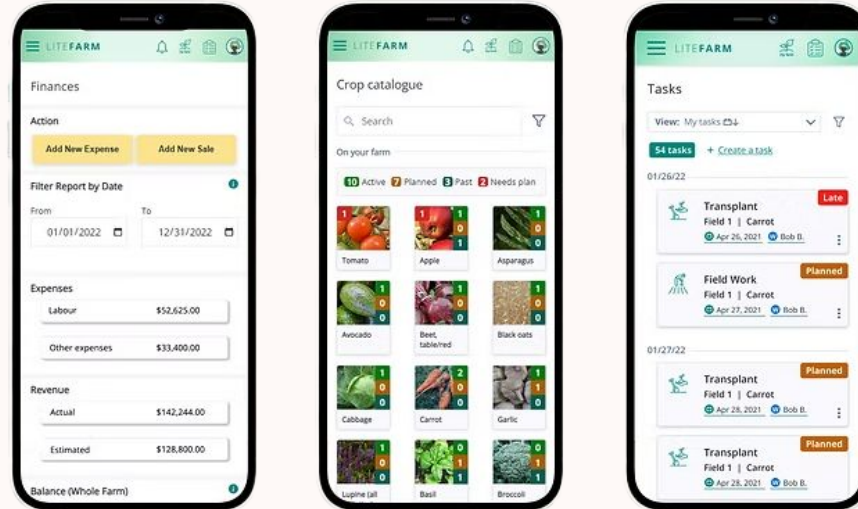
Europe



Farmable, developed in Norway, offer farm management software to help farmers simplify field operations, track harvests and manage spray applications. The app is free to use as a field map, note-taking tool and harvest tracker, and you can test the pro version by logging up to 5 farm operations, such as spraying a crop and applying fertiliser and conducting AI health checks on crops. For unlimited logging of operations and health checks, a paid version is available at €350 per year.

<https://farmable.tech/getting-started-farmable-farm-management-app/>

Farm Management Apps



International and Open-Source



LiteFarm is a free and open source farm management tool built for current and aspiring sustainable farmers. It is co-designed by farmers and researchers and is used to manage farm operations in more than 155 countries. On the app, one can track tasks, plan crops, track crop health, and track the financial health of a farm to allocate resources efficiently and make well-informed decisions to improve profitability.

<https://www.litefarm.org/>

Practical AI for Farming

AI Assistants

Good for summarising information, planning and general advice. However, they have limitations. They are not great with local data and should not replace decision making.

Examples: ChatGPT, Claude, Gemini, Perplexity

Demo prompts

- Summarise this funding call into eligibility and documents required
- Create a weekly task list for a small crop field
- Compare my costs for tomatoes and basil and tell me which looks more profitable
- Irrigation advice based on sensor readings
- Crop health insights based on photos
- Querying own farm records

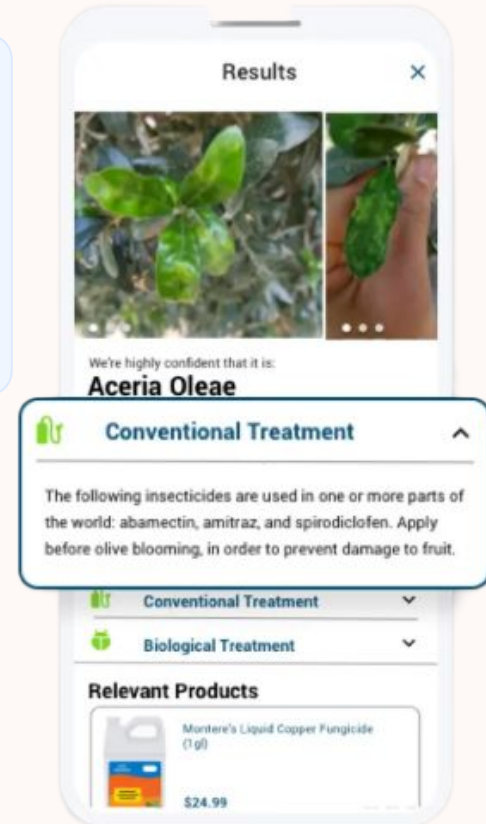
Other AI Tools

AI Plant Health Scanners: allow you to upload photos of sick crop and get an indication of the issue and how to treat it (Examples include Plantix (free) and Agrio (freemium, pro version €4-50/month))

<https://plantix.net/en/>; <https://agrio.app/An-app-that-identifies-plant-diseases-and-pests/>

Satellite-based precision agriculture software: can help identify if crop is stressed and needs inspection (Examples include OneSoil (freemium, pro version varies) and EOSDA Crop Monitoring (freemium, pro available for large areas)).

<https://onesoil.ai/en/>; <https://crop-monitoring.eos.com/>; NDVI data can be viewed for free here: <https://eos.com/landviewer>



Non-Traditional Farming

Hydroponics

- Method of growing plants using water-based solution instead of soil
- Provides precise control over plant nutrient intake, pH level and hydration
- Water savings since water mixture is recirculated - use up to 95% less water than soil farming



Non-Traditional Farming

Aeroponics

- Plant roots are suspended in the air and nourished with a fine mist of water and nutrient solution
- Fully automated - a pump shoots the mist at timed intervals
- Maximises oxygen which drives rapid cell growth and nutrient uptake



Non-Traditional Farming



Aquaponics

- Combines aquaculture and hydroponics
- Circular system where fish produce waste which naturally converts into nitrates via bacteria which plant use as food
- Plants filter and purify water, which is recirculated back to the fish

Non-Traditional Farming



Vertical Farming

- Arrangement where crops are cultivated in stacked and multi-tiered layers
- Stacked layers maximise volume and allow more crops on small footprint - ideal for indoor environments
- Hydroponics, aeroponics and aquaponics can be incorporated into vertical farming

List of Products Referenced / Where to buy

Soil moisture sensors:

- DIY: <https://www.fabian.com.mt/en/products/webshop/15808/soil-moisture-and-humidity-sensor-module-haitronic.htm>;
<https://agrinovo.io/products/sensors/soil/watermark-200ss-sensor/>
- Manual probe (includes soil fertility measure): <https://shorturl.at/7qs2L>
- IoT sensor with dashboard: <https://www.farm21.com/product/fs31-field-sensor/>; <https://www.sensoterra.com/soil-sensor-for-agriculture/>
- IoT Controllers: <https://agrinovo.io/products/controllers/omni-genesis-controller/>
- Automatic irrigation system: <https://rachio.com/>

Soil fertility sensors:

- Online guide to know target levels of nutrients for different crops:
<https://www.fertilizer-assoc.ie/template/calculators-app/p-k-calculator-app/>
- DIY: <https://shorturl.at/WU8d6>
- Manual probe (includes soil moisture measure): <https://shorturl.at/7qs2L>
- 7-in-1 with data logger:
<https://store.comwintop.com/products/low-consumption-soil-moisture-temperature-humidity-ec-ph-npk-7-in-1-parameters-4g-data-logger-soil-tester-with-built-in-battery>

Water flow sensors:

- DIY: <https://www.fabian.com.mt/en/products/webshop/16660/water-flow-sensor-1-30-liters-per-minute.htm>
- With Smartphone control: <https://shorturl.at/MwifH>

Pest traps:

- App for monitoring: <https://trapview.com>
- Solar light traps (manual data entry): <https://www.amazon.co.uk/Agriculture-Insects-Captures-Warranty-Pheromone/dp/B0GK6YKDB4>
- Smart traps: <https://scoutlabs.ag>
- Smart rodent traps:
https://goodnaturetraps.co.uk/shop/a24-smart-trap-kit/?srsltid=AfmBOopsC9OF7G8hdJlz_lb_jVluOfRX4zX29HCBK010HLWqAinxPEy7

List of Products Referenced / Where to buy

GPS collars and activity monitoring:

- <https://www.nofence.com/en-ie/nofence-for-cattle/product-and-pricing/> (Norway)
- <https://digitanimal.com/home/?lang=en> (Spain)

Feeding level or water level sensors:

- <https://shorturl.at/JrHEo>
- <https://www.macoga.eu/en/various/hopper-level-sensor-wireless-communication-no-wifi-no-power-supply.html>
- Automatic feeders: <https://www.omlet.co.uk/chicken-feeders/>;
[https://grandpasfeeders.co.uk/?srsltid=AfmBOoqqQ2AH8Uvwb_LNbgUYq2mcFtIVE1HsTs7jL51qJSw7VAOMZnZ9](https://grandpasfeeders.co.uk/?srsltid=AfmBOoqqQ2AH8Uvwb_LNbgUYq2mcFtIVE1HsTs7jL51qJSw7VAOMZnZ9;);
<https://hanskamp.com/en/solutions/caprabox/>

Detecting heat stress:

- <https://www.amazon.co.uk/HiKMICRO-E02-camera%EF%BC%8CsuperIR-resolution-portable/dp/B0CP99QBVJ>
- <https://www.crodeon.com/collections/livestock-monitoring> (Belgium) - can be connected to a relay connected to power line of fans/ventilation system
- <https://www.epluse.com/applications/agriculture/market-segments/livestock/> (Austria)
- <https://www.smaxtec.com/en/heat-stress/> (Austria)

Smart fences and virtual fencing:

- <https://www.fencee.eu/en/m-807-smart-farm-fencee-protects-animals-in-the-sheep-and-goat-farmers-association>
- <https://www.fencee.eu/en/m-597-functions-and-features-of-the-multifunctional-collar-fencee-gps-f10>

List of Products Referenced / Where to buy

Cameras:

- Solar-powered 4G cameras: https://reolink.com/product/reolink-go-pt-ultra/?srsltid=AfmBOoozooxHGTJg12VYwvSL1mGKYOMQpqRq87f7UrBRCP9e_iMMNR7R; <https://www.eufy.com/eu-en/products/t86p2321>
- Solar-powered Wifi camera: <https://reolink.com/product/argus-pt-ultra/?srsltid=AfmBOor0FZcBnsj-ZC5eSK312NSi5uOaeUI1rOVaZne2pslKsnN2DJRg>;
- Mains-powered Wifi camera: <https://www.dahuasecurity.com/pt/products/All-Products/PTZ-Cameras>
- AI animal health detection: <https://petvet.ai/>

Farm Management Apps:

- BiedjaCam: <https://arpa.gov.mt/en/mobile-app-information/>
- Farmable: <https://farmable.tech/>
- LiteFarm: <https://www.litefarm.org/>
- Farmleo (for livestock management): <https://www.farmleo.com/>
- FarmKeep: <https://www.farmkeep.com/solutions/hobby-farm-management-app>

AI Health Scanners:

- Plantix: <https://plantix.net/en/>
- Agrio: <https://agrio.app/>

Satellite-based precision agriculture software:

- OneSoil: <https://onesoil.ai/en>
- EOSDA Crop Monitoring: <https://crop-monitoring.eos.com/>

**Thank you for
your attention!**

Get in touch if you
have any questions.

Let's move on
to session 2.



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Session 2

Agritech in Practice



Jo Sakota

Co-founder @ Bio Aqua Garden; Agritech Innovator; Speaker on Youth in Agri
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bioaquagarden



BIO AQUA GARDEN

Sustainable AquaSoilPonics Farm – AgriVoltaic Operations

Innovative vertical farm technology enabling the nurturing of premium crops using only natural nutrients in Malta.

WWW.BIOAQUAGARDEN.COM



Our commitment to revolutionizing agriculture through sustainable innovation centered around the essence of life: water, energy, and food.



VISION

To provide food **purity, security, and sovereignty** whilst ensuring sustainable local communities. We aim to nurture crops using only natural nutrients through innovative vertical farm technology.



MISSION

Create a **collaborative environment** between capital, markets, and local people. We support vertically integrated, biodiverse operations with local ownership to serve community needs and meet all ESG criteria.



STRATEGY

Use innovative **energy-efficient technology** to build operations centered around the water-energy-food nexus. Focus on job creation, environmental awareness, and advanced Agritech execution.

THE PROBLEM WITH TRADITIONAL FARMING



Food Security

Only **25%** of food produce is locally grown. Heavy dependence on imports creates a huge threat to food sovereignty and increases the cost of living.



Land Scarcity

Rapid population growth has made land availability scarce. Traditional local farmers are becoming a dying breed as agricultural land diminishes.



Water Scarcity

Traditional soil farming requires a **huge supply of water**, putting immense strain on Malta's limited freshwater resources and aquifers.



Pesticide Use

Conventional methods depend on heavy pesticide use, which is harmful for human consumption and degrades long-term soil conservation.

MARKET OPPORTUNITY



FOOD IMPORT DEPENDENCY

Malta relies heavily on imports, creating vulnerability to price shocks and supply chain disruptions.



600K

Projected Population

+15% Growth



2.75M

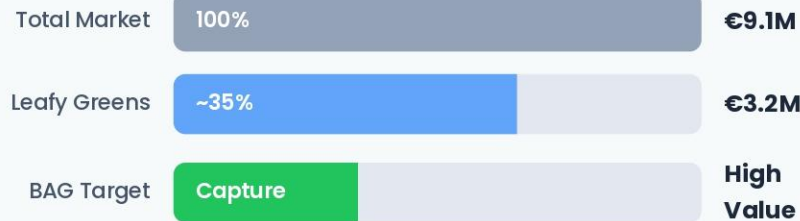
Annual Visitors

High Demand

Fresh Vegetables Market

€9.11M Revenue (2025)

Target Addressable Market (TAM)



🎯 **Strategic Focus:** Capturing the premium segment of leafy greens (lettuce, kale, rucola, spinach, chard, etc.) where freshness and shelf-life command higher margins.

OUR SOLUTION - THE BAG SYSTEM



Actual BAG System Installation



More Produce

Significantly higher yield in same physical footprint



Water Usage

Compared to traditional soil-based agriculture methods



Carbon Negative

Operations absorb more carbon than they emit

★ Key Benefits Breakdown



Healthier soil, better tasting produce, and **0 pesticides** used in cultivation.



Ideal integration for **AgriVoltaics**, combining energy with food production.



Locally produced ensuring food security and supply chain resilience.



Drastically reduced **food miles**, delivering fresher produce locally.



 International Patent



BAG System Technology

1. VERTICAL FARMING

Space-efficient vertical architecture maximizing yield per square meter.



2. AQUASOILPONICS

Hybrid system combining Aquaponics, Soil, and Bioponics for optimal growth.



3. WATER EFFICIENCY

Advanced recycling system utilizing < 5% water compared to traditional methods.



4. LOW ENERGY

Highly efficient consumption at approx. 3.2 kW per day per unit.



5. MOVING BEDS

Dynamic grow beds ensuring uniform light exposure and ease of access.



6. EFFICIENT GROWING

Optimized conditions for faster crop cycles and healthier plants.



7. IDEAL FOR AGRIVOLTAICS

Designed to integrate seamlessly beneath PV panels for dual land use.



8. PATENTED SOLUTION

Unique intellectual property protecting the core recycling innovation.



9. MODULAR DESIGN

Scalable units adaptable to various farm sizes and layouts.

OUR PRODUCE - PREMIUM QUALITY



PREMIUM FRESH PRODUCE



Better Taste

Enhanced flavor from natural nutrients & optimal conditions.



Healthier Choice

Pesticide-free, nutrient-rich produce promoting better health.



Longer Shelf-life

Harvested at peak freshness, lasting longer than imports.



Market & Eco Benefits



Cheaper

More affordable than organic imports due to efficiency.



Locally Produced

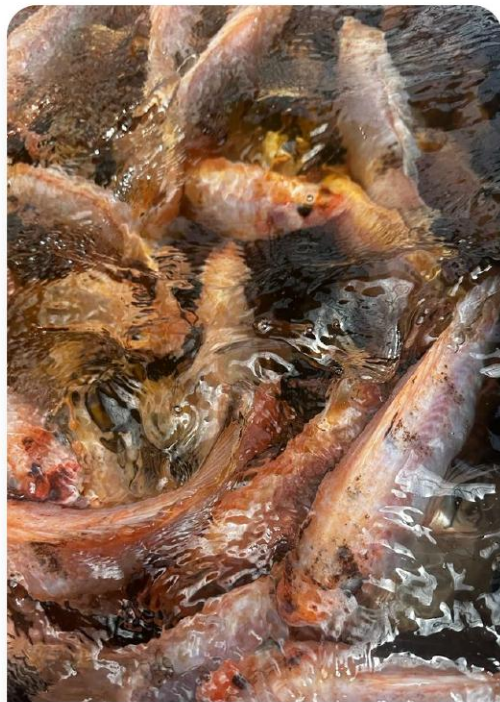
Grown locally ensuring food security & zero delays.



Carbon Negative

Farming operations that actively reduce carbon footprint.

CAPACITY & OPEX - BARS MODEL



BAG System Technology

System Specifications

FOOTPRINT

24 m²

CLEARANCE

~ 5.5 m

CAPACITY

6 Beds

EACH BED SIZE

7m2

Production Capacity



Lettuce / Kale / Chard

200g avg. / pot

624

Pots



Rucola / Spinach

100g avg. / pot

1,248

Pots

Monthly OPEX



Electricity (3.2 kWh/d)

< €15



Water (~500L)

€5



Fish Feed

€5



Seeds

€10

MONTHLY TOTAL

< €35

Exceptionally low OPEX

EFFICIENCY COMPARISON



RESOURCE EFFICIENCY	VERTICAL FARMING	GREENHOUSE FARMING	OUTDOOR FARMING	WINNER BAG FARMING
 Water Use L/kg lettuce/year	1 L	20 L	250 L	< 1 L
 Energy Use kWh/kg/year	250 kWh	60-180 kWh	0.3 kWh	0.6 kWh
 CO2 Emissions kg/ton of lettuce	158 kg	352 kg	540 kg	120 kg
 Land Use m ² for 1kg/day	0.3 m ²	9 m ²	93 m ²	5 m ²
 Food Miles Distance to market	43 km	800-1600 km	3200 km	Local
 Yield kg/m ² /year	80-120 kg	41 kg	3.9 kg	70 kg

COMPARISON IN CO2 EMISSIONS



FARMER FROM HOLLAND



320g

CO2 per Kale

TOTAL CO2

 **256,000 KG**



LOCAL BAG FARMING



40g

CO2 per Kale

TOTAL CO2

 **32,000 KG**

VS

Environmental Impact

Dramatically reducing the carbon footprint of food production.

800% LESS CO2 EMISSIONS

GROWTH CYCLES & SEASONALITY



 **LOWER TEMP**
Oct - May (8 Mos)

 **HIGHER TEMP**
Jun - Sep (4 Mos)

 Seedling Phase  Growing Phase

 **Lettuce**

 Lower Temp  **8 Wks**

 Higher Temp  **11 Wks**

 **Spinach**

 Lower Temp  **8 Wks**

 Higher Temp  **10 Wks**

 **Rucola**

 Lower Temp  **6 Wks**

 Higher Temp  **8 Wks**

 **Kale**

 Lower Temp  **8 Wks**

 Higher Temp  **10 Wks**

AWARDS & RECOGNITION



Malta Business Awards



INNOVATIVE CLIMATE SOLUTIONS

Recognized for pioneering sustainable impact in the Mediterranean region



New Innovative Private Business Awards

Excellence in Innovation



New Innovative Ecological Private Business Award

Ecological Leadership



Eco-Friendly Cultivation & Harvesting

Product Techniques – Company of the Year



“At first I was skeptical of this venture but the more I visited the premises and saw the developed technology and the results, the more convinced I became. The will and determination to make this happen is commendable and impressive.”



Malcolm Borg

Ghaqda Bdiewa Attivi, Deputy Director of
Agricultural Department MCAST



Continuing our commitment to Research, Development & Innovation, Bio Aqua Garden is advancing towards a fully integrated ecosystem of automated technology and high-value bio-products.



01

Full Automation

Transitioning from manual nurturing to fully autonomous operations to ensure consistency and scalability.

- ✓ Automated seedling & transplanting
- ✓ Precision harvesting systems
- ✓ Reduced manual labor dependency



02

Digitalisation & AI

End-to-end digital monitoring of the entire nurturing process, from water quality to soil health.

- 📶 IoT Sensors for water & nutrients
- 📱 Remote operations management
- 🧠 AI self-learning efficiency models



03

BIO Product Innovation

Diversifying produce into high-value BIO derivatives for health, nutrition, and convenience.

- 🌿 **BIO Powder:** Smoothies, spices, baby food
- 💚 **BIO Pills:** Immunity & vitamin supplements
- ♻️ Zero-waste production cycle



bioaquagarden

Short video:
Youth in smart agriculture



Thank you for your attention!

Get in touch if you have any questions.

Let's move on to session 3.



Jo Sakota

office@bioaquagarden.com



Session 3

Sustainability, Ecology and Place-Based Innovation

Jordi Pietx

Biologist and MSc in Environmental Sciences and Ecology; **Independent consultant** on networking in environmental and social innovation since 2019; **Associated expert** with Across Limits in the Environment and Rural Sectors; **Member of PREMIERE**, a Horizon Europe project aims to increase the value of multi-actor approach proposals <https://premiere-multiactor.eu>

enxarxa@jordipietx.net


I asked our AI friend...
and this was the suggestion.



10 DIGITAL TECHNOLOGIES FOR SMALL MEDITERRANEAN FARMS

Smart solutions for a resilient, productive and sustainable Mediterranean agriculture



<p>1 AI-POWERED PRECISION IRRIGATION</p>  <ul style="list-style-type: none"> Applies the right amount of water at the right time Saves 20-50% of irrigation water Reduces energy costs Improves crop quality 	<p>2 LOW-COST IOT SENSOR NETWORKS</p>  <ul style="list-style-type: none"> Monitors key soil and microclimate data Early detection of drought and heat stress Real-time alerts on your smartphone 	<p>3 DRONE-BASED CROP MONITORING</p>  <ul style="list-style-type: none"> Detects water stress, nutrient deficiencies, pest outbreaks High-resolution field insights Better decisions, higher yields 	<p>4 SATELLITE MONITORING PLATFORMS</p>  <ul style="list-style-type: none"> Access to free satellite imagery Tracks crop health and water stress Monitor growth over time without owning drones 	<p>5 AI PEST AND DISEASE DETECTION APPS</p>  <ul style="list-style-type: none"> Identify diseases and pests with a smartphone Get treatment and management recommendations Fast, easy and affordable
<p>6 DIGITAL FARM TWINS</p>  <ul style="list-style-type: none"> Virtual model of your farm Simulate scenarios and test decisions Optimize resource use and profitability 	<p>7 AUTONOMOUS SMALL-SCALE FIELD ROBOTS</p>  <ul style="list-style-type: none"> Mechanical weeding and monitoring Reduces herbicide use and labor needs Collects valuable field data 	<p>8 BLOCKCHAIN-BASED TRACEABILITY</p>  <ul style="list-style-type: none"> Transparent record of every step Proof of origin and production practices Builds trust and adds value to your products 	<p>9 COOPERATIVE DIGITAL MARKETPLACES</p>  <ul style="list-style-type: none"> Better prices Direct sales Shared logistics Stronger local food systems 	<p>10 CLIMATE RISK EARLY-WARNING SYSTEMS</p>  <ul style="list-style-type: none"> Heatwave alerts Frost warnings Drought predictions Extreme weather footifications Hyperlocal forecasts and alerts Actionable recommendations Protect your crops and plan ahead

And certainly, these high-end agri-techs are highly relevant to be further explored, for example, at:

Platforms:

- CAP Network
- EU Farmbook
- Farmtopia EU project

Home > Support > Innovation, knowledge exchange and EIP-AGRI > Digitalisation > Digital tools, automation and platforms

Digital tools, automation and platforms
Exploring digital solutions for agriculture and forestry

FARMTOPIA Home Project Overview

Democratizing Digital Farming for All – FARMTOPIA'S PATH TO EMPOWERING SMALL FARMS WITH DIGITAL TECHNOLOGIES

Find Out More...

Online Tools:

- Adapt2Clima MED Tool

ADAPT2CLIMA Adaptation to Climate change Impacts on the Mediterranean islands' Agriculture

HOME PROJECT PARTNERS ACTIONS NEWS / EVENTS NETWORKING USEFUL LINKS CONTACT

DISSEMINATION MATERIAL ADAPT2CLIMA TOOL

The ADAPT2CLIMA tool
The aim of the ADAPT2CLIMA Decision Support tool is to enhance understanding of climate change and its impacts on agriculture in order to support farmers, policy makers and other relevant stakeholders (agronomists, agribusiness industry, etc.) in adaptation planning.

- The tool
- Methodology
- Potential users of the tool

The tool
With this tool the user may discover useful information on the magnitude of climate change impacts for each crop under study (barley, wheat, grape, olive, potato and tomato) for the Mediterranean islands of Crete, Sicily and Cyprus, as well as, to assess the potential for enhancing resilience through the implementation of selected adaptation measures.

Furthermore, the user may explore in detail the relevant climatic, hydrologic, crop and socio-economic indicators, as well as the selected adaptation measures used for the impact and adaptation assessment of agriculture to climate change.

Practice examples:


FAO Connected Farmers Casebook

Food and Agriculture Organization of the United Nations

CONNECTED FARMERS
A CASEBOOK OF GOOD PRACTICES AND INSPIRING STORIES FROM EUROPE AND CENTRAL ASIA

But another reality applies to Malta farms and farmers...

- Small-scale: 69% of farm holdings < 1Ha, 99% sole-holder.
- Land-constrained
- Urban adjacent
- 1/3 of farmland irrigated, 2/3 rainfall-based.
- 89% men, 18% < 44 years old, 5% < 35 years.
- Only 14% workforce full-time.
- Arable land sells at 283,000 €/ha.



All suggested tools
include links!

Would the following **crowd-digital tech tools** apply to this scenario?



Regenerative Agriculture and Agroecological Farming: Transformation Advice at the Farm Level

Crowdfarming,
Mediterranean Farms

SOIL ASSOCIATION EXCHANGE

For Farmers For Corporates About us [Login](#)

The power to transform your farm

We've got the cutting-edge software and real-world expertise to drive your sustainable growth

Soil Association, UK

Here is what some of the pioneers in our Spanish pilot had to say:

"For me, [being part of Crowdfarming] is being part of progress, advancing towards the agriculture of the future with a beautiful project."

María, Finca Los Pipones

"The new monitoring protocol is a game-changer. It not only proves that our regenerative practices are working, but it highlights exactly where we need to focus next to keep improving our citrus orchard's resilience."

Javier, Verger de Alicia

Farmeure

Manage your farm in one place.

Keep your fields, tasks, and records organized—and get practical guidance to improve soil health and long-term resilience, step by step.

[Start now](#)

Dashboard

My Farms

Manage and monitor all your agricultural properties

[Add New Farm](#)

My Farms

- Finca Los Pipones
- Finca Los Pipones
- Finca Los Pipones
- Finca Los Pipones
- Finca Los Pipones
- Finca Los Pipones

Summary

Current Weather

8.3°C

15:00h 0.0

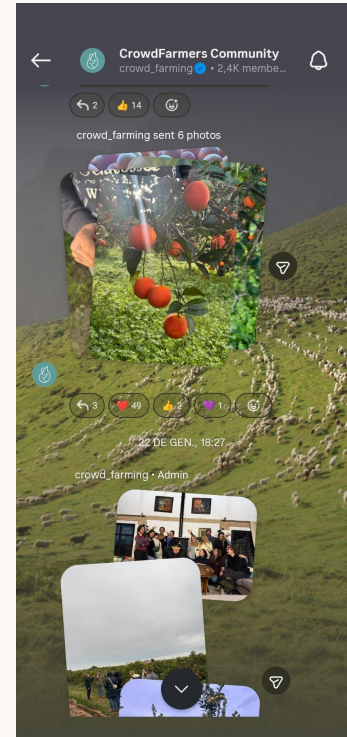
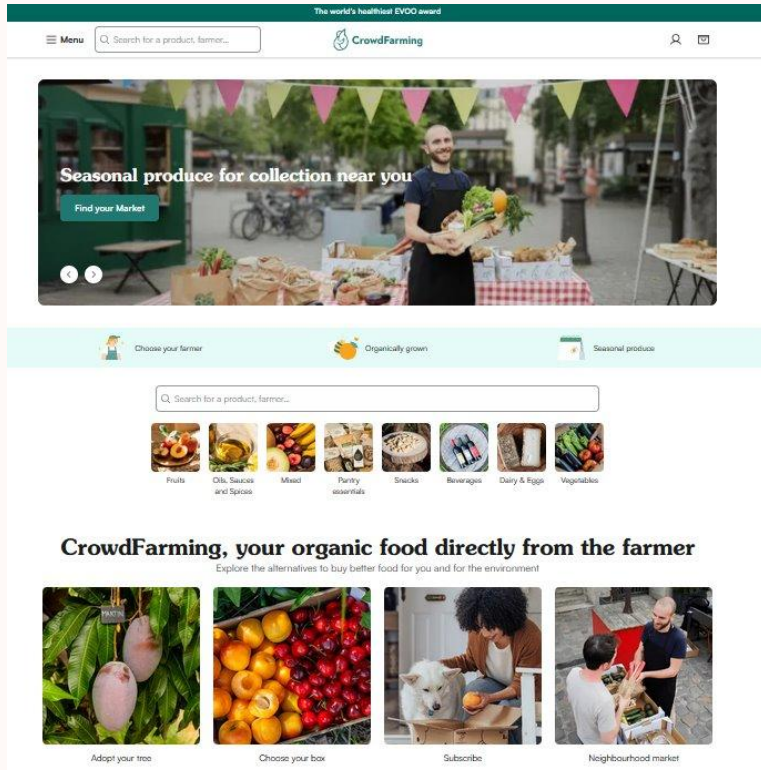
Weather Alerts

Parcels Total Area Total Varieties

Crowdfarming: Farmers United for Direct and Market Selling

With a vibrant and connected Instagram Community...

... And practical inspiring guidebooks...



WeFarmYou: Crowdfarmers Connected to Consumers and Visitors

WeFarmYou

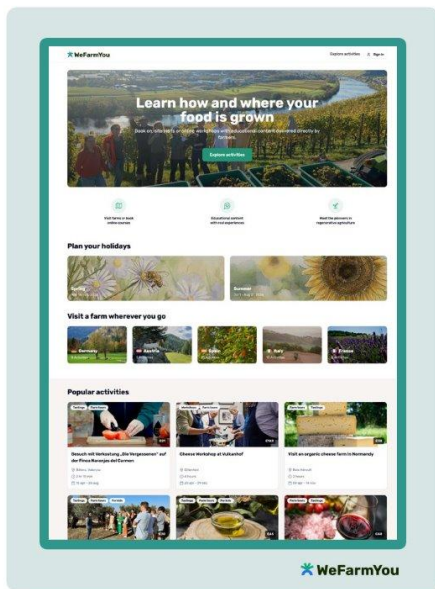
To take our community from the digital world into the physical fields, we successfully launched WeFarmYou, a dedicated agrotourism platform. It allows consumers to discover their European roots by booking on-site visits, tastings, and hands-on activities directly with the people who grow their food across Spain, Germany, Austria, France, and Italy.

We closed the year with **22 farms** actively onboarded to the platform, coordinating a total of **335 farm visits**.

This not only brings citizens closer to the source of their food, but it also creates a valuable, diversified revenue stream for our farmers.



A group of people during an event at Mostviertler Bio-Kürbischhof Metz, a pumpkin farm.



WeFarmYou



“

“Behind a product, there is not just one visible person; there are many people and families involved in a project. And thanks to these projects, families can stay in their villages and towns, close to their loved ones, and do not have to leave or emigrate to work; farm work is as dignified and important as any other.”

‘Un Olivo’ farm, Spain

And a second example:



Short Chain Production: From Farmer To Consumer

Connecting COsumers and producers to REbalance farmers' position through AmbassaDOrs trainings



THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION'S HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT NO 101000573



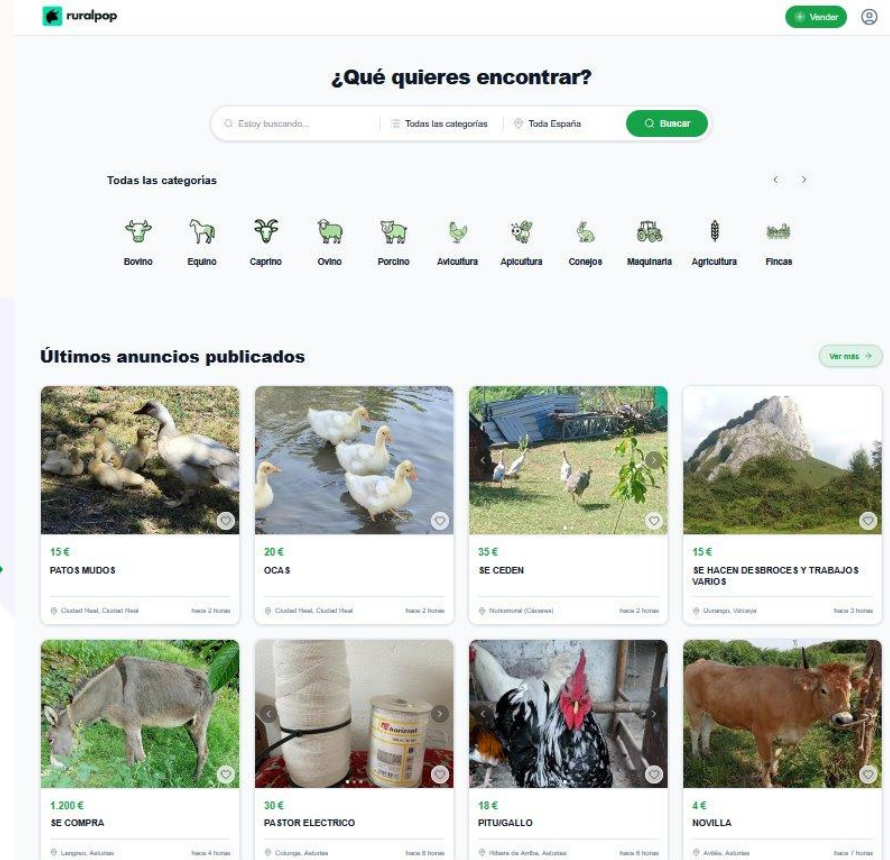
Digital Livestock Market For Farmers

Examples from Spain:

VACAPOP

APP


La primera app de compra-venta de ganado diseñada por y para ganaderos.
Gratis, segura y sin comisiones



Access To The Land For Farmers & New Entrants

In Ireland:

European network:



ABOUT MISSION MEMBERS JOIN US RESOURCES NEWS


OUR NETWORK

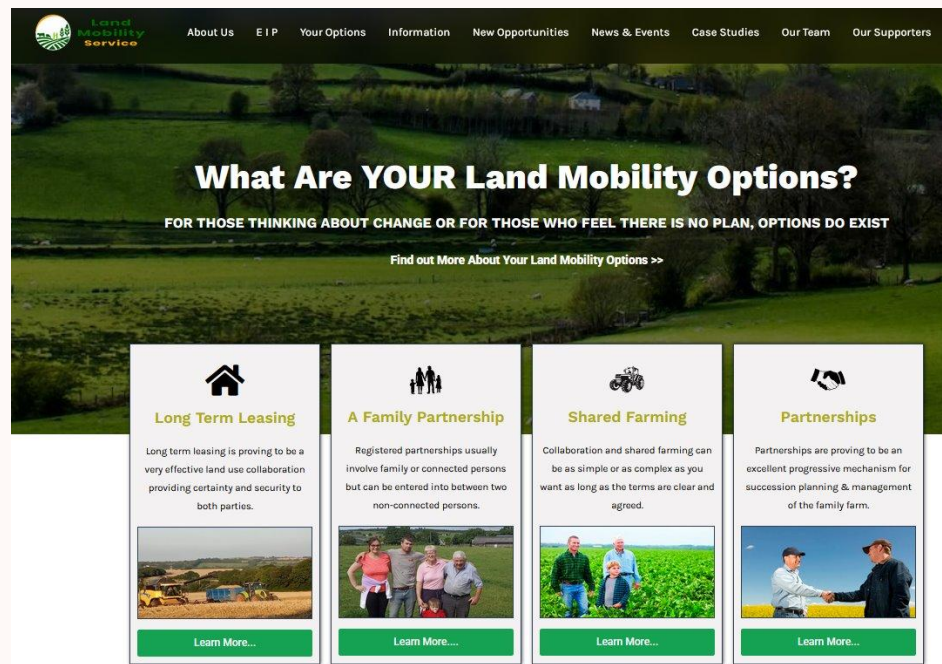
The **Access to Land network (A2L)** brings together grassroots organisations from across Europe to share experiences and promote the significance of access to land for agroecological transition and generational renewal.

A2L was founded in 2012 and functions as an informal network of about **15 organisations** whose aim is to ensure sustainable land use and food security in Europe.

[Join us!](#)

[Go to members](#)






Land Mobility Service

About Us EIP Your Options Information New Opportunities News & Events Case Studies Our Team Our Supporters

What Are YOUR Land Mobility Options?


FOR THOSE THINKING ABOUT CHANGE OR FOR THOSE WHO FEEL THERE IS NO PLAN, OPTIONS DO EXIST

[Find out More About Your Land Mobility Options >>](#)




Long Term Leasing

Long term leasing is proving to be a very effective land use collaboration providing certainty and security to both parties.




[Learn More...](#)




A Family Partnership

Registered partnerships usually involve family or connected persons but can be entered into between two non-connected persons.




[Learn More...](#)




Shared Farming

Collaboration and shared farming can be as simple or as complex as you want as long as the terms are clear and agreed.




[Learn More...](#)



Partnerships

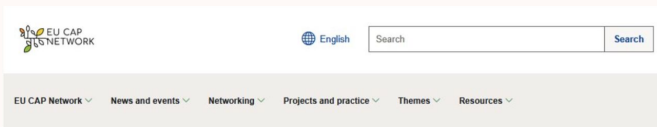
Partnerships are proving to be an excellent progressive mechanism for succession planning & management of the family farm.



[Learn More...](#)

Social Farming, An Opportunity?

EU CAP Network Focus Group



Home > Focus Group 'Social farming and innovations'

Focus Group 'Social farming and innovations'

How can social farming contribute to innovation in agriculture while strengthening the multi-functional role of agriculture and connecting people from urban and rural areas?

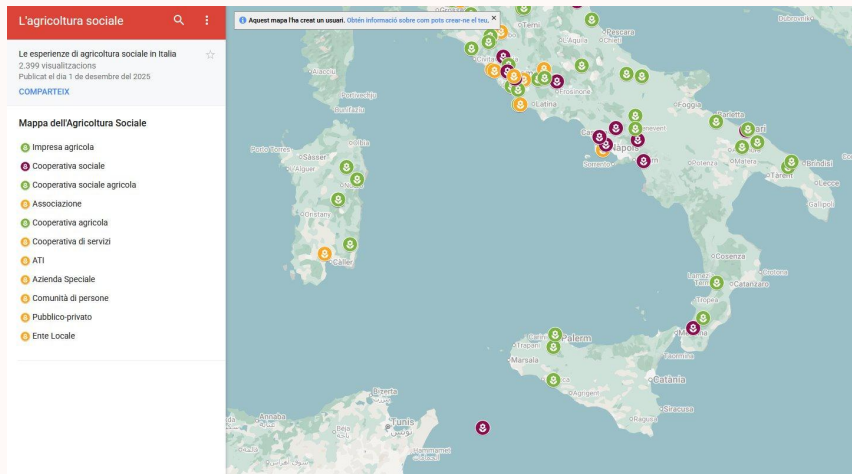
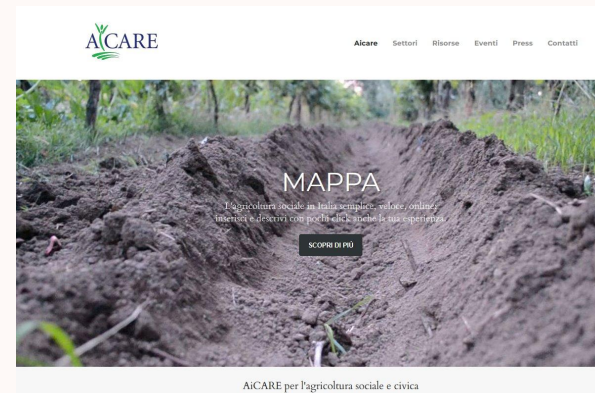
Final report Factsheet



How can social farming contribute to innovation in agriculture while strengthening the multi-functional role of agriculture and connecting people from urban and rural areas?



Italian network for Social Agriculture



Social Farming, An Opportunity?

Food and Agriculture Organization of the United Nations
 WORLD FOOD FORUM | GLOBAL YOUTH ACTION
 YOUNG SCIENTISTS GROUP

DIGITAL TECHNOLOGIES FOR MULTIDIMENSIONAL YOUTH ENGAGEMENT IN AGRIFOOD SYSTEMS TRANSFORMATION

World-Wide Opportunities on Organic Farms – WWOOFers

Welcome to WWOOF

A world filled with nature, fresh air, good food, hands-on farming, and community.

At WWOOF, we welcome everyone and embrace curiosity, enthusiasm, and adventures driven by the desire to improve the world around us. Since 1971, we've been part of a worldwide movement with a common mission: to promote sustainable farming.

[Find your destination](#)

What is WWOOF?

Worldwide Opportunities on Organic Farms (WWOOF)

WWOOF® links visitors with organic farmers, promotes an educational and cultural exchange and builds a global community conscious of ecological farming practices.

Visitors (or "WWOOFers") participate in the daily life of hosts while receiving educational opportunities, meals and accommodation during their visit, with no money exchanged between hosts and WWOOFers. WWOOFers learn to grow their own food, help on the farm, and experience a new culture.

Hosts open their homes to receive visitors from all walks of life who want to connect with organic food, regenerative agriculture and give a hand in the everyday tasks.

Curious about the WWOOF movement?

[Find out more](#)

Why join WWOOF?

Live. Learn. Grow. Connect.

Embark on an adventure and discover unique places, where growing food from hands-on farming is part of an inspiring lifestyle. Live in-tune with the elements of nature, where there is good laughter around the table and real food on the plate. Team up with WWOOF to promote organic agriculture and support farmers who are nourishing their community.

Find your place in this vibrant community bound by sustainability.

[How it works](#)

Thank you for your attention!

Get in touch if you have any questions.



Jordi Pietx

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Now it's time for our discussion and Q&A session

From Tools to Real-World Impact



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What Now?

Closing Remarks and Next Steps



Upcoming Events & Opportunities

- **25 June** – MALTESE Cascade Initiative Event: Presentation of Final Prototype & Business Pitch Winners

In-person event in Malta | Location: TBC

- **13 July** – Funding the Future: EU Opportunities for Farmers & rural projects

2nd session in the 4-part series | Location: In person, Gozo

- **SMART FOOD Pilot Opportunity**

Interreg Italia–Malta project piloting producing traceability tool using AI, blockchain and digital traceability tools. Seeking agri-food enterprises in Malta as pilot users. EOI closes **11 June 2026, 12:00 noon**.

- **More info:** <https://foodagency.mt/2026/05/19/smart-food-project>

Take Our Stakeholder Survey

Scan to access



Or click here

<https://docs.google.com/forms/d/e/1FAIpQLSfiy6Qk63zmnmwSPOQ3cnagRAKEqPfJQzPoCkzqtu1NnxfYQ/viewform>

Thank you for your attention!

Would you like to get in touch about PoliRural Plus?

maria.elena@acrosslimits.com

Take a look at the project website:

www.poliruralplus.eu

Follow the project:



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